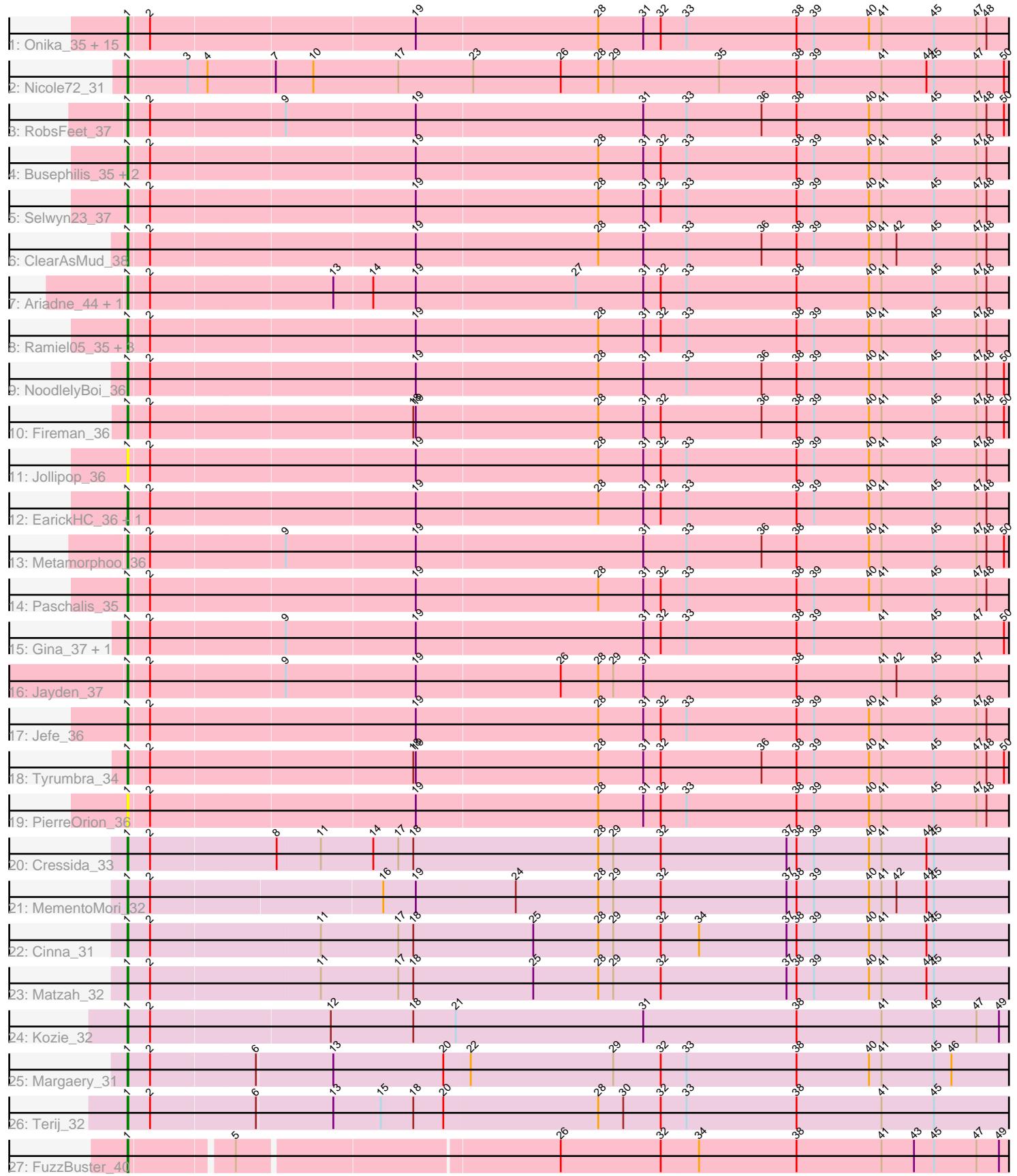


## Zoomed Pham 1983



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 1983 Report

This analysis was run 04/05/24 on database version 557.

Pham number 1983 has 50 members, 6 are drafts.

Phages represented in each track:

- Track 1 : Onika\_35, Yeti\_36, Pulchra\_37, Piperis\_36, Scumberland\_37, Quhwah\_39, Cranjis\_37, Honeyfin\_37, Antares\_36, PiperSansNom\_36, Phrancesco\_36, Shotgun\_35, Hermeonusus\_35, LittleFortune\_37, BrazzalePHS\_35, Phorgeous\_35
- Track 2 : Nicole72\_31
- Track 3 : RobsFeet\_37
- Track 4 : Busephilis\_35, CrazyRich\_35, Ganandorf\_35
- Track 5 : Selwyn23\_37
- Track 6 : ClearAsMud\_38
- Track 7 : Ariadne\_44, Smarties\_44
- Track 8 : Ramiel05\_35, Kowalski\_35, Savannah\_35, Crisis\_37
- Track 9 : NoodlyBoi\_36
- Track 10 : Fireman\_36
- Track 11 : Jollipop\_36
- Track 12 : EarickHC\_36, KaiHaiDragon\_36
- Track 13 : Metamorphoo\_36
- Track 14 : Paschalis\_35
- Track 15 : Gina\_37, Teamocil\_37
- Track 16 : Jayden\_37
- Track 17 : Jefe\_36
- Track 18 : Tyrumbra\_34
- Track 19 : PierreOrion\_36
- Track 20 : Cressida\_33
- Track 21 : MementoMori\_32
- Track 22 : Cinna\_31
- Track 23 : Matzah\_32
- Track 24 : Kozie\_32
- Track 25 : Margaery\_31
- Track 26 : Terij\_32
- Track 27 : FuzzBuster\_40

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

The start number called the most often in the published annotations is 1, it was called in 44 of the 44 non-draft genes in the pham.

Genes that call this "Most Annotated" start:

- Antares\_36, Ariadne\_44, BrazzalePHS\_35, Busephilis\_35, Cinna\_31, ClearAsMud\_38, Cranjis\_37, CrazyRich\_35, Cressida\_33, Crisis\_37, EarickHC\_36, Fireman\_36, FuzzBuster\_40, Ganandorf\_35, Gina\_37, Hermeonusus\_35, Honeyfin\_37, Jayden\_37, Jefe\_36, Jollipop\_36, KaiHaiDragon\_36, Kowalski\_35, Kozie\_32, LittleFortune\_37, Margaery\_31, Matzah\_32, MementoMori\_32, Metamorphoo\_36, Nicole72\_31, NoodlyBoi\_36, Onika\_35, Paschalis\_35, Phorgeous\_35, Phrancesco\_36, PierreOrion\_36, PiperSansNom\_36, Piperis\_36, Pulchra\_37, Quhwah\_39, Ramiel05\_35, RobsFeet\_37, Savannah\_35, Scumberland\_37, Selwyn23\_37, Shotgun\_35, Smarties\_44, Teamocil\_37, Terij\_32, Tyrbra\_34, Yeti\_36,

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

- 

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

- 

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

Start 1:

- Found in 50 of 50 ( 100.0% ) of genes in pham
- Manual Annotations of this start: 44 of 44
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Antares\_36 (EC), Ariadne\_44 (EC), BrazzalePHS\_35 (EC), Busephilis\_35 (EC), Cinna\_31 (EI), ClearAsMud\_38 (EC), Cranjis\_37 (EC), CrazyRich\_35 (EC), Cressida\_33 (EI), Crisis\_37 (EC), EarickHC\_36 (EC), Fireman\_36 (EC), FuzzBuster\_40 (singleton), Ganandorf\_35 (EC), Gina\_37 (EC), Hermeonusus\_35 (EC), Honeyfin\_37 (EC), Jayden\_37 (EC), Jefe\_36 (EC), Jollipop\_36 (EC), KaiHaiDragon\_36 (EC), Kowalski\_35 (EC), Kozie\_32 (EI), LittleFortune\_37 (EC), Margaery\_31 (EI), Matzah\_32 (EI), MementoMori\_32 (EI), Metamorphoo\_36 (EC), Nicole72\_31 (EC), NoodlyBoi\_36 (EC), Onika\_35 (EC), Paschalis\_35 (EC), Phorgeous\_35 (EC), Phrancesco\_36 (EC), PierreOrion\_36 (EC), PiperSansNom\_36 (EC), Piperis\_36 (EC), Pulchra\_37 (EC), Quhwah\_39 (EC), Ramiel05\_35 (EC), RobsFeet\_37 (EC), Savannah\_35 (EC), Scumberland\_37 (EC), Selwyn23\_37 (EC), Shotgun\_35 (EC), Smarties\_44 (EC), Teamocil\_37 (EC), Terij\_32 (EI), Tyrbra\_34 (EC), Yeti\_36 (EC),

### **Summary by clusters:**

There are 3 clusters represented in this pham: singleton, EI, EC,

Info for manual annotations of cluster EC:

- Start number 1 was manually annotated 36 times for cluster EC.

Info for manual annotations of cluster EI:

- Start number 1 was manually annotated 7 times for cluster EI.

### **Gene Information:**

Gene: Antares\_36 Start: 20847, Stop: 23714, Start Num: 1

Candidate Starts for Antares\_36:

(Start: 1 @20847 has 44 MA's), (2, 20871), (19, 21180), (28, 21396), (31, 21450), (32, 21471), (33, 21501), (38, 21633), (39, 21654), (40, 21720), (41, 21735), (45, 21798), (47, 21849), (48, 21861), (52, 21912), (53, 21936), (54, 21939), (55, 21954), (56, 21978), (58, 22014), (59, 22035), (63, 22128), (64, 22146), (66, 22158), (68, 22203), (70, 22293), (71, 22320), (77, 22464), (79, 22503), (83, 22527), (85, 22539), (86, 22548), (92, 22587), (93, 22596), (97, 22617), (103, 22668), (106, 22695), (110, 22713), (116, 22767), (118, 22776), (121, 22794), (122, 22800), (123, 22812), (127, 22872), (129, 22881), (132, 22923), (133, 22941), (135, 22959), (136, 22965), (139, 23016), (143, 23097), (145, 23130), (146, 23145), (151, 23208), (152, 23211), (154, 23232), (155, 23241), (157, 23277), (160, 23316), (163, 23391), (166, 23415), (169, 23445), (172, 23469), (187, 23619), (188, 23622),

Gene: Ariadne\_44 Start: 22548, Stop: 25418, Start Num: 1

Candidate Starts for Ariadne\_44:

(Start: 1 @22548 has 44 MA's), (2, 22572), (13, 22785), (14, 22830), (19, 22881), (27, 23070), (31, 23151), (32, 23172), (33, 23202), (38, 23334), (40, 23421), (41, 23436), (45, 23499), (47, 23550), (48, 23562), (53, 23637), (55, 23655), (57, 23682), (58, 23715), (59, 23736), (63, 23829), (65, 23856), (66, 23859), (68, 23904), (70, 23994), (74, 24072), (77, 24165), (79, 24204), (83, 24228), (84, 24237), (86, 24249), (89, 24264), (90, 24279), (97, 24318), (101, 24351), (102, 24360), (103, 24369), (106, 24396), (110, 24414), (118, 24477), (122, 24501), (123, 24513), (127, 24573), (129, 24582), (132, 24624), (133, 24642), (136, 24666), (138, 24714), (143, 24798), (144, 24825), (146, 24846), (151, 24909), (152, 24912), (155, 24942), (158, 24990), (159, 25008), (163, 25092), (166, 25116), (169, 25146), (172, 25170), (181, 25236), (190, 25335), (192, 25374), (194, 25404), (195, 25407),

Gene: BrazzalePHS\_35 Start: 20642, Stop: 23509, Start Num: 1

Candidate Starts for BrazzalePHS\_35:

(Start: 1 @20642 has 44 MA's), (2, 20666), (19, 20975), (28, 21191), (31, 21245), (32, 21266), (33, 21296), (38, 21428), (39, 21449), (40, 21515), (41, 21530), (45, 21593), (47, 21644), (48, 21656), (52, 21707), (53, 21731), (54, 21734), (55, 21749), (56, 21773), (58, 21809), (59, 21830), (63, 21923), (64, 21941), (66, 21953), (68, 21998), (70, 22088), (71, 22115), (77, 22259), (79, 22298), (83, 22322), (85, 22334), (86, 22343), (92, 22382), (93, 22391), (97, 22412), (103, 22463), (106, 22490), (110, 22508), (116, 22562), (118, 22571), (121, 22589), (122, 22595), (123, 22607), (127, 22667), (129, 22676), (132, 22718), (133, 22736), (135, 22754), (136, 22760), (139, 22811), (143, 22892), (145, 22925), (146, 22940), (151, 23003), (152, 23006), (154, 23027), (155, 23036), (157, 23072), (160, 23111), (163, 23186), (166, 23210), (169, 23240), (172, 23264), (187, 23414), (188, 23417),

Gene: Busephilis\_35 Start: 20577, Stop: 23444, Start Num: 1

Candidate Starts for Busephilis\_35:

(Start: 1 @20577 has 44 MA's), (2, 20601), (19, 20910), (28, 21126), (31, 21180), (32, 21201), (33, 21231), (38, 21363), (39, 21384), (40, 21450), (41, 21465), (45, 21528), (47, 21579), (48, 21591), (52, 21642), (53, 21666), (54, 21669), (55, 21684), (56, 21708), (58, 21744), (59, 21765), (63, 21858), (64, 21876), (68, 21933), (70, 22023), (71, 22050), (77, 22194), (79, 22233), (83, 22257), (85, 22269), (86, 22278), (92, 22317), (93, 22326), (97, 22347), (103, 22398), (106, 22425), (110, 22443), (116, 22497), (118, 22506), (121, 22524), (122, 22530), (123, 22542), (127, 22602), (129, 22611), (132, 22653), (133, 22671), (135, 22689), (136, 22695), (139, 22746), (143, 22827), (145, 22860), (146, 22875), (151, 22938), (152, 22941), (154, 22962), (155, 22971), (157, 23007), (160, 23046), (163, 23121), (166, 23145), (169, 23175), (172, 23199), (187, 23349), (188, 23352),

Gene: Cinna\_31 Start: 20016, Stop: 22862, Start Num: 1

Candidate Starts for Cinna\_31:

(Start: 1 @20016 has 44 MA's), (2, 20043), (11, 20241), (17, 20334), (18, 20352), (25, 20496), (28, 20574), (29, 20592), (32, 20649), (34, 20694), (37, 20799), (38, 20811), (39, 20832), (40, 20898), (41, 20913), (44, 20967), (45, 20976), (53, 21114), (54, 21117), (56, 21156), (58, 21192), (59, 21213), (63, 21306), (68, 21381), (70, 21471), (74, 21549), (75, 21609), (77, 21642), (79, 21681), (80, 21684), (81, 21696), (86, 21726), (87, 21729), (95, 21783), (96, 21792), (100, 21822), (105, 21861), (107, 21876), (120, 21960), (122, 21978), (127, 22050), (129, 22059), (132, 22101), (136, 22143), (138, 22191), (141, 22242), (142, 22254), (143, 22275), (144, 22302), (145, 22308), (146, 22323), (151, 22386), (152, 22389), (154, 22410), (157, 22455), (166, 22593), (167, 22605), (169, 22623), (170, 22635), (172, 22647), (174, 22656), (189, 22785), (193, 22851),

Gene: ClearAsMud\_38 Start: 21358, Stop: 24225, Start Num: 1

Candidate Starts for ClearAsMud\_38:

(Start: 1 @21358 has 44 MA's), (2, 21382), (19, 21691), (28, 21907), (31, 21961), (33, 22012), (36, 22102), (38, 22144), (39, 22165), (40, 22231), (41, 22246), (42, 22264), (45, 22309), (47, 22360), (48, 22372), (52, 22423), (53, 22447), (54, 22450), (55, 22465), (56, 22489), (58, 22525), (59, 22546), (63, 22639), (65, 22666), (66, 22669), (68, 22714), (70, 22804), (74, 22882), (77, 22975), (79, 23014), (85, 23050), (86, 23059), (88, 23065), (103, 23179), (106, 23206), (110, 23224), (118, 23287), (122, 23311), (123, 23323), (127, 23383), (129, 23392), (132, 23434), (133, 23452), (135, 23470), (136, 23476), (139, 23527), (143, 23608), (145, 23641), (146, 23656), (151, 23719), (152, 23722), (154, 23743), (155, 23752), (157, 23788), (160, 23827), (162, 23854), (163, 23902), (166, 23926), (169, 23956), (172, 23980), (180, 24031),

Gene: Cranjis\_37 Start: 20802, Stop: 23669, Start Num: 1

Candidate Starts for Cranjis\_37:

(Start: 1 @20802 has 44 MA's), (2, 20826), (19, 21135), (28, 21351), (31, 21405), (32, 21426), (33, 21456), (38, 21588), (39, 21609), (40, 21675), (41, 21690), (45, 21753), (47, 21804), (48, 21816), (52, 21867), (53, 21891), (54, 21894), (55, 21909), (56, 21933), (58, 21969), (59, 21990), (63, 22083), (64, 22101), (66, 22113), (68, 22158), (70, 22248), (71, 22275), (77, 22419), (79, 22458), (83, 22482), (85, 22494), (86, 22503), (92, 22542), (93, 22551), (97, 22572), (103, 22623), (106, 22650), (110, 22668), (116, 22722), (118, 22731), (121, 22749), (122, 22755), (123, 22767), (127, 22827), (129, 22836), (132, 22878), (133, 22896), (135, 22914), (136, 22920), (139, 22971), (143, 23052), (145, 23085), (146, 23100), (151, 23163), (152, 23166), (154, 23187), (155, 23196), (157, 23232), (160, 23271), (163, 23346), (166, 23370), (169, 23400), (172, 23424), (187, 23574), (188, 23577),

Gene: CrazyRich\_35 Start: 20611, Stop: 23478, Start Num: 1

Candidate Starts for CrazyRich\_35:

(Start: 1 @20611 has 44 MA's), (2, 20635), (19, 20944), (28, 21160), (31, 21214), (32, 21235), (33, 21265), (38, 21397), (39, 21418), (40, 21484), (41, 21499), (45, 21562), (47, 21613), (48, 21625), (52, 21676), (53, 21700), (54, 21703), (55, 21718), (56, 21742), (58, 21778), (59, 21799), (63, 21892), (64, 21910), (68, 21967), (70, 22057), (71, 22084), (77, 22228), (79, 22267), (83, 22291), (85, 22303), (86, 22312), (92, 22351), (93, 22360), (97, 22381), (103, 22432), (106, 22459), (110, 22477), (116, 22531), (118, 22540), (121, 22558), (122, 22564), (123, 22576), (127, 22636), (129, 22645), (132, 22687), (133, 22705), (135, 22723), (136, 22729), (139, 22780), (143, 22861), (145, 22894), (146, 22909), (151, 22972), (152, 22975), (154, 22996), (155, 23005), (157, 23041), (160, 23080), (163, 23155), (166, 23179), (169, 23209), (172, 23233), (187, 23383), (188, 23386),

Gene: Cressida\_33 Start: 20076, Stop: 22925, Start Num: 1

Candidate Starts for Cressida\_33:

(Start: 1 @20076 has 44 MA's), (2, 20103), (8, 20250), (11, 20301), (14, 20364), (17, 20394), (18, 20412), (28, 20634), (29, 20652), (32, 20709), (37, 20859), (38, 20871), (39, 20892), (40, 20958), (41, 20973), (44, 21027), (45, 21036), (52, 21150), (53, 21174), (54, 21177), (58, 21252), (59, 21273), (61, 21285), (63, 21366), (64, 21384), (68, 21441), (70, 21531), (74, 21609), (77, 21702), (79, 21741), (80, 21744), (81, 21756), (85, 21777), (86, 21786), (87, 21789), (96, 21852), (100, 21882), (101, 21888),

(105, 21921), (107, 21936), (120, 22020), (122, 22038), (127, 22110), (132, 22161), (136, 22203), (138, 22251), (141, 22302), (142, 22314), (143, 22335), (144, 22362), (145, 22368), (146, 22383), (151, 22446), (152, 22449), (166, 22653), (167, 22665), (169, 22683), (170, 22695), (172, 22707), (176, 22740), (178, 22746), (189, 22848), (193, 22914),

Gene: Crisis\_37 Start: 20596, Stop: 23463, Start Num: 1

Candidate Starts for Crisis\_37:

(Start: 1 @20596 has 44 MA's), (2, 20620), (19, 20929), (28, 21145), (31, 21199), (32, 21220), (33, 21250), (38, 21382), (39, 21403), (40, 21469), (41, 21484), (45, 21547), (47, 21598), (48, 21610), (52, 21661), (53, 21685), (54, 21688), (55, 21703), (56, 21727), (58, 21763), (59, 21784), (63, 21877), (64, 21895), (66, 21907), (68, 21952), (70, 22042), (71, 22069), (77, 22213), (79, 22252), (83, 22276), (85, 22288), (86, 22297), (92, 22336), (93, 22345), (97, 22366), (103, 22417), (106, 22444), (110, 22462), (116, 22516), (118, 22525), (121, 22543), (122, 22549), (123, 22561), (127, 22621), (129, 22630), (132, 22672), (133, 22690), (135, 22708), (136, 22714), (139, 22765), (143, 22846), (145, 22879), (146, 22894), (151, 22957), (152, 22960), (154, 22981), (155, 22990), (157, 23026), (160, 23065), (163, 23140), (166, 23164), (169, 23194), (172, 23218), (180, 23269), (187, 23368), (188, 23371),

Gene: EarickHC\_36 Start: 20522, Stop: 23389, Start Num: 1

Candidate Starts for EarickHC\_36:

(Start: 1 @20522 has 44 MA's), (2, 20546), (19, 20855), (28, 21071), (31, 21125), (32, 21146), (33, 21176), (38, 21308), (39, 21329), (40, 21395), (41, 21410), (45, 21473), (47, 21524), (48, 21536), (52, 21587), (53, 21611), (54, 21614), (55, 21629), (56, 21653), (58, 21689), (59, 21710), (63, 21803), (66, 21833), (68, 21878), (70, 21968), (77, 22139), (79, 22178), (83, 22202), (85, 22214), (86, 22223), (92, 22262), (93, 22271), (97, 22292), (103, 22343), (106, 22370), (110, 22388), (116, 22442), (118, 22451), (121, 22469), (122, 22475), (123, 22487), (127, 22547), (129, 22556), (132, 22598), (133, 22616), (135, 22634), (136, 22640), (139, 22691), (143, 22772), (145, 22805), (146, 22820), (151, 22883), (152, 22886), (154, 22907), (155, 22916), (157, 22952), (160, 22991), (163, 23066), (166, 23090), (169, 23120), (172, 23144), (187, 23294), (188, 23297),

Gene: Fireman\_36 Start: 20417, Stop: 24025, Start Num: 1

Candidate Starts for Fireman\_36:

(Start: 1 @20417 has 44 MA's), (2, 20441), (18, 20747), (19, 20750), (28, 20966), (31, 21020), (32, 21041), (36, 21161), (38, 21203), (39, 21224), (40, 21290), (41, 21305), (45, 21368), (47, 21419), (48, 21431), (50, 21452), (52, 21482), (53, 21506), (55, 21524), (57, 21551), (58, 21584), (59, 21605), (63, 21698), (65, 21725), (68, 21773), (70, 21863), (71, 21890), (77, 22034), (80, 22076), (85, 22109), (86, 22118), (87, 22121), (90, 22148), (95, 22175), (100, 22214), (101, 22220), (104, 22250), (108, 22274), (109, 22280), (113, 22310), (116, 22337), (122, 22370), (129, 22451), (131, 22478), (136, 22535), (138, 22583), (139, 22586), (143, 22667), (144, 22694), (145, 22700), (147, 22733), (151, 22778), (152, 22781), (154, 22802), (155, 22811), (157, 22847), (164, 22964), (165, 22982), (171, 23039), (177, 23084), (182, 23120), (184, 23186), (189, 23219), (192, 23261), (196, 23306), (197, 23318), (198, 23369), (199, 23489), (200, 23591), (201, 23702), (202, 23750), (203, 23783), (204, 23840), (206, 23870), (207, 23909), (208, 23942), (209, 23981), (210, 24011), (211, 24014),

Gene: FuzzBuster\_40 Start: 20718, Stop: 23513, Start Num: 1

Candidate Starts for FuzzBuster\_40:

(Start: 1 @20718 has 44 MA's), (5, 20832), (26, 21201), (32, 21321), (34, 21366), (38, 21483), (41, 21585), (43, 21624), (45, 21648), (47, 21699), (49, 21726), (51, 21756), (53, 21786), (57, 21831), (58, 21864), (59, 21885), (60, 21888), (67, 22017), (70, 22122), (73, 22173), (75, 22260), (79, 22332), (83, 22356), (85, 22368), (86, 22377), (98, 22452), (100, 22473), (122, 22629), (128, 22707), (132, 22752), (136, 22794), (138, 22842), (141, 22893), (143, 22926), (144, 22953), (146, 22974), (154, 23061), (163, 23220), (166, 23244), (167, 23256), (169, 23274), (172, 23298), (173, 23301), (174, 23307), (179, 23340),

Gene: Ganandorf\_35 Start: 20658, Stop: 23525, Start Num: 1

Candidate Starts for Ganandorf\_35:

(Start: 1 @20658 has 44 MA's), (2, 20682), (19, 20991), (28, 21207), (31, 21261), (32, 21282), (33, 21312), (38, 21444), (39, 21465), (40, 21531), (41, 21546), (45, 21609), (47, 21660), (48, 21672), (52, 21723), (53, 21747), (54, 21750), (55, 21765), (56, 21789), (58, 21825), (59, 21846), (63, 21939), (64, 21957), (68, 22014), (70, 22104), (71, 22131), (77, 22275), (79, 22314), (83, 22338), (85, 22350), (86, 22359), (92, 22398), (93, 22407), (97, 22428), (103, 22479), (106, 22506), (110, 22524), (116, 22578), (118, 22587), (121, 22605), (122, 22611), (123, 22623), (127, 22683), (129, 22692), (132, 22734), (133, 22752), (135, 22770), (136, 22776), (139, 22827), (143, 22908), (145, 22941), (146, 22956), (151, 23019), (152, 23022), (154, 23043), (155, 23052), (157, 23088), (160, 23127), (163, 23202), (166, 23226), (169, 23256), (172, 23280), (187, 23430), (188, 23433),

Gene: Gina\_37 Start: 20438, Stop: 23305, Start Num: 1

Candidate Starts for Gina\_37:

(Start: 1 @20438 has 44 MA's), (2, 20462), (9, 20618), (19, 20771), (31, 21041), (32, 21062), (33, 21092), (38, 21224), (39, 21245), (41, 21326), (45, 21389), (47, 21440), (50, 21473), (52, 21503), (53, 21527), (54, 21530), (55, 21545), (56, 21569), (57, 21572), (58, 21605), (59, 21626), (63, 21719), (68, 21794), (70, 21884), (71, 21911), (72, 21932), (74, 21962), (77, 22055), (79, 22094), (85, 22130), (86, 22139), (90, 22169), (95, 22196), (100, 22235), (101, 22241), (109, 22301), (122, 22391), (123, 22403), (129, 22472), (133, 22532), (136, 22556), (138, 22604), (143, 22688), (144, 22715), (146, 22736), (151, 22799), (152, 22802), (154, 22823), (155, 22832), (157, 22868), (158, 22880), (163, 22982), (166, 23006), (169, 23036), (190, 23222), (192, 23261), (194, 23291), (195, 23294),

Gene: Hermeonusus\_35 Start: 20531, Stop: 23398, Start Num: 1

Candidate Starts for Hermeonusus\_35:

(Start: 1 @20531 has 44 MA's), (2, 20555), (19, 20864), (28, 21080), (31, 21134), (32, 21155), (33, 21185), (38, 21317), (39, 21338), (40, 21404), (41, 21419), (45, 21482), (47, 21533), (48, 21545), (52, 21596), (53, 21620), (54, 21623), (55, 21638), (56, 21662), (58, 21698), (59, 21719), (63, 21812), (64, 21830), (66, 21842), (68, 21887), (70, 21977), (71, 22004), (77, 22148), (79, 22187), (83, 22211), (85, 22223), (86, 22232), (92, 22271), (93, 22280), (97, 22301), (103, 22352), (106, 22379), (110, 22397), (116, 22451), (118, 22460), (121, 22478), (122, 22484), (123, 22496), (127, 22556), (129, 22565), (132, 22607), (133, 22625), (135, 22643), (136, 22649), (139, 22700), (143, 22781), (145, 22814), (146, 22829), (151, 22892), (152, 22895), (154, 22916), (155, 22925), (157, 22961), (160, 23000), (163, 23075), (166, 23099), (169, 23129), (172, 23153), (187, 23303), (188, 23306),

Gene: Honeyfin\_37 Start: 20846, Stop: 23713, Start Num: 1

Candidate Starts for Honeyfin\_37:

(Start: 1 @20846 has 44 MA's), (2, 20870), (19, 21179), (28, 21395), (31, 21449), (32, 21470), (33, 21500), (38, 21632), (39, 21653), (40, 21719), (41, 21734), (45, 21797), (47, 21848), (48, 21860), (52, 21911), (53, 21935), (54, 21938), (55, 21953), (56, 21977), (58, 22013), (59, 22034), (63, 22127), (64, 22145), (66, 22157), (68, 22202), (70, 22292), (71, 22319), (77, 22463), (79, 22502), (83, 22526), (85, 22538), (86, 22547), (92, 22586), (93, 22595), (97, 22616), (103, 22667), (106, 22694), (110, 22712), (116, 22766), (118, 22775), (121, 22793), (122, 22799), (123, 22811), (127, 22871), (129, 22880), (132, 22922), (133, 22940), (135, 22958), (136, 22964), (139, 23015), (143, 23096), (145, 23129), (146, 23144), (151, 23207), (152, 23210), (154, 23231), (155, 23240), (157, 23276), (160, 23315), (163, 23390), (166, 23414), (169, 23444), (172, 23468), (187, 23618), (188, 23621),

Gene: Jayden\_37 Start: 20588, Stop: 23455, Start Num: 1

Candidate Starts for Jayden\_37:

(Start: 1 @20588 has 44 MA's), (2, 20612), (9, 20768), (19, 20921), (26, 21092), (28, 21137), (29, 21155), (31, 21191), (38, 21374), (41, 21476), (42, 21494), (45, 21539), (47, 21590), (53, 21677), (54, 21680), (55, 21695), (56, 21719), (58, 21755), (59, 21776), (63, 21869), (68, 21944), (70, 22034), (72, 22082), (77, 22205), (79, 22244), (85, 22280), (86, 22289), (90, 22319), (91, 22325), (101, 22391),

(109, 22451), (113, 22481), (116, 22508), (122, 22541), (123, 22553), (129, 22622), (132, 22664), (136, 22706), (139, 22757), (143, 22838), (144, 22865), (146, 22886), (151, 22949), (152, 22952), (154, 22973), (158, 23030), (163, 23132), (166, 23156), (169, 23186), (172, 23210), (192, 23411), (194, 23441), (195, 23444),

Gene: Jefe\_36 Start: 20583, Stop: 23450, Start Num: 1

Candidate Starts for Jefe\_36:

(Start: 1 @20583 has 44 MA's), (2, 20607), (19, 20916), (28, 21132), (31, 21186), (32, 21207), (33, 21237), (38, 21369), (39, 21390), (40, 21456), (41, 21471), (45, 21534), (47, 21585), (48, 21597), (52, 21648), (53, 21672), (54, 21675), (55, 21690), (56, 21714), (58, 21750), (59, 21771), (63, 21864), (64, 21882), (65, 21891), (68, 21939), (70, 22029), (71, 22056), (85, 22275), (86, 22284), (88, 22290), (96, 22350), (99, 22365), (100, 22380), (109, 22446), (113, 22476), (114, 22485), (122, 22536), (129, 22617), (132, 22659), (133, 22677), (136, 22701), (139, 22752), (143, 22833), (145, 22866), (146, 22881), (151, 22944), (152, 22947), (154, 22968), (155, 22977), (157, 23013), (160, 23052), (163, 23127), (166, 23151), (169, 23181), (172, 23205), (187, 23355), (188, 23358),

Gene: Jollipop\_36 Start: 20928, Stop: 23795, Start Num: 1

Candidate Starts for Jollipop\_36:

(Start: 1 @20928 has 44 MA's), (2, 20952), (19, 21261), (28, 21477), (31, 21531), (32, 21552), (33, 21582), (38, 21714), (39, 21735), (40, 21801), (41, 21816), (45, 21879), (47, 21930), (48, 21942), (52, 21993), (53, 22017), (54, 22020), (55, 22035), (56, 22059), (58, 22095), (59, 22116), (63, 22209), (64, 22227), (66, 22239), (68, 22284), (70, 22374), (71, 22401), (77, 22545), (79, 22584), (83, 22608), (85, 22620), (86, 22629), (92, 22668), (93, 22677), (97, 22698), (103, 22749), (106, 22776), (110, 22794), (116, 22848), (118, 22857), (121, 22875), (122, 22881), (123, 22893), (127, 22953), (129, 22962), (132, 23004), (133, 23022), (135, 23040), (136, 23046), (139, 23097), (143, 23178), (145, 23211), (146, 23226), (151, 23289), (152, 23292), (154, 23313), (155, 23322), (157, 23358), (160, 23397), (163, 23472), (169, 23526), (172, 23550), (187, 23700), (188, 23703),

Gene: KaiHaiDragon\_36 Start: 20522, Stop: 23389, Start Num: 1

Candidate Starts for KaiHaiDragon\_36:

(Start: 1 @20522 has 44 MA's), (2, 20546), (19, 20855), (28, 21071), (31, 21125), (32, 21146), (33, 21176), (38, 21308), (39, 21329), (40, 21395), (41, 21410), (45, 21473), (47, 21524), (48, 21536), (52, 21587), (53, 21611), (54, 21614), (55, 21629), (56, 21653), (58, 21689), (59, 21710), (63, 21803), (66, 21833), (68, 21878), (70, 21968), (77, 22139), (79, 22178), (83, 22202), (85, 22214), (86, 22223), (92, 22262), (93, 22271), (97, 22292), (103, 22343), (106, 22370), (110, 22388), (116, 22442), (118, 22451), (121, 22469), (122, 22475), (123, 22487), (127, 22547), (129, 22556), (132, 22598), (133, 22616), (135, 22634), (136, 22640), (139, 22691), (143, 22772), (145, 22805), (146, 22820), (151, 22883), (152, 22886), (154, 22907), (155, 22916), (157, 22952), (160, 22991), (163, 23066), (166, 23090), (169, 23120), (172, 23144), (187, 23294), (188, 23297),

Gene: Kowalski\_35 Start: 20638, Stop: 23505, Start Num: 1

Candidate Starts for Kowalski\_35:

(Start: 1 @20638 has 44 MA's), (2, 20662), (19, 20971), (28, 21187), (31, 21241), (32, 21262), (33, 21292), (38, 21424), (39, 21445), (40, 21511), (41, 21526), (45, 21589), (47, 21640), (48, 21652), (52, 21703), (53, 21727), (54, 21730), (55, 21745), (56, 21769), (58, 21805), (59, 21826), (63, 21919), (64, 21937), (66, 21949), (68, 21994), (70, 22084), (71, 22111), (77, 22255), (79, 22294), (83, 22318), (85, 22330), (86, 22339), (92, 22378), (93, 22387), (97, 22408), (103, 22459), (106, 22486), (110, 22504), (116, 22558), (118, 22567), (121, 22585), (122, 22591), (123, 22603), (127, 22663), (129, 22672), (132, 22714), (133, 22732), (135, 22750), (136, 22756), (139, 22807), (143, 22888), (145, 22921), (146, 22936), (151, 22999), (152, 23002), (154, 23023), (155, 23032), (157, 23068), (160, 23107), (163, 23182), (166, 23206), (169, 23236), (172, 23260), (180, 23311), (187, 23410), (188, 23413),

Gene: Kozie\_32 Start: 20311, Stop: 23169, Start Num: 1

Candidate Starts for Kozie\_32:

(Start: 1 @20311 has 44 MA's), (2, 20338), (12, 20548), (18, 20647), (21, 20698), (31, 20923), (38, 21106), (41, 21208), (45, 21271), (47, 21322), (49, 21349), (51, 21379), (52, 21385), (53, 21409), (55, 21427), (57, 21454), (58, 21487), (59, 21508), (63, 21601), (70, 21766), (71, 21793), (72, 21814), (74, 21844), (77, 21937), (82, 21997), (84, 22009), (85, 22012), (90, 22051), (101, 22123), (102, 22132), (109, 22183), (112, 22207), (116, 22240), (121, 22267), (122, 22273), (127, 22345), (130, 22363), (132, 22396), (133, 22414), (134, 22429), (136, 22438), (138, 22486), (143, 22570), (146, 22618), (150, 22678), (151, 22681), (152, 22684), (154, 22705), (166, 22888), (169, 22918), (170, 22930), (175, 22954), (178, 22975), (183, 23011), (190, 23086), (192, 23125), (194, 23155), (195, 23158),

Gene: LittleFortune\_37 Start: 20888, Stop: 23755, Start Num: 1

Candidate Starts for LittleFortune\_37:

(Start: 1 @20888 has 44 MA's), (2, 20912), (19, 21221), (28, 21437), (31, 21491), (32, 21512), (33, 21542), (38, 21674), (39, 21695), (40, 21761), (41, 21776), (45, 21839), (47, 21890), (48, 21902), (52, 21953), (53, 21977), (54, 21980), (55, 21995), (56, 22019), (58, 22055), (59, 22076), (63, 22169), (64, 22187), (66, 22199), (68, 22244), (70, 22334), (71, 22361), (77, 22505), (79, 22544), (83, 22568), (85, 22580), (86, 22589), (92, 22628), (93, 22637), (97, 22658), (103, 22709), (106, 22736), (110, 22754), (116, 22808), (118, 22817), (121, 22835), (122, 22841), (123, 22853), (127, 22913), (129, 22922), (132, 22964), (133, 22982), (135, 23000), (136, 23006), (139, 23057), (143, 23138), (145, 23171), (146, 23186), (151, 23249), (152, 23252), (154, 23273), (155, 23282), (157, 23318), (160, 23357), (163, 23432), (166, 23456), (169, 23486), (172, 23510), (187, 23660), (188, 23663),

Gene: Margaery\_31 Start: 19960, Stop: 22806, Start Num: 1

Candidate Starts for Margaery\_31:

(Start: 1 @19960 has 44 MA's), (2, 19987), (6, 20110), (13, 20200), (20, 20332), (22, 20362), (29, 20533), (32, 20590), (33, 20620), (38, 20752), (40, 20839), (41, 20854), (45, 20917), (46, 20938), (52, 21031), (53, 21055), (54, 21058), (55, 21073), (57, 21100), (58, 21133), (59, 21154), (62, 21178), (63, 21247), (68, 21322), (70, 21412), (75, 21550), (77, 21583), (80, 21625), (86, 21667), (100, 21763), (101, 21769), (106, 21814), (122, 21919), (127, 21991), (129, 22000), (132, 22042), (136, 22084), (137, 22117), (138, 22132), (140, 22168), (141, 22183), (143, 22216), (144, 22243), (145, 22249), (153, 22339), (161, 22441), (162, 22462), (166, 22534), (167, 22546), (169, 22564), (170, 22576), (172, 22588), (185, 22708), (191, 22735), (193, 22795),

Gene: Matzah\_32 Start: 19992, Stop: 22838, Start Num: 1

Candidate Starts for Matzah\_32:

(Start: 1 @19992 has 44 MA's), (2, 20019), (11, 20217), (17, 20310), (18, 20328), (25, 20472), (28, 20550), (29, 20568), (32, 20625), (37, 20775), (38, 20787), (39, 20808), (40, 20874), (41, 20889), (44, 20943), (45, 20952), (53, 21090), (54, 21093), (56, 21132), (58, 21168), (59, 21189), (63, 21282), (64, 21300), (68, 21357), (70, 21447), (74, 21525), (75, 21585), (77, 21618), (79, 21657), (80, 21660), (85, 21693), (86, 21702), (87, 21705), (95, 21759), (96, 21768), (100, 21798), (105, 21837), (107, 21852), (120, 21936), (122, 21954), (127, 22026), (129, 22035), (132, 22077), (136, 22119), (138, 22167), (141, 22218), (142, 22230), (143, 22251), (144, 22278), (145, 22284), (146, 22299), (148, 22329), (151, 22362), (152, 22365), (153, 22374), (157, 22431), (166, 22569), (167, 22581), (169, 22599), (172, 22623), (176, 22656), (178, 22662), (189, 22761), (191, 22767), (193, 22827),

Gene: MementoMori\_32 Start: 19722, Stop: 22562, Start Num: 1

Candidate Starts for MementoMori\_32:

(Start: 1 @19722 has 44 MA's), (2, 19749), (16, 20019), (19, 20058), (24, 20175), (28, 20274), (29, 20292), (32, 20349), (37, 20499), (38, 20511), (39, 20532), (40, 20598), (41, 20613), (42, 20631), (44, 20667), (45, 20676), (52, 20790), (53, 20814), (54, 20817), (58, 20892), (59, 20913), (63, 21006), (68, 21081), (70, 21171), (74, 21249), (75, 21309), (77, 21342), (79, 21381), (80, 21384), (81, 21396), (86, 21426), (87, 21429), (95, 21483), (96, 21492), (100, 21522), (105, 21561), (107, 21576), (111, 21597), (120, 21660), (122, 21678), (124, 21720), (127, 21750), (129, 21759), (132, 21801), (136, 21843),

(138, 21891), (141, 21942), (142, 21954), (143, 21975), (144, 22002), (145, 22008), (146, 22023), (151, 22086), (152, 22089), (154, 22110), (157, 22155), (166, 22293), (169, 22323), (170, 22335), (172, 22347), (174, 22356), (189, 22485), (191, 22491), (193, 22551),

Gene: Metamorphoo\_36 Start: 20441, Stop: 23311, Start Num: 1

Candidate Starts for Metamorphoo\_36:

(Start: 1 @20441 has 44 MA's), (2, 20465), (9, 20621), (19, 20774), (31, 21044), (33, 21095), (36, 21185), (38, 21227), (40, 21314), (41, 21329), (45, 21392), (47, 21443), (48, 21455), (50, 21476), (52, 21506), (53, 21530), (54, 21533), (55, 21548), (57, 21575), (58, 21608), (59, 21629), (63, 21722), (64, 21740), (65, 21749), (66, 21752), (68, 21797), (70, 21887), (72, 21935), (77, 22058), (79, 22097), (85, 22133), (86, 22142), (90, 22172), (108, 22298), (111, 22313), (122, 22394), (125, 22439), (127, 22466), (129, 22475), (132, 22517), (133, 22535), (136, 22559), (143, 22691), (144, 22718), (145, 22724), (146, 22739), (151, 22802), (155, 22835), (163, 22985), (166, 23009), (169, 23039), (172, 23063), (184, 23195), (186, 23204), (194, 23297), (195, 23300),

Gene: Nicole72\_31 Start: 22378, Stop: 25257, Start Num: 1

Candidate Starts for Nicole72\_31:

(Start: 1 @22378 has 44 MA's), (3, 22447), (4, 22471), (7, 22549), (10, 22594), (17, 22696), (23, 22786), (26, 22891), (28, 22936), (29, 22954), (35, 23080), (38, 23173), (39, 23194), (41, 23275), (44, 23329), (45, 23338), (47, 23389), (50, 23422), (53, 23476), (54, 23479), (56, 23518), (58, 23554), (59, 23575), (63, 23668), (73, 23884), (76, 23983), (78, 24034), (79, 24043), (81, 24058), (86, 24088), (94, 24142), (97, 24157), (101, 24190), (103, 24208), (106, 24235), (111, 24259), (114, 24289), (115, 24301), (120, 24322), (122, 24340), (126, 24406), (127, 24412), (129, 24421), (132, 24463), (133, 24481), (134, 24496), (136, 24505), (143, 24637), (144, 24664), (146, 24685), (151, 24748), (152, 24751), (154, 24772), (156, 24796), (157, 24817), (162, 24883), (163, 24931), (166, 24955), (168, 24976), (169, 24985), (172, 25009), (178, 25048), (185, 25150), (194, 25243), (195, 25246),

Gene: NoodlelyBoi\_36 Start: 20968, Stop: 23835, Start Num: 1

Candidate Starts for NoodlelyBoi\_36:

(Start: 1 @20968 has 44 MA's), (2, 20992), (19, 21301), (28, 21517), (31, 21571), (33, 21622), (36, 21712), (38, 21754), (39, 21775), (40, 21841), (41, 21856), (45, 21919), (47, 21970), (48, 21982), (50, 22003), (53, 22057), (54, 22060), (55, 22075), (57, 22102), (58, 22135), (59, 22156), (63, 22249), (65, 22276), (66, 22279), (68, 22324), (70, 22414), (74, 22492), (77, 22585), (79, 22624), (85, 22660), (86, 22669), (88, 22675), (103, 22789), (106, 22816), (110, 22834), (118, 22897), (121, 22915), (122, 22921), (123, 22933), (127, 22993), (129, 23002), (132, 23044), (133, 23062), (135, 23080), (136, 23086), (139, 23137), (143, 23218), (145, 23251), (146, 23266), (151, 23329), (152, 23332), (154, 23353), (155, 23362), (157, 23398), (163, 23512), (166, 23536), (169, 23566), (172, 23590), (180, 23641),

Gene: Onika\_35 Start: 20613, Stop: 23480, Start Num: 1

Candidate Starts for Onika\_35:

(Start: 1 @20613 has 44 MA's), (2, 20637), (19, 20946), (28, 21162), (31, 21216), (32, 21237), (33, 21267), (38, 21399), (39, 21420), (40, 21486), (41, 21501), (45, 21564), (47, 21615), (48, 21627), (52, 21678), (53, 21702), (54, 21705), (55, 21720), (56, 21744), (58, 21780), (59, 21801), (63, 21894), (64, 21912), (66, 21924), (68, 21969), (70, 22059), (71, 22086), (77, 22230), (79, 22269), (83, 22293), (85, 22305), (86, 22314), (92, 22353), (93, 22362), (97, 22383), (103, 22434), (106, 22461), (110, 22479), (116, 22533), (118, 22542), (121, 22560), (122, 22566), (123, 22578), (127, 22638), (129, 22647), (132, 22689), (133, 22707), (135, 22725), (136, 22731), (139, 22782), (143, 22863), (145, 22896), (146, 22911), (151, 22974), (152, 22977), (154, 22998), (155, 23007), (157, 23043), (160, 23082), (163, 23157), (166, 23181), (169, 23211), (172, 23235), (187, 23385), (188, 23388),

Gene: Paschalis\_35 Start: 20626, Stop: 23493, Start Num: 1

Candidate Starts for Paschalis\_35:

(Start: 1 @20626 has 44 MA's), (2, 20650), (19, 20959), (28, 21175), (31, 21229), (32, 21250), (33, 21280), (38, 21412), (39, 21433), (40, 21499), (41, 21514), (45, 21577), (47, 21628), (48, 21640), (52, 21691), (53, 21715), (54, 21718), (55, 21733), (56, 21757), (58, 21793), (59, 21814), (63, 21907), (66, 21937), (68, 21982), (70, 22072), (71, 22099), (85, 22318), (86, 22327), (88, 22333), (96, 22393), (99, 22408), (100, 22423), (109, 22489), (113, 22519), (114, 22528), (117, 22549), (122, 22579), (129, 22660), (132, 22702), (133, 22720), (135, 22738), (136, 22744), (139, 22795), (143, 22876), (145, 22909), (146, 22924), (151, 22987), (152, 22990), (154, 23011), (155, 23020), (157, 23056), (160, 23095), (163, 23170), (166, 23194), (169, 23224), (172, 23248), (187, 23398), (188, 23401),

Gene: Phorgeous\_35 Start: 20480, Stop: 23347, Start Num: 1

Candidate Starts for Phorgeous\_35:

(Start: 1 @20480 has 44 MA's), (2, 20504), (19, 20813), (28, 21029), (31, 21083), (32, 21104), (33, 21134), (38, 21266), (39, 21287), (40, 21353), (41, 21368), (45, 21431), (47, 21482), (48, 21494), (52, 21545), (53, 21569), (54, 21572), (55, 21587), (56, 21611), (58, 21647), (59, 21668), (63, 21761), (64, 21779), (66, 21791), (68, 21836), (70, 21926), (71, 21953), (77, 22097), (79, 22136), (83, 22160), (85, 22172), (86, 22181), (92, 22220), (93, 22229), (97, 22250), (103, 22301), (106, 22328), (110, 22346), (116, 22400), (118, 22409), (121, 22427), (122, 22433), (123, 22445), (127, 22505), (129, 22514), (132, 22556), (133, 22574), (135, 22592), (136, 22598), (139, 22649), (143, 22730), (145, 22763), (146, 22778), (151, 22841), (152, 22844), (154, 22865), (155, 22874), (157, 22910), (160, 22949), (163, 23024), (166, 23048), (169, 23078), (172, 23102), (187, 23252), (188, 23255),

Gene: Phrancesco\_36 Start: 20758, Stop: 23625, Start Num: 1

Candidate Starts for Phrancesco\_36:

(Start: 1 @20758 has 44 MA's), (2, 20782), (19, 21091), (28, 21307), (31, 21361), (32, 21382), (33, 21412), (38, 21544), (39, 21565), (40, 21631), (41, 21646), (45, 21709), (47, 21760), (48, 21772), (52, 21823), (53, 21847), (54, 21850), (55, 21865), (56, 21889), (58, 21925), (59, 21946), (63, 22039), (64, 22057), (66, 22069), (68, 22114), (70, 22204), (71, 22231), (77, 22375), (79, 22414), (83, 22438), (85, 22450), (86, 22459), (92, 22498), (93, 22507), (97, 22528), (103, 22579), (106, 22606), (110, 22624), (116, 22678), (118, 22687), (121, 22705), (122, 22711), (123, 22723), (127, 22783), (129, 22792), (132, 22834), (133, 22852), (135, 22870), (136, 22876), (139, 22927), (143, 23008), (145, 23041), (146, 23056), (151, 23119), (152, 23122), (154, 23143), (155, 23152), (157, 23188), (160, 23227), (163, 23302), (166, 23326), (169, 23356), (172, 23380), (187, 23530), (188, 23533),

Gene: PierreOrion\_36 Start: 20781, Stop: 23648, Start Num: 1

Candidate Starts for PierreOrion\_36:

(Start: 1 @20781 has 44 MA's), (2, 20805), (19, 21114), (28, 21330), (31, 21384), (32, 21405), (33, 21435), (38, 21567), (39, 21588), (40, 21654), (41, 21669), (45, 21732), (47, 21783), (48, 21795), (52, 21846), (53, 21870), (54, 21873), (55, 21888), (56, 21912), (58, 21948), (59, 21969), (63, 22062), (66, 22092), (68, 22137), (70, 22227), (71, 22254), (85, 22473), (86, 22482), (88, 22488), (96, 22548), (99, 22563), (100, 22578), (109, 22644), (113, 22674), (114, 22683), (117, 22704), (122, 22734), (129, 22815), (132, 22857), (133, 22875), (135, 22893), (136, 22899), (139, 22950), (143, 23031), (145, 23064), (146, 23079), (151, 23142), (152, 23145), (154, 23166), (155, 23175), (157, 23211), (160, 23250), (163, 23325), (166, 23349), (169, 23379), (172, 23403), (180, 23454), (187, 23553), (188, 23556),

Gene: PiperSansNom\_36 Start: 20933, Stop: 23800, Start Num: 1

Candidate Starts for PiperSansNom\_36:

(Start: 1 @20933 has 44 MA's), (2, 20957), (19, 21266), (28, 21482), (31, 21536), (32, 21557), (33, 21587), (38, 21719), (39, 21740), (40, 21806), (41, 21821), (45, 21884), (47, 21935), (48, 21947), (52, 21998), (53, 22022), (54, 22025), (55, 22040), (56, 22064), (58, 22100), (59, 22121), (63, 22214), (64, 22232), (66, 22244), (68, 22289), (70, 22379), (71, 22406), (77, 22550), (79, 22589), (83, 22613), (85, 22625), (86, 22634), (92, 22673), (93, 22682), (97, 22703), (103, 22754), (106, 22781), (110, 22799), (116, 22853), (118, 22862), (121, 22880), (122, 22886), (123, 22898), (127, 22958), (129, 22967),

(132, 23009), (133, 23027), (135, 23045), (136, 23051), (139, 23102), (143, 23183), (145, 23216),  
(146, 23231), (151, 23294), (152, 23297), (154, 23318), (155, 23327), (157, 23363), (160, 23402),  
(163, 23477), (166, 23501), (169, 23531), (172, 23555), (187, 23705), (188, 23708),

Gene: Piperis\_36 Start: 20603, Stop: 23470, Start Num: 1

Candidate Starts for Piperis\_36:

(Start: 1 @20603 has 44 MA's), (2, 20627), (19, 20936), (28, 21152), (31, 21206), (32, 21227), (33, 21257), (38, 21389), (39, 21410), (40, 21476), (41, 21491), (45, 21554), (47, 21605), (48, 21617), (52, 21668), (53, 21692), (54, 21695), (55, 21710), (56, 21734), (58, 21770), (59, 21791), (63, 21884), (64, 21902), (66, 21914), (68, 21959), (70, 22049), (71, 22076), (77, 22220), (79, 22259), (83, 22283), (85, 22295), (86, 22304), (92, 22343), (93, 22352), (97, 22373), (103, 22424), (106, 22451), (110, 22469),  
(116, 22523), (118, 22532), (121, 22550), (122, 22556), (123, 22568), (127, 22628), (129, 22637),  
(132, 22679), (133, 22697), (135, 22715), (136, 22721), (139, 22772), (143, 22853), (145, 22886),  
(146, 22901), (151, 22964), (152, 22967), (154, 22988), (155, 22997), (157, 23033), (160, 23072),  
(163, 23147), (166, 23171), (169, 23201), (172, 23225), (187, 23375), (188, 23378),

Gene: Pulchra\_37 Start: 21003, Stop: 23870, Start Num: 1

Candidate Starts for Pulchra\_37:

(Start: 1 @21003 has 44 MA's), (2, 21027), (19, 21336), (28, 21552), (31, 21606), (32, 21627), (33, 21657), (38, 21789), (39, 21810), (40, 21876), (41, 21891), (45, 21954), (47, 22005), (48, 22017), (52, 22068), (53, 22092), (54, 22095), (55, 22110), (56, 22134), (58, 22170), (59, 22191), (63, 22284), (64, 22302), (66, 22314), (68, 22359), (70, 22449), (71, 22476), (77, 22620), (79, 22659), (83, 22683), (85, 22695), (86, 22704), (92, 22743), (93, 22752), (97, 22773), (103, 22824), (106, 22851), (110, 22869),  
(116, 22923), (118, 22932), (121, 22950), (122, 22956), (123, 22968), (127, 23028), (129, 23037),  
(132, 23079), (133, 23097), (135, 23115), (136, 23121), (139, 23172), (143, 23253), (145, 23286),  
(146, 23301), (151, 23364), (152, 23367), (154, 23388), (155, 23397), (157, 23433), (160, 23472),  
(163, 23547), (166, 23571), (169, 23601), (172, 23625), (187, 23775), (188, 23778),

Gene: Quhwah\_39 Start: 21229, Stop: 24096, Start Num: 1

Candidate Starts for Quhwah\_39:

(Start: 1 @21229 has 44 MA's), (2, 21253), (19, 21562), (28, 21778), (31, 21832), (32, 21853), (33, 21883), (38, 22015), (39, 22036), (40, 22102), (41, 22117), (45, 22180), (47, 22231), (48, 22243), (52, 22294), (53, 22318), (54, 22321), (55, 22336), (56, 22360), (58, 22396), (59, 22417), (63, 22510), (64, 22528), (66, 22540), (68, 22585), (70, 22675), (71, 22702), (77, 22846), (79, 22885), (83, 22909), (85, 22921), (86, 22930), (92, 22969), (93, 22978), (97, 22999), (103, 23050), (106, 23077), (110, 23095),  
(116, 23149), (118, 23158), (121, 23176), (122, 23182), (123, 23194), (127, 23254), (129, 23263),  
(132, 23305), (133, 23323), (135, 23341), (136, 23347), (139, 23398), (143, 23479), (145, 23512),  
(146, 23527), (151, 23590), (152, 23593), (154, 23614), (155, 23623), (157, 23659), (160, 23698),  
(163, 23773), (166, 23797), (169, 23827), (172, 23851), (187, 24001), (188, 24004),

Gene: Ramiel05\_35 Start: 20638, Stop: 23505, Start Num: 1

Candidate Starts for Ramiel05\_35:

(Start: 1 @20638 has 44 MA's), (2, 20662), (19, 20971), (28, 21187), (31, 21241), (32, 21262), (33, 21292), (38, 21424), (39, 21445), (40, 21511), (41, 21526), (45, 21589), (47, 21640), (48, 21652), (52, 21703), (53, 21727), (54, 21730), (55, 21745), (56, 21769), (58, 21805), (59, 21826), (63, 21919), (64, 21937), (66, 21949), (68, 21994), (70, 22084), (71, 22111), (77, 22255), (79, 22294), (83, 22318), (85, 22330), (86, 22339), (92, 22378), (93, 22387), (97, 22408), (103, 22459), (106, 22486), (110, 22504),  
(116, 22558), (118, 22567), (121, 22585), (122, 22591), (123, 22603), (127, 22663), (129, 22672),  
(132, 22714), (133, 22732), (135, 22750), (136, 22756), (139, 22807), (143, 22888), (145, 22921),  
(146, 22936), (151, 22999), (152, 23002), (154, 23023), (155, 23032), (157, 23068), (160, 23107),  
(163, 23182), (166, 23206), (169, 23236), (172, 23260), (180, 23311), (187, 23410), (188, 23413),

Gene: RobsFeet\_37 Start: 20722, Stop: 23592, Start Num: 1

Candidate Starts for RobsFeet\_37:

(Start: 1 @20722 has 44 MA's), (2, 20746), (9, 20902), (19, 21055), (31, 21325), (33, 21376), (36, 21466), (38, 21508), (40, 21595), (41, 21610), (45, 21673), (47, 21724), (48, 21736), (50, 21757), (52, 21787), (53, 21811), (54, 21814), (55, 21829), (57, 21856), (58, 21889), (59, 21910), (63, 22003), (64, 22021), (65, 22030), (66, 22033), (68, 22078), (70, 22168), (71, 22195), (72, 22216), (77, 22339), (79, 22378), (85, 22414), (86, 22423), (90, 22453), (108, 22579), (111, 22594), (122, 22675), (125, 22720), (127, 22747), (129, 22756), (132, 22798), (133, 22816), (136, 22840), (143, 22972), (144, 22999), (145, 23005), (146, 23020), (151, 23083), (155, 23116), (163, 23266), (166, 23290), (169, 23320), (172, 23344), (186, 23485), (194, 23578), (195, 23581),

Gene: Savannah\_35 Start: 20665, Stop: 23532, Start Num: 1

Candidate Starts for Savannah\_35:

(Start: 1 @20665 has 44 MA's), (2, 20689), (19, 20998), (28, 21214), (31, 21268), (32, 21289), (33, 21319), (38, 21451), (39, 21472), (40, 21538), (41, 21553), (45, 21616), (47, 21667), (48, 21679), (52, 21730), (53, 21754), (54, 21757), (55, 21772), (56, 21796), (58, 21832), (59, 21853), (63, 21946), (64, 21964), (66, 21976), (68, 22021), (70, 22111), (71, 22138), (77, 22282), (79, 22321), (83, 22345), (85, 22357), (86, 22366), (92, 22405), (93, 22414), (97, 22435), (103, 22486), (106, 22513), (110, 22531), (116, 22585), (118, 22594), (121, 22612), (122, 22618), (123, 22630), (127, 22690), (129, 22699), (132, 22741), (133, 22759), (135, 22777), (136, 22783), (139, 22834), (143, 22915), (145, 22948), (146, 22963), (151, 23026), (152, 23029), (154, 23050), (155, 23059), (157, 23095), (160, 23134), (163, 23209), (166, 23233), (169, 23263), (172, 23287), (180, 23338), (187, 23437), (188, 23440),

Gene: Scumberland\_37 Start: 20854, Stop: 23721, Start Num: 1

Candidate Starts for Scumberland\_37:

(Start: 1 @20854 has 44 MA's), (2, 20878), (19, 21187), (28, 21403), (31, 21457), (32, 21478), (33, 21508), (38, 21640), (39, 21661), (40, 21727), (41, 21742), (45, 21805), (47, 21856), (48, 21868), (52, 21919), (53, 21943), (54, 21946), (55, 21961), (56, 21985), (58, 22021), (59, 22042), (63, 22135), (64, 22153), (66, 22165), (68, 22210), (70, 22300), (71, 22327), (77, 22471), (79, 22510), (83, 22534), (85, 22546), (86, 22555), (92, 22594), (93, 22603), (97, 22624), (103, 22675), (106, 22702), (110, 22720), (116, 22774), (118, 22783), (121, 22801), (122, 22807), (123, 22819), (127, 22879), (129, 22888), (132, 22930), (133, 22948), (135, 22966), (136, 22972), (139, 23023), (143, 23104), (145, 23137), (146, 23152), (151, 23215), (152, 23218), (154, 23239), (155, 23248), (157, 23284), (160, 23323), (163, 23398), (166, 23422), (169, 23452), (172, 23476), (187, 23626), (188, 23629),

Gene: Selwyn23\_37 Start: 20831, Stop: 23698, Start Num: 1

Candidate Starts for Selwyn23\_37:

(Start: 1 @20831 has 44 MA's), (2, 20855), (19, 21164), (28, 21380), (31, 21434), (32, 21455), (33, 21485), (38, 21617), (39, 21638), (40, 21704), (41, 21719), (45, 21782), (47, 21833), (48, 21845), (52, 21896), (53, 21920), (54, 21923), (55, 21938), (56, 21962), (58, 21998), (59, 22019), (63, 22112), (64, 22130), (66, 22142), (68, 22187), (70, 22277), (71, 22304), (77, 22448), (79, 22487), (83, 22511), (85, 22523), (86, 22532), (92, 22571), (93, 22580), (97, 22601), (103, 22652), (106, 22679), (110, 22697), (116, 22751), (118, 22760), (121, 22778), (122, 22784), (123, 22796), (127, 22856), (129, 22865), (132, 22907), (133, 22925), (135, 22943), (136, 22949), (139, 23000), (143, 23081), (145, 23114), (146, 23129), (149, 23171), (151, 23192), (152, 23195), (154, 23216), (155, 23225), (157, 23261), (160, 23300), (163, 23375), (166, 23399), (169, 23429), (172, 23453), (187, 23603), (188, 23606),

Gene: Shotgun\_35 Start: 20464, Stop: 23331, Start Num: 1

Candidate Starts for Shotgun\_35:

(Start: 1 @20464 has 44 MA's), (2, 20488), (19, 20797), (28, 21013), (31, 21067), (32, 21088), (33, 21118), (38, 21250), (39, 21271), (40, 21337), (41, 21352), (45, 21415), (47, 21466), (48, 21478), (52, 21529), (53, 21553), (54, 21556), (55, 21571), (56, 21595), (58, 21631), (59, 21652), (63, 21745), (64, 21763), (66, 21775), (68, 21820), (70, 21910), (71, 21937), (77, 22081), (79, 22120), (83, 22144), (85, 22156), (86, 22165), (92, 22204), (93, 22213), (97, 22234), (103, 22285), (106, 22312), (110, 22330),

(116, 22384), (118, 22393), (121, 22411), (122, 22417), (123, 22429), (127, 22489), (129, 22498), (132, 22540), (133, 22558), (135, 22576), (136, 22582), (139, 22633), (143, 22714), (145, 22747), (146, 22762), (151, 22825), (152, 22828), (154, 22849), (155, 22858), (157, 22894), (160, 22933), (163, 23008), (166, 23032), (169, 23062), (172, 23086), (187, 23236), (188, 23239),

Gene: Smarties\_44 Start: 22548, Stop: 25418, Start Num: 1

Candidate Starts for Smarties\_44:

(Start: 1 @22548 has 44 MA's), (2, 22572), (13, 22785), (14, 22830), (19, 22881), (27, 23070), (31, 23151), (32, 23172), (33, 23202), (38, 23334), (40, 23421), (41, 23436), (45, 23499), (47, 23550), (48, 23562), (53, 23637), (55, 23655), (57, 23682), (58, 23715), (59, 23736), (63, 23829), (65, 23856), (66, 23859), (68, 23904), (70, 23994), (74, 24072), (77, 24165), (79, 24204), (83, 24228), (84, 24237), (86, 24249), (89, 24264), (90, 24279), (97, 24318), (101, 24351), (102, 24360), (103, 24369), (106, 24396), (110, 24414), (118, 24477), (122, 24501), (123, 24513), (127, 24573), (129, 24582), (132, 24624), (133, 24642), (136, 24666), (138, 24714), (143, 24798), (144, 24825), (146, 24846), (151, 24909), (152, 24912), (155, 24942), (158, 24990), (159, 25008), (163, 25092), (166, 25116), (169, 25146), (172, 25170), (181, 25236), (190, 25335), (192, 25374), (194, 25404), (195, 25407),

Gene: Teamocil\_37 Start: 20537, Stop: 23404, Start Num: 1

Candidate Starts for Teamocil\_37:

(Start: 1 @20537 has 44 MA's), (2, 20561), (9, 20717), (19, 20870), (31, 21140), (32, 21161), (33, 21191), (38, 21323), (39, 21344), (41, 21425), (45, 21488), (47, 21539), (50, 21572), (52, 21602), (53, 21626), (54, 21629), (55, 21644), (56, 21668), (57, 21671), (58, 21704), (59, 21725), (63, 21818), (68, 21893), (70, 21983), (71, 22010), (72, 22031), (74, 22061), (77, 22154), (79, 22193), (85, 22229), (86, 22238), (90, 22268), (95, 22295), (100, 22334), (101, 22340), (109, 22400), (122, 22490), (123, 22502), (129, 22571), (133, 22631), (136, 22655), (138, 22703), (143, 22787), (144, 22814), (146, 22835), (151, 22898), (152, 22901), (154, 22922), (155, 22931), (157, 22967), (158, 22979), (163, 23081), (166, 23105), (169, 23135), (190, 23321), (192, 23360), (194, 23390), (195, 23393),

Gene: Terij\_32 Start: 20048, Stop: 22894, Start Num: 1

Candidate Starts for Terij\_32:

(Start: 1 @20048 has 44 MA's), (2, 20075), (6, 20198), (13, 20288), (15, 20345), (18, 20384), (20, 20420), (28, 20603), (30, 20633), (32, 20678), (33, 20708), (38, 20840), (41, 20942), (45, 21005), (52, 21119), (53, 21143), (57, 21188), (58, 21221), (59, 21242), (63, 21335), (64, 21353), (65, 21362), (68, 21410), (69, 21458), (70, 21500), (77, 21671), (85, 21746), (86, 21755), (87, 21758), (91, 21791), (100, 21851), (119, 21986), (122, 22007), (127, 22079), (129, 22088), (132, 22130), (136, 22172), (137, 22205), (140, 22256), (141, 22271), (142, 22283), (143, 22304), (144, 22331), (145, 22337), (146, 22352), (151, 22415), (154, 22439), (166, 22622), (167, 22634), (169, 22652), (170, 22664), (172, 22676), (178, 22715), (185, 22796), (187, 22802), (189, 22817), (193, 22883),

Gene: Tyrumbra\_34 Start: 19760, Stop: 23368, Start Num: 1

Candidate Starts for Tyrumbra\_34:

(Start: 1 @19760 has 44 MA's), (2, 19784), (18, 20090), (19, 20093), (28, 20309), (31, 20363), (32, 20384), (36, 20504), (38, 20546), (39, 20567), (40, 20633), (41, 20648), (45, 20711), (47, 20762), (48, 20774), (50, 20795), (52, 20825), (53, 20849), (55, 20867), (57, 20894), (58, 20927), (59, 20948), (63, 21041), (68, 21116), (70, 21206), (71, 21233), (77, 21377), (80, 21419), (85, 21452), (86, 21461), (87, 21464), (90, 21491), (95, 21518), (100, 21557), (101, 21563), (104, 21593), (108, 21617), (109, 21623), (113, 21653), (116, 21680), (129, 21794), (131, 21821), (136, 21878), (138, 21926), (139, 21929), (143, 22010), (144, 22037), (145, 22043), (151, 22121), (154, 22145), (155, 22154), (157, 22190), (164, 22307), (165, 22325), (171, 22382), (177, 22427), (182, 22463), (184, 22529), (189, 22562), (192, 22604), (196, 22649), (197, 22661), (198, 22712), (199, 22832), (200, 22934), (201, 23045), (202, 23093), (203, 23126), (204, 23183), (205, 23192), (206, 23213), (207, 23252), (208, 23285), (209, 23324), (210, 23354), (211, 23357),

Gene: Yeti\_36 Start: 20633, Stop: 23500, Start Num: 1

Candidate Starts for Yeti\_36:

(Start: 1 @20633 has 44 MA's), (2, 20657), (19, 20966), (28, 21182), (31, 21236), (32, 21257), (33, 21287), (38, 21419), (39, 21440), (40, 21506), (41, 21521), (45, 21584), (47, 21635), (48, 21647), (52, 21698), (53, 21722), (54, 21725), (55, 21740), (56, 21764), (58, 21800), (59, 21821), (63, 21914), (64, 21932), (66, 21944), (68, 21989), (70, 22079), (71, 22106), (77, 22250), (79, 22289), (83, 22313), (85, 22325), (86, 22334), (92, 22373), (93, 22382), (97, 22403), (103, 22454), (106, 22481), (110, 22499), (116, 22553), (118, 22562), (121, 22580), (122, 22586), (123, 22598), (127, 22658), (129, 22667), (132, 22709), (133, 22727), (135, 22745), (136, 22751), (139, 22802), (143, 22883), (145, 22916), (146, 22931), (151, 22994), (152, 22997), (154, 23018), (155, 23027), (157, 23063), (160, 23102), (163, 23177), (166, 23201), (169, 23231), (172, 23255), (187, 23405), (188, 23408),