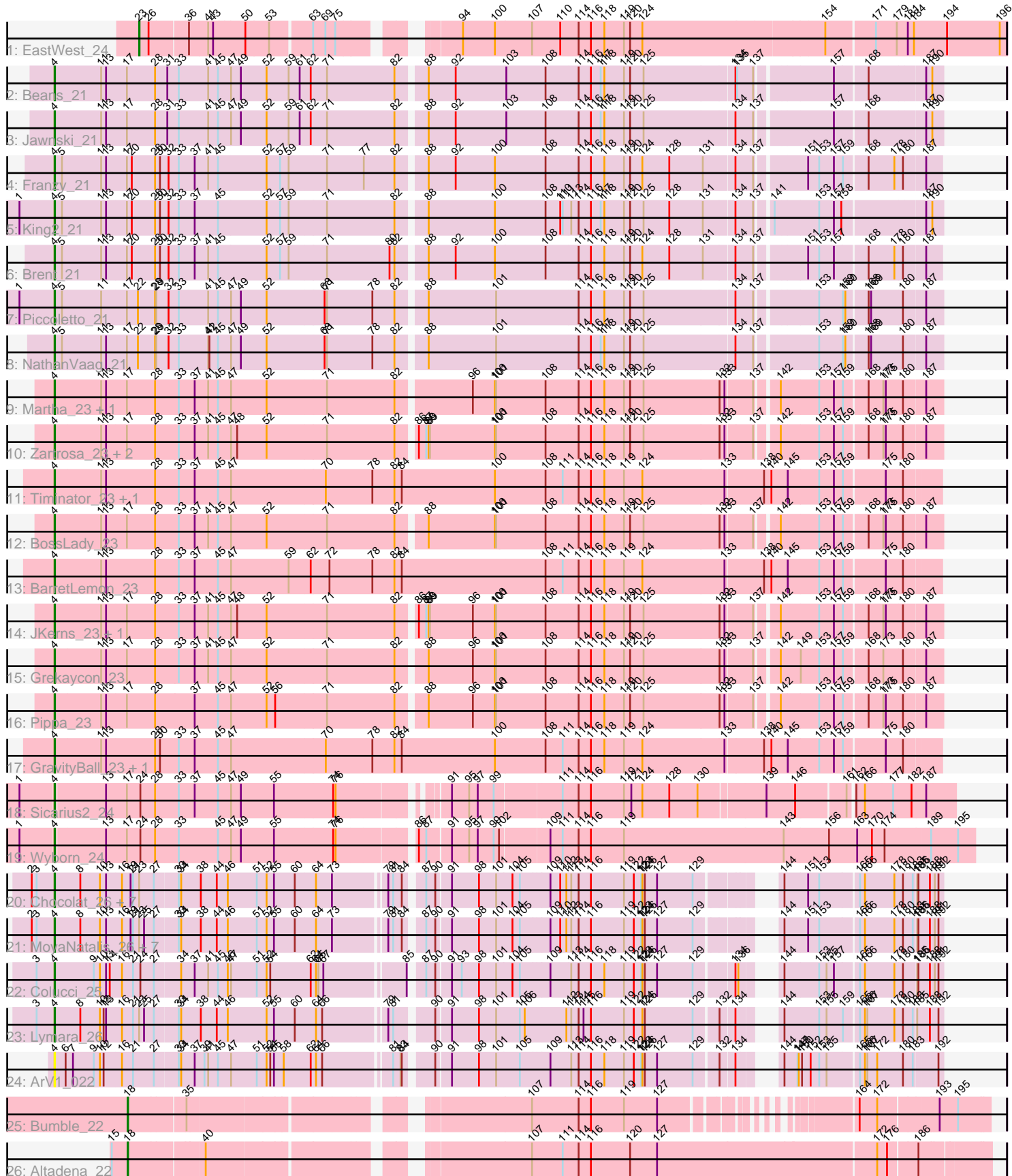


# Pham 196630



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 196630 Report

This analysis was run 12/09/24 on database version 580.

Pham number 196630 has 46 members, 3 are drafts.

Phages represented in each track:

- Track 1 : EastWest\_24
- Track 2 : Beans\_21
- Track 3 : Jawnski\_21
- Track 4 : Franzy\_21
- Track 5 : King2\_21
- Track 6 : Brent\_21
- Track 7 : Piccoletto\_21
- Track 8 : NathanVaag\_21
- Track 9 : Martha\_23, TaeYoung\_23
- Track 10 : Zartrosa\_23, Sonny\_23, Shade\_23
- Track 11 : Timinator\_23, LeeroyJ\_23
- Track 12 : BossLady\_23
- Track 13 : BarretLemon\_23
- Track 14 : JKerns\_23, Jordan\_23
- Track 15 : Grekaycon\_23
- Track 16 : Pippa\_23
- Track 17 : GravityBall\_23, StevieBAY\_23
- Track 18 : Sicarius2\_24
- Track 19 : Wyborn\_24
- Track 20 : Chocolat\_26, Mordred\_26, Kabreeze\_26, Scavito\_26, Chipper1996\_260, JaNo\_26, Tophat\_26, HumptyDumpty\_26
- Track 21 : MoyaNatalis\_26, Conboy\_26, PrincessTrina\_26, Chubster\_26, RosiePosie\_26, EdgarPoe\_26, Linus\_26, JayCookie\_26
- Track 22 : Colucci\_25
- Track 23 : Lymara\_26
- Track 24 : ArV1\_022
- Track 25 : Bumble\_22
- Track 26 : Altadena\_22

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

The start number called the most often in the published annotations is 4, it was called in 40 of the 43 non-draft genes in the pham.

Genes that call this "Most Annotated" start:

- ArV1\_022, BarretLemon\_23, Beans\_21, BossLady\_23, Brent\_21, Chipper1996\_260, Chocolat\_26, Chubster\_26, Colucci\_25, Conboy\_26, EdgarPoe\_26, Franzy\_21, GravityBall\_23, Grekaycon\_23, HumptyDumpty\_26, JKerns\_23, JaNo\_26, Jawnski\_21, JayCookie\_26, Jordan\_23, Kabreeze\_26, King2\_21, LeeroyJ\_23, Linus\_26, Lymara\_26, Martha\_23, Mordred\_26, MoyaNatalis\_26, NathanVaag\_21, Piccoletto\_21, Pippa\_23, PrincessTrina\_26, RosiePosie\_26, Scavito\_26, Shade\_23, Sicarius2\_24, Sonny\_23, StevieBAY\_23, TaeYoung\_23, Timinator\_23, Tophat\_26, Wyborn\_24, Zartrosa\_23,

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

- 

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

- Altadena\_22, Bumble\_22, EastWest\_24,

### Summary by start number:

Start 4:

- Found in 43 of 46 ( 93.5% ) of genes in pham
- Manual Annotations of this start: 40 of 43
- Called 100.0% of time when present
- Phage (with cluster) where this start called: ArV1\_022 (AR), BarretLemon\_23 (AO2), Beans\_21 (AO1), BossLady\_23 (AO2), Brent\_21 (AO1), Chipper1996\_260 (AR), Chocolat\_26 (AR), Chubster\_26 (AR), Colucci\_25 (AR), Conboy\_26 (AR), EdgarPoe\_26 (AR), Franzy\_21 (AO1), GravityBall\_23 (AO2), Grekaycon\_23 (AO2), HumptyDumpty\_26 (AR), JKerns\_23 (AO2), JaNo\_26 (AR), Jawnski\_21 (AO1), JayCookie\_26 (AR), Jordan\_23 (AO2), Kabreeze\_26 (AR), King2\_21 (AO1), LeeroyJ\_23 (AO2), Linus\_26 (AR), Lymara\_26 (AR), Martha\_23 (AO2), Mordred\_26 (AR), MoyaNatalis\_26 (AR), NathanVaag\_21 (AO1), Piccoletto\_21 (AO1), Pippa\_23 (AO2), PrincessTrina\_26 (AR), RosiePosie\_26 (AR), Scavito\_26 (AR), Shade\_23 (AO2), Sicarius2\_24 (AO2), Sonny\_23 (AO2), StevieBAY\_23 (AO2), TaeYoung\_23 (AO2), Timinator\_23 (AO2), Tophat\_26 (AR), Wyborn\_24 (AO2), Zartrosa\_23 (AO2),

Start 18:

- Found in 2 of 46 ( 4.3% ) of genes in pham
- Manual Annotations of this start: 2 of 43
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Altadena\_22 (FH), Bumble\_22 (FH),

Start 23:

- Found in 18 of 46 ( 39.1% ) of genes in pham
- Manual Annotations of this start: 1 of 43
- Called 5.6% of time when present
- Phage (with cluster) where this start called: EastWest\_24 (AO),

### Summary by clusters:

There are 5 clusters represented in this pham: FH, AR, AO, AO2, AO1,

Info for manual annotations of cluster AO:

- Start number 23 was manually annotated 1 time for cluster AO.

Info for manual annotations of cluster AO1:

- Start number 4 was manually annotated 7 times for cluster AO1.

Info for manual annotations of cluster AO2:

- Start number 4 was manually annotated 16 times for cluster AO2.

Info for manual annotations of cluster AR:

- Start number 4 was manually annotated 17 times for cluster AR.

Info for manual annotations of cluster FH:

- Start number 18 was manually annotated 2 times for cluster FH.

### **Gene Information:**

Gene: Altadena\_22 Start: 18121, Stop: 20040, Start Num: 18

Candidate Starts for Altadena\_22:

(15, 18082), (Start: 18 @18121 has 2 MA's), (40, 18295), (107, 18976), (111, 19051), (114, 19087), (116, 19117), (120, 19213), (127, 19279), (172, 19801), (176, 19819), (186, 19882),

Gene: ArV1\_022 Start: 20005, Stop: 21969, Start Num: 4

Candidate Starts for ArV1\_022:

(Start: 4 @20005 has 40 MA's), (6, 20026), (7, 20044), (9, 20095), (10, 20110), (12, 20119), (16, 20161), (21, 20188), (27, 20239), (33, 20293), (34, 20299), (37, 20332), (39, 20356), (41, 20365), (45, 20389), (47, 20419), (51, 20482), (52, 20506), (54, 20515), (55, 20524), (58, 20548), (62, 20611), (64, 20623), (66, 20638), (81, 20791), (83, 20809), (84, 20812), (90, 20866), (91, 20899), (98, 20965), (101, 21007), (105, 21064), (109, 21133), (113, 21181), (114, 21199), (116, 21229), (118, 21262), (119, 21310), (122, 21334), (123, 21352), (124, 21355), (126, 21361), (127, 21391), (129, 21478), (132, 21529), (134, 21562), (144, 21610), (147, 21640), (148, 21643), (150, 21649), (152, 21670), (153, 21691), (155, 21709), (165, 21781), (166, 21793), (167, 21799), (172, 21823), (180, 21883), (183, 21904), (192, 21958),

Gene: BarretLemon\_23 Start: 18796, Stop: 20910, Start Num: 4

Candidate Starts for BarretLemon\_23:

(Start: 4 @18796 has 40 MA's), (11, 18907), (13, 18919), (28, 19036), (33, 19093), (37, 19132), (45, 19189), (47, 19219), (59, 19360), (62, 19411), (72, 19456), (78, 19558), (82, 19612), (84, 19630), (108, 19981), (111, 20023), (114, 20059), (116, 20089), (118, 20122), (119, 20170), (124, 20215), (133, 20413), (138, 20503), (140, 20521), (145, 20560), (153, 20635), (157, 20671), (159, 20692), (175, 20788), (180, 20827),

Gene: Beans\_21 Start: 18506, Stop: 20575, Start Num: 4

Candidate Starts for Beans\_21:

(Start: 4 @18506 has 40 MA's), (11, 18614), (13, 18626), (17, 18674), (28, 18743), (31, 18773), (33, 18800), (41, 18872), (45, 18896), (47, 18926), (49, 18950), (52, 19013), (59, 19067), (61, 19094), (62, 19118), (71, 19157), (82, 19322), (88, 19385), (92, 19451), (103, 19574), (108, 19670), (114, 19748), (116, 19778), (117, 19802), (118, 19811), (119, 19859), (120, 19874), (125, 19907), (134, 20123), (135, 20126), (137, 20165), (157, 20333), (168, 20408), (187, 20534), (190, 20549),

Gene: BossLady\_23 Start: 18820, Stop: 20889, Start Num: 4

Candidate Starts for BossLady\_23:

(Start: 4 @18820 has 40 MA's), (11, 18928), (13, 18940), (17, 18988), (28, 19057), (33, 19114), (37, 19153), (41, 19186), (45, 19210), (47, 19240), (52, 19327), (71, 19471), (82, 19636), (88, 19699),

(100, 19861), (101, 19864), (108, 19984), (114, 20062), (116, 20092), (118, 20125), (119, 20173), (120, 20188), (125, 20221), (132, 20404), (133, 20416), (137, 20479), (142, 20524), (153, 20611), (157, 20647), (159, 20668), (168, 20722), (173, 20758), (175, 20764), (180, 20803), (187, 20848),

Gene: Brent\_21 Start: 18489, Stop: 20555, Start Num: 4

Candidate Starts for Brent\_21:

(Start: 4 @18489 has 40 MA's), (5, 18504), (11, 18597), (13, 18609), (17, 18657), (20, 18669), (28, 18726), (30, 18738), (32, 18759), (33, 18783), (37, 18822), (41, 18855), (45, 18879), (52, 18996), (57, 19029), (59, 19050), (71, 19140), (80, 19293), (82, 19305), (88, 19368), (92, 19434), (100, 19530), (108, 19653), (114, 19731), (116, 19761), (118, 19794), (119, 19842), (120, 19857), (124, 19887), (128, 19953), (131, 20034), (134, 20106), (137, 20148), (151, 20253), (153, 20280), (157, 20316), (168, 20391), (178, 20454), (180, 20472), (187, 20517),

Gene: Bumble\_22 Start: 18132, Stop: 19916, Start Num: 18

Candidate Starts for Bumble\_22:

(Start: 18 @18132 has 2 MA's), (35, 18264), (107, 18984), (114, 19098), (116, 19128), (119, 19209), (127, 19290), (164, 19623), (172, 19662), (193, 19794), (195, 19839),

Gene: Chipper1996\_260 Start: 21687, Stop: 23657, Start Num: 4

Candidate Starts for Chipper1996\_260:

(2, 21633), (3, 21645), (Start: 4 @21687 has 40 MA's), (8, 21750), (10, 21798), (13, 21813), (16, 21849), (19, 21870), (21, 21876), (Start: 23 @21891 has 1 MA's), (27, 21927), (33, 21981), (34, 21987), (38, 22035), (44, 22074), (46, 22101), (51, 22170), (52, 22194), (55, 22212), (60, 22263), (64, 22311), (73, 22350), (79, 22467), (81, 22479), (84, 22500), (87, 22536), (90, 22554), (91, 22587), (98, 22653), (101, 22695), (104, 22734), (105, 22752), (109, 22821), (110, 22845), (112, 22860), (113, 22869), (114, 22887), (116, 22917), (119, 22998), (122, 23022), (123, 23040), (124, 23043), (126, 23049), (127, 23079), (129, 23166), (144, 23298), (151, 23352), (153, 23379), (165, 23469), (166, 23481), (178, 23553), (180, 23571), (183, 23592), (185, 23598), (186, 23601), (188, 23625), (191, 23637), (192, 23646),

Gene: Chocolat\_26 Start: 21687, Stop: 23657, Start Num: 4

Candidate Starts for Chocolat\_26:

(2, 21633), (3, 21645), (Start: 4 @21687 has 40 MA's), (8, 21750), (10, 21798), (13, 21813), (16, 21849), (19, 21870), (21, 21876), (Start: 23 @21891 has 1 MA's), (27, 21927), (33, 21981), (34, 21987), (38, 22035), (44, 22074), (46, 22101), (51, 22170), (52, 22194), (55, 22212), (60, 22263), (64, 22311), (73, 22350), (79, 22467), (81, 22479), (84, 22500), (87, 22536), (90, 22554), (91, 22587), (98, 22653), (101, 22695), (104, 22734), (105, 22752), (109, 22821), (110, 22845), (112, 22860), (113, 22869), (114, 22887), (116, 22917), (119, 22998), (122, 23022), (123, 23040), (124, 23043), (126, 23049), (127, 23079), (129, 23166), (144, 23298), (151, 23352), (153, 23379), (165, 23469), (166, 23481), (178, 23553), (180, 23571), (183, 23592), (185, 23598), (186, 23601), (188, 23625), (191, 23637), (192, 23646),

Gene: Chubster\_26 Start: 21458, Stop: 23428, Start Num: 4

Candidate Starts for Chubster\_26:

(2, 21404), (3, 21416), (Start: 4 @21458 has 40 MA's), (8, 21521), (10, 21569), (13, 21584), (16, 21620), (19, 21641), (21, 21647), (Start: 23 @21662 has 1 MA's), (25, 21674), (27, 21698), (33, 21752), (34, 21758), (38, 21806), (44, 21845), (46, 21872), (51, 21941), (52, 21965), (55, 21983), (60, 22034), (64, 22082), (73, 22121), (79, 22238), (81, 22250), (84, 22271), (87, 22307), (90, 22325), (91, 22358), (98, 22424), (101, 22466), (104, 22505), (105, 22523), (109, 22592), (110, 22616), (112, 22631), (113, 22640), (114, 22658), (116, 22688), (119, 22769), (122, 22793), (123, 22811), (124, 22814), (126, 22820), (127, 22850), (129, 22937), (144, 23069), (151, 23123), (153, 23150), (165, 23240), (166, 23252), (178, 23324), (180, 23342), (183, 23363), (185, 23369), (186, 23372), (188, 23396), (191, 23408), (192, 23417),

Gene: Colucci\_25 Start: 21154, Stop: 23121, Start Num: 4

Candidate Starts for Colucci\_25:

(3, 21112), (Start: 4 @21154 has 40 MA's), (9, 21247), (10, 21262), (13, 21277), (14, 21286), (16, 21313), (21, 21340), (24, 21358), (27, 21391), (34, 21451), (37, 21484), (41, 21517), (45, 21541), (46, 21565), (47, 21571), (51, 21634), (52, 21658), (54, 21667), (62, 21763), (64, 21775), (65, 21781), (67, 21793), (85, 21976), (87, 22000), (90, 22018), (91, 22051), (93, 22075), (98, 22117), (101, 22159), (104, 22198), (105, 22216), (109, 22285), (113, 22333), (114, 22351), (116, 22381), (118, 22414), (119, 22462), (122, 22486), (123, 22504), (124, 22507), (126, 22513), (127, 22543), (129, 22630), (134, 22714), (136, 22720), (144, 22762), (153, 22843), (155, 22861), (157, 22879), (165, 22933), (166, 22945), (178, 23017), (180, 23035), (185, 23062), (186, 23065), (188, 23089), (191, 23101), (192, 23110),

Gene: Conboy\_26 Start: 21686, Stop: 23656, Start Num: 4

Candidate Starts for Conboy\_26:

(2, 21632), (3, 21644), (Start: 4 @21686 has 40 MA's), (8, 21749), (10, 21797), (13, 21812), (16, 21848), (19, 21869), (21, 21875), (Start: 23 @21890 has 1 MA's), (25, 21902), (27, 21926), (33, 21980), (34, 21986), (38, 22034), (44, 22073), (46, 22100), (51, 22169), (52, 22193), (55, 22211), (60, 22262), (64, 22310), (73, 22349), (79, 22466), (81, 22478), (84, 22499), (87, 22535), (90, 22553), (91, 22586), (98, 22652), (101, 22694), (104, 22733), (105, 22751), (109, 22820), (110, 22844), (112, 22859), (113, 22868), (114, 22886), (116, 22916), (119, 22997), (122, 23021), (123, 23039), (124, 23042), (126, 23048), (127, 23078), (129, 23165), (144, 23297), (151, 23351), (153, 23378), (165, 23468), (166, 23480), (178, 23552), (180, 23570), (183, 23591), (185, 23597), (186, 23600), (188, 23624), (191, 23636), (192, 23645),

Gene: EastWest\_24 Start: 18793, Stop: 20760, Start Num: 23

Candidate Starts for EastWest\_24:

(Start: 23 @18793 has 1 MA's), (26, 18814), (36, 18901), (41, 18946), (43, 18958), (50, 19027), (53, 19084), (63, 19180), (69, 19210), (75, 19234), (94, 19453), (100, 19531), (107, 19621), (110, 19690), (114, 19735), (116, 19765), (118, 19798), (119, 19846), (120, 19861), (124, 19891), (154, 20326), (171, 20440), (179, 20491), (181, 20518), (184, 20533), (194, 20614), (196, 20743),

Gene: EdgarPoe\_26 Start: 21686, Stop: 23656, Start Num: 4

Candidate Starts for EdgarPoe\_26:

(2, 21632), (3, 21644), (Start: 4 @21686 has 40 MA's), (8, 21749), (10, 21797), (13, 21812), (16, 21848), (19, 21869), (21, 21875), (Start: 23 @21890 has 1 MA's), (25, 21902), (27, 21926), (33, 21980), (34, 21986), (38, 22034), (44, 22073), (46, 22100), (51, 22169), (52, 22193), (55, 22211), (60, 22262), (64, 22310), (73, 22349), (79, 22466), (81, 22478), (84, 22499), (87, 22535), (90, 22553), (91, 22586), (98, 22652), (101, 22694), (104, 22733), (105, 22751), (109, 22820), (110, 22844), (112, 22859), (113, 22868), (114, 22886), (116, 22916), (119, 22997), (122, 23021), (123, 23039), (124, 23042), (126, 23048), (127, 23078), (129, 23165), (144, 23297), (151, 23351), (153, 23378), (165, 23468), (166, 23480), (178, 23552), (180, 23570), (183, 23591), (185, 23597), (186, 23600), (188, 23624), (191, 23636), (192, 23645),

Gene: Franzy\_21 Start: 18488, Stop: 20554, Start Num: 4

Candidate Starts for Franzy\_21:

(Start: 4 @18488 has 40 MA's), (5, 18503), (11, 18596), (13, 18608), (17, 18656), (20, 18668), (28, 18725), (30, 18737), (32, 18758), (33, 18782), (37, 18821), (41, 18854), (45, 18878), (52, 18995), (57, 19028), (59, 19049), (71, 19139), (77, 19229), (82, 19304), (88, 19367), (92, 19433), (100, 19529), (108, 19652), (114, 19730), (116, 19760), (118, 19793), (119, 19841), (120, 19856), (124, 19886), (128, 19952), (131, 20033), (134, 20105), (137, 20147), (151, 20252), (153, 20279), (157, 20315), (159, 20336), (168, 20390), (178, 20453), (180, 20471), (187, 20516),

Gene: GravityBall\_23 Start: 18795, Stop: 20909, Start Num: 4

Candidate Starts for GravityBall\_23:

(Start: 4 @18795 has 40 MA's), (11, 18906), (13, 18918), (28, 19035), (30, 19047), (33, 19092), (37, 19131), (45, 19188), (47, 19218), (70, 19446), (78, 19557), (82, 19611), (84, 19629), (100, 19857), (108, 19980), (111, 20022), (114, 20058), (116, 20088), (118, 20121), (119, 20169), (124, 20214), (133, 20412), (138, 20502), (140, 20520), (145, 20559), (153, 20634), (157, 20670), (159, 20691), (175, 20787), (180, 20826),

Gene: Grekaycon\_23 Start: 18829, Stop: 20898, Start Num: 4

Candidate Starts for Grekaycon\_23:

(Start: 4 @18829 has 40 MA's), (11, 18937), (13, 18949), (17, 18997), (28, 19066), (33, 19123), (37, 19162), (41, 19195), (45, 19219), (47, 19249), (52, 19336), (71, 19480), (82, 19645), (88, 19708), (96, 19816), (100, 19870), (101, 19873), (108, 19993), (114, 20071), (116, 20101), (118, 20134), (119, 20182), (120, 20197), (125, 20230), (132, 20413), (133, 20425), (137, 20488), (142, 20533), (149, 20575), (153, 20620), (157, 20656), (159, 20677), (168, 20731), (173, 20767), (180, 20812), (187, 20857),

Gene: HumptyDumpty\_26 Start: 21685, Stop: 23655, Start Num: 4

Candidate Starts for HumptyDumpty\_26:

(2, 21631), (3, 21643), (Start: 4 @21685 has 40 MA's), (8, 21748), (10, 21796), (13, 21811), (16, 21847), (19, 21868), (21, 21874), (Start: 23 @21889 has 1 MA's), (27, 21925), (33, 21979), (34, 21985), (38, 22033), (44, 22072), (46, 22099), (51, 22168), (52, 22192), (55, 22210), (60, 22261), (64, 22309), (73, 22348), (79, 22465), (81, 22477), (84, 22498), (87, 22534), (90, 22552), (91, 22585), (98, 22651), (101, 22693), (104, 22732), (105, 22750), (109, 22819), (110, 22843), (112, 22858), (113, 22867), (114, 22885), (116, 22915), (119, 22996), (122, 23020), (123, 23038), (124, 23041), (126, 23047), (127, 23077), (129, 23164), (144, 23296), (151, 23350), (153, 23377), (165, 23467), (166, 23479), (178, 23551), (180, 23569), (183, 23590), (185, 23596), (186, 23599), (188, 23623), (191, 23635), (192, 23644),

Gene: JKerns\_23 Start: 18856, Stop: 20925, Start Num: 4

Candidate Starts for JKerns\_23:

(Start: 4 @18856 has 40 MA's), (11, 18964), (13, 18976), (17, 19024), (28, 19093), (33, 19150), (37, 19189), (41, 19222), (45, 19246), (47, 19276), (48, 19291), (52, 19363), (71, 19507), (82, 19672), (86, 19711), (87, 19729), (88, 19735), (89, 19738), (96, 19843), (100, 19897), (101, 19900), (108, 20020), (114, 20098), (116, 20128), (118, 20161), (119, 20209), (120, 20224), (125, 20257), (132, 20440), (133, 20452), (137, 20515), (142, 20560), (153, 20647), (157, 20683), (159, 20704), (168, 20758), (173, 20794), (175, 20800), (180, 20839), (187, 20884),

Gene: JaNo\_26 Start: 21685, Stop: 23655, Start Num: 4

Candidate Starts for JaNo\_26:

(2, 21631), (3, 21643), (Start: 4 @21685 has 40 MA's), (8, 21748), (10, 21796), (13, 21811), (16, 21847), (19, 21868), (21, 21874), (Start: 23 @21889 has 1 MA's), (27, 21925), (33, 21979), (34, 21985), (38, 22033), (44, 22072), (46, 22099), (51, 22168), (52, 22192), (55, 22210), (60, 22261), (64, 22309), (73, 22348), (79, 22465), (81, 22477), (84, 22498), (87, 22534), (90, 22552), (91, 22585), (98, 22651), (101, 22693), (104, 22732), (105, 22750), (109, 22819), (110, 22843), (112, 22858), (113, 22867), (114, 22885), (116, 22915), (119, 22996), (122, 23020), (123, 23038), (124, 23041), (126, 23047), (127, 23077), (129, 23164), (144, 23296), (151, 23350), (153, 23377), (165, 23467), (166, 23479), (178, 23551), (180, 23569), (183, 23590), (185, 23596), (186, 23599), (188, 23623), (191, 23635), (192, 23644),

Gene: Jawnski\_21 Start: 18501, Stop: 20570, Start Num: 4

Candidate Starts for Jawnski\_21:

(Start: 4 @18501 has 40 MA's), (11, 18609), (13, 18621), (17, 18669), (28, 18738), (31, 18768), (33, 18795), (41, 18867), (45, 18891), (47, 18921), (49, 18945), (52, 19008), (59, 19062), (61, 19089), (62, 19113), (71, 19152), (82, 19317), (88, 19380), (92, 19446), (103, 19569), (108, 19665), (114, 19743), (116, 19773), (117, 19797), (118, 19806), (119, 19854), (120, 19869), (125, 19902), (134, 20118), (137, 20160), (157, 20328), (168, 20403), (187, 20529), (190, 20544),

Gene: JayCookie\_26 Start: 21688, Stop: 23658, Start Num: 4

Candidate Starts for JayCookie\_26:

(2, 21634), (3, 21646), (Start: 4 @21688 has 40 MA's), (8, 21751), (10, 21799), (13, 21814), (16, 21850), (19, 21871), (21, 21877), (Start: 23 @21892 has 1 MA's), (25, 21904), (27, 21928), (33, 21982), (34, 21988), (38, 22036), (44, 22075), (46, 22102), (51, 22171), (52, 22195), (55, 22213), (60, 22264), (64, 22312), (73, 22351), (79, 22468), (81, 22480), (84, 22501), (87, 22537), (90, 22555), (91, 22588), (98, 22654), (101, 22696), (104, 22735), (105, 22753), (109, 22822), (110, 22846), (112, 22861), (113, 22870), (114, 22888), (116, 22918), (119, 22999), (122, 23023), (123, 23041), (124, 23044), (126, 23050), (127, 23080), (129, 23167), (144, 23299), (151, 23353), (153, 23380), (165, 23470), (166, 23482), (178, 23554), (180, 23572), (183, 23593), (185, 23599), (186, 23602), (188, 23626), (191, 23638), (192, 23647),

Gene: Jordan\_23 Start: 18826, Stop: 20895, Start Num: 4

Candidate Starts for Jordan\_23:

(Start: 4 @18826 has 40 MA's), (11, 18934), (13, 18946), (17, 18994), (28, 19063), (33, 19120), (37, 19159), (41, 19192), (45, 19216), (47, 19246), (48, 19261), (52, 19333), (71, 19477), (82, 19642), (86, 19681), (87, 19699), (88, 19705), (89, 19708), (96, 19813), (100, 19867), (101, 19870), (108, 19990), (114, 20068), (116, 20098), (118, 20131), (119, 20179), (120, 20194), (125, 20227), (132, 20410), (133, 20422), (137, 20485), (142, 20530), (153, 20617), (157, 20653), (159, 20674), (168, 20728), (173, 20764), (175, 20770), (180, 20809), (187, 20854),

Gene: Kabreeze\_26 Start: 21685, Stop: 23655, Start Num: 4

Candidate Starts for Kabreeze\_26:

(2, 21631), (3, 21643), (Start: 4 @21685 has 40 MA's), (8, 21748), (10, 21796), (13, 21811), (16, 21847), (19, 21868), (21, 21874), (Start: 23 @21889 has 1 MA's), (27, 21925), (33, 21979), (34, 21985), (38, 22033), (44, 22072), (46, 22099), (51, 22168), (52, 22192), (55, 22210), (60, 22261), (64, 22309), (73, 22348), (79, 22465), (81, 22477), (84, 22498), (87, 22534), (90, 22552), (91, 22585), (98, 22651), (101, 22693), (104, 22732), (105, 22750), (109, 22819), (110, 22843), (112, 22858), (113, 22867), (114, 22885), (116, 22915), (119, 22996), (122, 23020), (123, 23038), (124, 23041), (126, 23047), (127, 23077), (129, 23164), (144, 23296), (151, 23350), (153, 23377), (165, 23467), (166, 23479), (178, 23551), (180, 23569), (183, 23590), (185, 23596), (186, 23599), (188, 23623), (191, 23635), (192, 23644),

Gene: King2\_21 Start: 18492, Stop: 20561, Start Num: 4

Candidate Starts for King2\_21:

(1, 18408), (Start: 4 @18492 has 40 MA's), (5, 18507), (11, 18600), (13, 18612), (17, 18660), (20, 18672), (28, 18729), (30, 18741), (32, 18762), (33, 18786), (37, 18825), (45, 18882), (52, 18999), (57, 19032), (59, 19053), (71, 19143), (82, 19308), (88, 19371), (100, 19533), (108, 19656), (110, 19692), (111, 19698), (113, 19716), (114, 19734), (116, 19764), (117, 19788), (118, 19797), (119, 19845), (120, 19860), (125, 19893), (128, 19956), (131, 20037), (134, 20109), (137, 20151), (141, 20181), (153, 20283), (157, 20319), (158, 20337), (187, 20520), (190, 20535),

Gene: LeeroyJ\_23 Start: 18795, Stop: 20909, Start Num: 4

Candidate Starts for LeeroyJ\_23:

(Start: 4 @18795 has 40 MA's), (11, 18906), (13, 18918), (28, 19035), (33, 19092), (37, 19131), (45, 19188), (47, 19218), (70, 19446), (78, 19557), (82, 19611), (84, 19629), (100, 19857), (108, 19980), (111, 20022), (114, 20058), (116, 20088), (118, 20121), (119, 20169), (124, 20214), (133, 20412),



(138, 20502), (140, 20520), (145, 20559), (153, 20634), (157, 20670), (159, 20691), (175, 20787), (180, 20826),

Gene: Linus\_26 Start: 21685, Stop: 23655, Start Num: 4

Candidate Starts for Linus\_26:

(2, 21631), (3, 21643), (Start: 4 @21685 has 40 MA's), (8, 21748), (10, 21796), (13, 21811), (16, 21847), (19, 21868), (21, 21874), (Start: 23 @21889 has 1 MA's), (25, 21901), (27, 21925), (33, 21979), (34, 21985), (38, 22033), (44, 22072), (46, 22099), (51, 22168), (52, 22192), (55, 22210), (60, 22261), (64, 22309), (73, 22348), (79, 22465), (81, 22477), (84, 22498), (87, 22534), (90, 22552), (91, 22585), (98, 22651), (101, 22693), (104, 22732), (105, 22750), (109, 22819), (110, 22843), (112, 22858), (113, 22867), (114, 22885), (116, 22915), (119, 22996), (122, 23020), (123, 23038), (124, 23041), (126, 23047), (127, 23077), (129, 23164), (144, 23296), (151, 23350), (153, 23377), (165, 23467), (166, 23479), (178, 23551), (180, 23569), (183, 23590), (185, 23596), (186, 23599), (188, 23623), (191, 23635), (192, 23644),

Gene: Lymara\_26 Start: 21683, Stop: 23653, Start Num: 4

Candidate Starts for Lymara\_26:

(3, 21641), (Start: 4 @21683 has 40 MA's), (8, 21746), (10, 21794), (12, 21803), (13, 21809), (16, 21845), (21, 21872), (Start: 23 @21887 has 1 MA's), (25, 21899), (27, 21923), (33, 21977), (34, 21983), (38, 22031), (44, 22070), (46, 22097), (52, 22190), (55, 22208), (60, 22259), (64, 22307), (66, 22322), (79, 22463), (81, 22475), (90, 22550), (91, 22583), (98, 22649), (101, 22691), (105, 22748), (106, 22760), (112, 22856), (113, 22865), (114, 22883), (115, 22895), (116, 22913), (119, 22994), (122, 23018), (124, 23039), (126, 23045), (129, 23162), (132, 23213), (134, 23246), (144, 23294), (153, 23375), (155, 23393), (159, 23432), (165, 23465), (166, 23477), (167, 23483), (178, 23549), (180, 23567), (183, 23588), (185, 23594), (188, 23621), (192, 23642),

Gene: Martha\_23 Start: 18767, Stop: 20836, Start Num: 4

Candidate Starts for Martha\_23:

(Start: 4 @18767 has 40 MA's), (11, 18875), (13, 18887), (17, 18935), (28, 19004), (33, 19061), (37, 19100), (41, 19133), (45, 19157), (47, 19187), (52, 19274), (71, 19418), (82, 19583), (96, 19754), (100, 19808), (101, 19811), (108, 19931), (114, 20009), (116, 20039), (118, 20072), (119, 20120), (120, 20135), (125, 20168), (132, 20351), (133, 20363), (137, 20426), (142, 20471), (153, 20558), (157, 20594), (159, 20615), (168, 20669), (173, 20705), (175, 20711), (180, 20750), (187, 20795),

Gene: Mordred\_26 Start: 21685, Stop: 23655, Start Num: 4

Candidate Starts for Mordred\_26:

(2, 21631), (3, 21643), (Start: 4 @21685 has 40 MA's), (8, 21748), (10, 21796), (13, 21811), (16, 21847), (19, 21868), (21, 21874), (Start: 23 @21889 has 1 MA's), (27, 21925), (33, 21979), (34, 21985), (38, 22033), (44, 22072), (46, 22099), (51, 22168), (52, 22192), (55, 22210), (60, 22261), (64, 22309), (73, 22348), (79, 22465), (81, 22477), (84, 22498), (87, 22534), (90, 22552), (91, 22585), (98, 22651), (101, 22693), (104, 22732), (105, 22750), (109, 22819), (110, 22843), (112, 22858), (113, 22867), (114, 22885), (116, 22915), (119, 22996), (122, 23020), (123, 23038), (124, 23041), (126, 23047), (127, 23077), (129, 23164), (144, 23296), (151, 23350), (153, 23377), (165, 23467), (166, 23479), (178, 23551), (180, 23569), (183, 23590), (185, 23596), (186, 23599), (188, 23623), (191, 23635), (192, 23644),

Gene: MoyaNatalis\_26 Start: 21688, Stop: 23658, Start Num: 4

Candidate Starts for MoyaNatalis\_26:

(2, 21634), (3, 21646), (Start: 4 @21688 has 40 MA's), (8, 21751), (10, 21799), (13, 21814), (16, 21850), (19, 21871), (21, 21877), (Start: 23 @21892 has 1 MA's), (25, 21904), (27, 21928), (33, 21982), (34, 21988), (38, 22036), (44, 22075), (46, 22102), (51, 22171), (52, 22195), (55, 22213), (60, 22264), (64, 22312), (73, 22351), (79, 22468), (81, 22480), (84, 22501), (87, 22537), (90, 22555), (91, 22588), (98, 22654), (101, 22696), (104, 22735), (105, 22753), (109, 22822), (110, 22846), (112,

22861), (113, 22870), (114, 22888), (116, 22918), (119, 22999), (122, 23023), (123, 23041), (124, 23044), (126, 23050), (127, 23080), (129, 23167), (144, 23299), (151, 23353), (153, 23380), (165, 23470), (166, 23482), (178, 23554), (180, 23572), (183, 23593), (185, 23599), (186, 23602), (188, 23626), (191, 23638), (192, 23647),

Gene: NathanVaag\_21 Start: 18498, Stop: 20567, Start Num: 4

Candidate Starts for NathanVaag\_21:

(Start: 4 @18498 has 40 MA's), (5, 18513), (11, 18606), (13, 18618), (17, 18666), (22, 18693), (28, 18735), (29, 18738), (32, 18768), (33, 18792), (41, 18864), (42, 18867), (45, 18888), (47, 18918), (49, 18942), (52, 19005), (68, 19143), (71, 19149), (78, 19260), (82, 19314), (88, 19377), (101, 19542), (114, 19740), (116, 19770), (117, 19794), (118, 19803), (119, 19851), (120, 19866), (125, 19899), (134, 20115), (137, 20157), (153, 20289), (159, 20346), (160, 20352), (168, 20400), (169, 20406), (180, 20481), (187, 20526),

Gene: Piccoletto\_21 Start: 18497, Stop: 20566, Start Num: 4

Candidate Starts for Piccoletto\_21:

(1, 18413), (Start: 4 @18497 has 40 MA's), (5, 18512), (11, 18605), (17, 18665), (22, 18692), (28, 18734), (29, 18737), (32, 18767), (33, 18791), (41, 18863), (45, 18887), (47, 18917), (49, 18941), (52, 19004), (68, 19142), (71, 19148), (78, 19259), (82, 19313), (88, 19376), (101, 19541), (114, 19739), (116, 19769), (118, 19802), (119, 19850), (120, 19865), (125, 19898), (134, 20114), (137, 20156), (153, 20288), (159, 20345), (160, 20351), (168, 20399), (169, 20405), (180, 20480), (187, 20525),

Gene: Pippa\_23 Start: 18865, Stop: 20934, Start Num: 4

Candidate Starts for Pippa\_23:

(Start: 4 @18865 has 40 MA's), (11, 18973), (13, 18985), (17, 19033), (28, 19102), (37, 19198), (45, 19255), (47, 19285), (52, 19372), (56, 19393), (71, 19516), (82, 19681), (88, 19744), (96, 19852), (100, 19906), (101, 19909), (108, 20029), (114, 20107), (116, 20137), (118, 20170), (119, 20218), (120, 20233), (125, 20266), (132, 20449), (133, 20461), (137, 20524), (142, 20569), (153, 20656), (157, 20692), (159, 20713), (168, 20767), (173, 20803), (175, 20809), (180, 20848), (187, 20893),

Gene: PrincessTrina\_26 Start: 21688, Stop: 23658, Start Num: 4

Candidate Starts for PrincessTrina\_26:

(2, 21634), (3, 21646), (Start: 4 @21688 has 40 MA's), (8, 21751), (10, 21799), (13, 21814), (16, 21850), (19, 21871), (21, 21877), (Start: 23 @21892 has 1 MA's), (25, 21904), (27, 21928), (33, 21982), (34, 21988), (38, 22036), (44, 22075), (46, 22102), (51, 22171), (52, 22195), (55, 22213), (60, 22264), (64, 22312), (73, 22351), (79, 22468), (81, 22480), (84, 22501), (87, 22537), (90, 22555), (91, 22588), (98, 22654), (101, 22696), (104, 22735), (105, 22753), (109, 22822), (110, 22846), (112, 22861), (113, 22870), (114, 22888), (116, 22918), (119, 22999), (122, 23023), (123, 23041), (124, 23044), (126, 23050), (127, 23080), (129, 23167), (144, 23299), (151, 23353), (153, 23380), (165, 23470), (166, 23482), (178, 23554), (180, 23572), (183, 23593), (185, 23599), (186, 23602), (188, 23626), (191, 23638), (192, 23647),

Gene: RosiePosie\_26 Start: 21688, Stop: 23658, Start Num: 4

Candidate Starts for RosiePosie\_26:

(2, 21634), (3, 21646), (Start: 4 @21688 has 40 MA's), (8, 21751), (10, 21799), (13, 21814), (16, 21850), (19, 21871), (21, 21877), (Start: 23 @21892 has 1 MA's), (25, 21904), (27, 21928), (33, 21982), (34, 21988), (38, 22036), (44, 22075), (46, 22102), (51, 22171), (52, 22195), (55, 22213), (60, 22264), (64, 22312), (73, 22351), (79, 22468), (81, 22480), (84, 22501), (87, 22537), (90, 22555), (91, 22588), (98, 22654), (101, 22696), (104, 22735), (105, 22753), (109, 22822), (110, 22846), (112, 22861), (113, 22870), (114, 22888), (116, 22918), (119, 22999), (122, 23023), (123, 23041), (124, 23044), (126, 23050), (127, 23080), (129, 23167), (144, 23299), (151, 23353), (153, 23380), (165, 23470), (166, 23482), (178, 23554), (180, 23572), (183, 23593), (185, 23599), (186, 23602), (188, 23626), (191, 23638), (192, 23647),

Gene: Scavito\_26 Start: 21685, Stop: 23655, Start Num: 4

Candidate Starts for Scavito\_26:

(2, 21631), (3, 21643), (Start: 4 @21685 has 40 MA's), (8, 21748), (10, 21796), (13, 21811), (16, 21847), (19, 21868), (21, 21874), (Start: 23 @21889 has 1 MA's), (27, 21925), (33, 21979), (34, 21985), (38, 22033), (44, 22072), (46, 22099), (51, 22168), (52, 22192), (55, 22210), (60, 22261), (64, 22309), (73, 22348), (79, 22465), (81, 22477), (84, 22498), (87, 22534), (90, 22552), (91, 22585), (98, 22651), (101, 22693), (104, 22732), (105, 22750), (109, 22819), (110, 22843), (112, 22858), (113, 22867), (114, 22885), (116, 22915), (119, 22996), (122, 23020), (123, 23038), (124, 23041), (126, 23047), (127, 23077), (129, 23164), (144, 23296), (151, 23350), (153, 23377), (165, 23467), (166, 23479), (178, 23551), (180, 23569), (183, 23590), (185, 23596), (186, 23599), (188, 23623), (191, 23635), (192, 23644),

Gene: Shade\_23 Start: 18805, Stop: 20874, Start Num: 4

Candidate Starts for Shade\_23:

(Start: 4 @18805 has 40 MA's), (11, 18913), (13, 18925), (17, 18973), (28, 19042), (33, 19099), (37, 19138), (41, 19171), (45, 19195), (47, 19225), (48, 19240), (52, 19312), (71, 19456), (82, 19621), (86, 19660), (87, 19678), (88, 19684), (89, 19687), (100, 19846), (101, 19849), (108, 19969), (114, 20047), (116, 20077), (118, 20110), (119, 20158), (120, 20173), (125, 20206), (132, 20389), (133, 20401), (137, 20464), (142, 20509), (153, 20596), (157, 20632), (159, 20653), (168, 20707), (173, 20743), (175, 20749), (180, 20788), (187, 20833),

Gene: Sicarius2\_24 Start: 19283, Stop: 21313, Start Num: 4

Candidate Starts for Sicarius2\_24:

(1, 19202), (Start: 4 @19283 has 40 MA's), (13, 19400), (17, 19451), (24, 19484), (28, 19520), (33, 19577), (37, 19616), (45, 19673), (47, 19703), (49, 19727), (55, 19808), (74, 19946), (76, 19949), (91, 20159), (95, 20201), (97, 20222), (99, 20261), (111, 20417), (114, 20453), (116, 20483), (119, 20564), (121, 20582), (124, 20609), (128, 20675), (130, 20744), (139, 20897), (146, 20966), (161, 21077), (162, 21089), (166, 21110), (177, 21170), (182, 21212), (187, 21242),

Gene: Sonny\_23 Start: 18826, Stop: 20895, Start Num: 4

Candidate Starts for Sonny\_23:

(Start: 4 @18826 has 40 MA's), (11, 18934), (13, 18946), (17, 18994), (28, 19063), (33, 19120), (37, 19159), (41, 19192), (45, 19216), (47, 19246), (48, 19261), (52, 19333), (71, 19477), (82, 19642), (86, 19681), (87, 19699), (88, 19705), (89, 19708), (100, 19867), (101, 19870), (108, 19990), (114, 20068), (116, 20098), (118, 20131), (119, 20179), (120, 20194), (125, 20227), (132, 20410), (133, 20422), (137, 20485), (142, 20530), (153, 20617), (157, 20653), (159, 20674), (168, 20728), (173, 20764), (175, 20770), (180, 20809), (187, 20854),

Gene: StevieBAY\_23 Start: 18795, Stop: 20909, Start Num: 4

Candidate Starts for StevieBAY\_23:

(Start: 4 @18795 has 40 MA's), (11, 18906), (13, 18918), (28, 19035), (30, 19047), (33, 19092), (37, 19131), (45, 19188), (47, 19218), (70, 19446), (78, 19557), (82, 19611), (84, 19629), (100, 19857), (108, 19980), (111, 20022), (114, 20058), (116, 20088), (118, 20121), (119, 20169), (124, 20214), (133, 20412), (138, 20502), (140, 20520), (145, 20559), (153, 20634), (157, 20670), (159, 20691), (175, 20787), (180, 20826),

Gene: TaeYoung\_23 Start: 18830, Stop: 20899, Start Num: 4

Candidate Starts for TaeYoung\_23:

(Start: 4 @18830 has 40 MA's), (11, 18938), (13, 18950), (17, 18998), (28, 19067), (33, 19124), (37, 19163), (41, 19196), (45, 19220), (47, 19250), (52, 19337), (71, 19481), (82, 19646), (96, 19817), (100, 19871), (101, 19874), (108, 19994), (114, 20072), (116, 20102), (118, 20135), (119, 20183), (120, 20198), (125, 20231), (132, 20414), (133, 20426), (137, 20489), (142, 20534), (153, 20621),

(157, 20657), (159, 20678), (168, 20732), (173, 20768), (175, 20774), (180, 20813), (187, 20858),

Gene: Timinator\_23 Start: 18795, Stop: 20909, Start Num: 4

Candidate Starts for Timinator\_23:

(Start: 4 @18795 has 40 MA's), (11, 18906), (13, 18918), (28, 19035), (33, 19092), (37, 19131), (45, 19188), (47, 19218), (70, 19446), (78, 19557), (82, 19611), (84, 19629), (100, 19857), (108, 19980), (111, 20022), (114, 20058), (116, 20088), (118, 20121), (119, 20169), (124, 20214), (133, 20412), (138, 20502), (140, 20520), (145, 20559), (153, 20634), (157, 20670), (159, 20691), (175, 20787), (180, 20826),

Gene: Tophat\_26 Start: 21687, Stop: 23657, Start Num: 4

Candidate Starts for Tophat\_26:

(2, 21633), (3, 21645), (Start: 4 @21687 has 40 MA's), (8, 21750), (10, 21798), (13, 21813), (16, 21849), (19, 21870), (21, 21876), (Start: 23 @21891 has 1 MA's), (27, 21927), (33, 21981), (34, 21987), (38, 22035), (44, 22074), (46, 22101), (51, 22170), (52, 22194), (55, 22212), (60, 22263), (64, 22311), (73, 22350), (79, 22467), (81, 22479), (84, 22500), (87, 22536), (90, 22554), (91, 22587), (98, 22653), (101, 22695), (104, 22734), (105, 22752), (109, 22821), (110, 22845), (112, 22860), (113, 22869), (114, 22887), (116, 22917), (119, 22998), (122, 23022), (123, 23040), (124, 23043), (126, 23049), (127, 23079), (129, 23166), (144, 23298), (151, 23352), (153, 23379), (165, 23469), (166, 23481), (178, 23553), (180, 23571), (183, 23592), (185, 23598), (186, 23601), (188, 23625), (191, 23637), (192, 23646),

Gene: Wyborn\_24 Start: 19141, Stop: 21291, Start Num: 4

Candidate Starts for Wyborn\_24:

(1, 19060), (Start: 4 @19141 has 40 MA's), (13, 19258), (17, 19309), (24, 19342), (28, 19378), (33, 19435), (45, 19531), (47, 19561), (49, 19585), (55, 19666), (74, 19804), (76, 19807), (86, 19975), (87, 19993), (91, 20044), (95, 20086), (97, 20107), (99, 20146), (102, 20158), (109, 20272), (111, 20302), (114, 20338), (116, 20368), (119, 20449), (143, 20839), (156, 20947), (163, 21016), (170, 21052), (174, 21082), (189, 21187), (195, 21250),

Gene: Zartrosa\_23 Start: 18829, Stop: 20898, Start Num: 4

Candidate Starts for Zartrosa\_23:

(Start: 4 @18829 has 40 MA's), (11, 18937), (13, 18949), (17, 18997), (28, 19066), (33, 19123), (37, 19162), (41, 19195), (45, 19219), (47, 19249), (48, 19264), (52, 19336), (71, 19480), (82, 19645), (86, 19684), (87, 19702), (88, 19708), (89, 19711), (100, 19870), (101, 19873), (108, 19993), (114, 20071), (116, 20101), (118, 20134), (119, 20182), (120, 20197), (125, 20230), (132, 20413), (133, 20425), (137, 20488), (142, 20533), (153, 20620), (157, 20656), (159, 20677), (168, 20731), (173, 20767), (175, 20773), (180, 20812), (187, 20857),