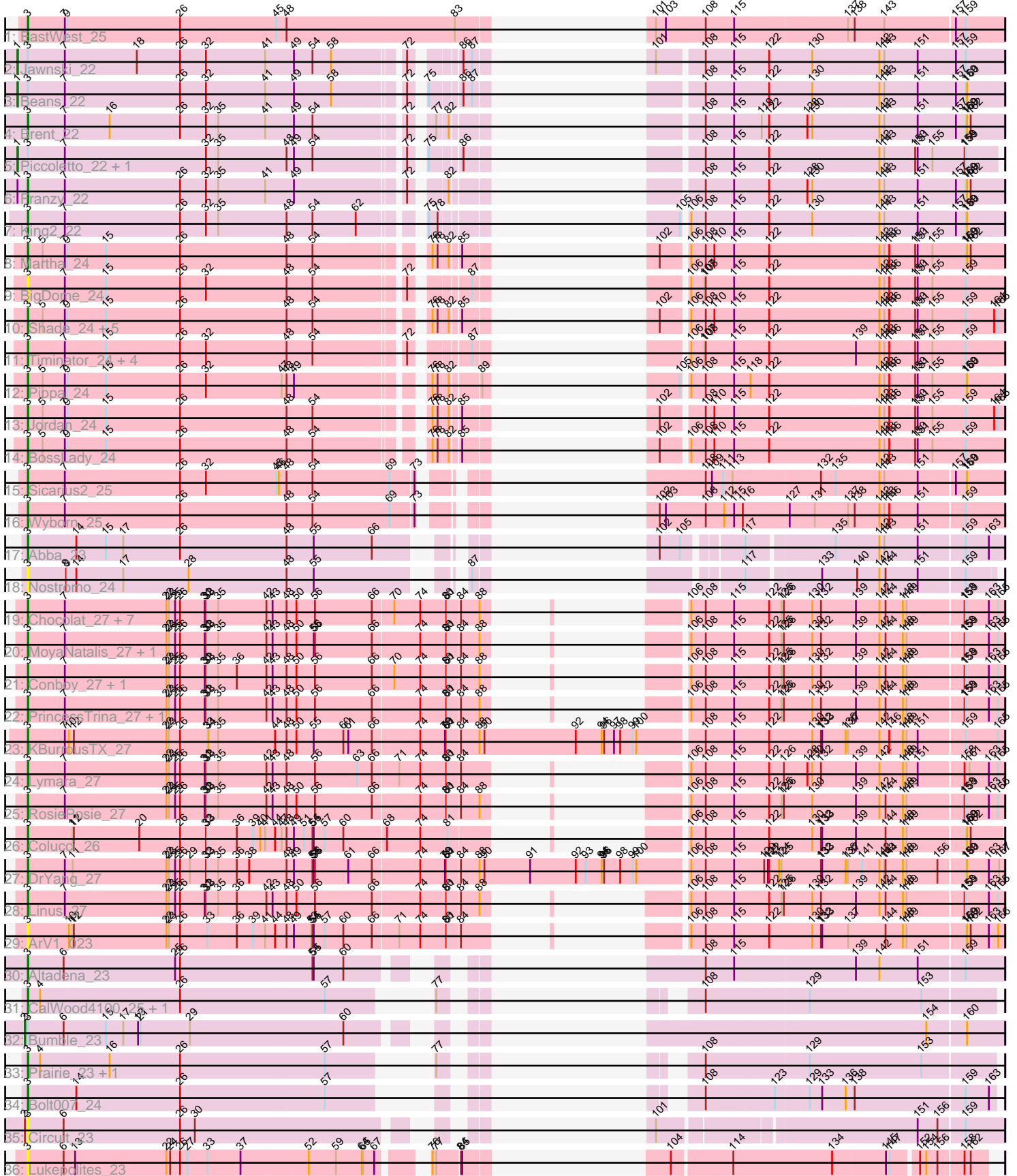


Pham 216201



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 216201 Report

This analysis was run 02/22/25 on database version 588.

Pham number 216201 has 58 members, 7 are drafts.

Phages represented in each track:

- Track 1 : EastWest\_25
- Track 2 : Jawnski\_22
- Track 3 : Beans\_22
- Track 4 : Brent\_22
- Track 5 : Piccoletto\_22, NathanVaag\_22
- Track 6 : Franzy\_22
- Track 7 : King2\_22
- Track 8 : Martha\_24
- Track 9 : BigDome\_24
- Track 10 : Shade\_24, Zartrosa\_24, JKerns\_24, Grekaycon\_24, Sonny\_24, TaeYoung\_24
- Track 11 : Timinator\_24, BarretLemon\_24, LeeroyJ\_24, GravityBall\_24, StevieBAY\_24
- Track 12 : Pippa\_24
- Track 13 : Jordan\_24
- Track 14 : BossLady\_24
- Track 15 : Sicarius2\_25
- Track 16 : Wyborn\_25
- Track 17 : Abba\_23
- Track 18 : Nostromo\_24
- Track 19 : Chocolat\_27, Kabreeze\_27, Scavito\_27, JaNo\_27, Mordred\_27, HumptyDumpty\_27, Chipper1996\_270, Tophat\_27
- Track 20 : MoyaNatalis\_27, JayCookie\_27
- Track 21 : Conboy\_27, EdgarPoe\_27
- Track 22 : PrincessTrina\_27, Chubster\_27
- Track 23 : KBurrousTX\_27
- Track 24 : Lymara\_27
- Track 25 : RosiePosie\_27
- Track 26 : Colucci\_26
- Track 27 : DrYang\_27
- Track 28 : Linus\_27
- Track 29 : ArV1\_023
- Track 30 : Altadena\_23
- Track 31 : CalWood4100\_25, Lilmac1015\_25
- Track 32 : Bumble\_23
- Track 33 : Prairie\_23, Klevey\_24
- Track 34 : Bolt007\_24

- Track 35 : Circuit\_23
- Track 36 : Lukepolites\_23

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

The start number called the most often in the published annotations is 3, it was called in 46 of the 51 non-draft genes in the pham.

Genes that call this "Most Annotated" start:

- Abba\_23, Altadena\_23, ArV1\_023, BarretLemon\_24, BigDome\_24, Bolt007\_24, BossLady\_24, Brent\_22, CalWood4100\_25, Chipper1996\_270, Chocolat\_27, Chubster\_27, Circuit\_23, Colucci\_26, Conboy\_27, DrYang\_27, EastWest\_25, EdgarPoe\_27, Franzy\_22, GravityBall\_24, Grekaycon\_24, HumptyDumpty\_27, JKerns\_24, JaNo\_27, JayCookie\_27, Jordan\_24, KBurrousTX\_27, Kabreeze\_27, King2\_22, Klevey\_24, LeeroyJ\_24, Lilmac1015\_25, Linus\_27, Lukepolites\_23, Lymara\_27, Martha\_24, Mordred\_27, MoyaNatalis\_27, Nostromo\_24, Pippa\_24, Prairie\_23, PrincessTrina\_27, RosiePosie\_27, Scavito\_27, Shade\_24, Sicarius2\_25, Sonny\_24, StevieBAY\_24, TaeYoung\_24, Timinator\_24, Tophat\_27, Wyborn\_25, Zartrosa\_24,

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

- Beans\_22, Bumble\_23, Jawnski\_22, NathanVaag\_22, Piccoletto\_22,

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

- 

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

Start 1:

- Found in 5 of 58 ( 8.6% ) of genes in pham
- Manual Annotations of this start: 4 of 51
- Called 80.0% of time when present
- Phage (with cluster) where this start called: Beans\_22 (AO1), Jawnski\_22 (AO1), NathanVaag\_22 (AO1), Piccoletto\_22 (AO1),

Start 2:

- Found in 2 of 58 ( 3.4% ) of genes in pham
- Manual Annotations of this start: 1 of 51
- Called 50.0% of time when present
- Phage (with cluster) where this start called: Bumble\_23 (FH),

Start 3:

- Found in 58 of 58 ( 100.0% ) of genes in pham
- Manual Annotations of this start: 46 of 51
- Called 91.4% of time when present
- Phage (with cluster) where this start called: Abba\_23 (AO3), Altadena\_23 (FH), ArV1\_023 (AR), BarretLemon\_24 (AO2), BigDome\_24 (AO2), Bolt007\_24 (FH), BossLady\_24 (AO2), Brent\_22 (AO1), CalWood4100\_25 (FH), Chipper1996\_270 (AR), Chocolat\_27 (AR), Chubster\_27 (AR), Circuit\_23 (FH), Colucci\_26 (AR), Conboy\_27 (AR), DrYang\_27 (AR), EastWest\_25 (AO), EdgarPoe\_27 (AR),

Franzy\_22 (AO1), GravityBall\_24 (AO2), Grekaycon\_24 (AO2), HumptyDumpty\_27 (AR), JKerns\_24 (AO2), JaNo\_27 (AR), JayCookie\_27 (AR), Jordan\_24 (AO2), KBurrousTX\_27 (AR), Kabreeze\_27 (AR), King2\_22 (AO1), Klevey\_24 (FH), LeeroyJ\_24 (AO2), Lilmac1015\_25 (FH), Linus\_27 (AR), Lukepolites\_23 (singleton), Lymara\_27 (AR), Martha\_24 (AO2), Mordred\_27 (AR), MoyaNatalis\_27 (AR), Nostromo\_24 (AO3), Pippa\_24 (AO2), Prairie\_23 (FH), PrincessTrina\_27 (AR), RosiePosie\_27 (AR), Scavito\_27 (AR), Shade\_24 (AO2), Sicarius2\_25 (AO2), Sonny\_24 (AO2), StevieBAY\_24 (AO2), TaeYoung\_24 (AO2), Timinator\_24 (AO2), Tophat\_27 (AR), Wyborn\_25 (AO2), Zartrosa\_24 (AO2),

### **Summary by clusters:**

There are 7 clusters represented in this pham: singleton, AO, AR, AO3, AO2, AO1, FH,

Info for manual annotations of cluster AO:

- Start number 3 was manually annotated 1 time for cluster AO.

Info for manual annotations of cluster AO1:

- Start number 1 was manually annotated 4 times for cluster AO1.
- Start number 3 was manually annotated 3 times for cluster AO1.

Info for manual annotations of cluster AO2:

- Start number 3 was manually annotated 17 times for cluster AO2.

Info for manual annotations of cluster AO3:

- Start number 3 was manually annotated 1 time for cluster AO3.

Info for manual annotations of cluster AR:

- Start number 3 was manually annotated 19 times for cluster AR.

Info for manual annotations of cluster FH:

- Start number 2 was manually annotated 1 time for cluster FH.
- Start number 3 was manually annotated 5 times for cluster FH.

### **Gene Information:**

Gene: Abba\_23 Start: 20919, Stop: 22694, Start Num: 3

Candidate Starts for Abba\_23:

(Start: 3 @20919 has 46 MA's), (14, 21036), (15, 21108), (17, 21150), (26, 21288), (48, 21546), (55, 21612), (66, 21750), (102, 21948), (105, 21996), (117, 22107), (135, 22299), (142, 22404), (143, 22416), (151, 22497), (159, 22605), (163, 22659),

Gene: Altadena\_23 Start: 20090, Stop: 21892, Start Num: 3

Candidate Starts for Altadena\_23:

(Start: 3 @20090 has 46 MA's), (6, 20177), (25, 20447), (26, 20459), (54, 20780), (55, 20783), (60, 20855), (108, 21203), (115, 21269), (139, 21548), (142, 21602), (151, 21692), (159, 21800),

Gene: ArV1\_023 Start: 22022, Stop: 23962, Start Num: 3

Candidate Starts for ArV1\_023:

(Start: 3 @22022 has 46 MA's), (10, 22121), (11, 22130), (12, 22133), (22, 22358), (23, 22364), (26, 22391), (33, 22457), (36, 22529), (39, 22568), (41, 22598), (44, 22622), (48, 22649), (49, 22667), (53, 22709), (54, 22712), (55, 22715), (57, 22742), (60, 22787), (66, 22856), (71, 22916), (74, 22967), (80, 23030), (81, 23033), (84, 23060), (106, 23228), (108, 23261), (115, 23327), (122, 23411), (130, 23516), (132, 23537), (133, 23540), (137, 23603), (144, 23690), (148, 23732), (149, 23741), (159, 23876), (160, 23879), (162, 23888), (163, 23930), (166, 23951),

Gene: BarretLemon\_24 Start: 20966, Stop: 22825, Start Num: 3

Candidate Starts for BarretLemon\_24:

(Start: 3 @20966 has 46 MA's), (7, 21056), (15, 21155), (26, 21335), (32, 21398), (48, 21593), (54, 21656), (72, 21851), (87, 21956), (106, 22079), (107, 22109), (108, 22112), (115, 22178), (122, 22262), (139, 22472), (142, 22526), (143, 22538), (146, 22550), (150, 22613), (151, 22619), (155, 22655), (159, 22736),

Gene: Beans\_22 Start: 20611, Stop: 22491, Start Num: 1

Candidate Starts for Beans\_22:

(Start: 1 @20611 has 4 MA's), (Start: 3 @20635 has 46 MA's), (7, 20725), (26, 21004), (32, 21067), (41, 21211), (49, 21280), (58, 21370), (72, 21520), (75, 21541), (86, 21604), (87, 21625), (108, 21781), (115, 21847), (122, 21931), (130, 22036), (142, 22195), (143, 22207), (151, 22285), (157, 22378), (159, 22402), (160, 22405),

Gene: BigDome\_24 Start: 20955, Stop: 22814, Start Num: 3

Candidate Starts for BigDome\_24:

(Start: 3 @20955 has 46 MA's), (7, 21045), (15, 21144), (26, 21324), (32, 21387), (48, 21582), (54, 21645), (72, 21840), (87, 21945), (106, 22068), (107, 22098), (108, 22101), (115, 22167), (122, 22251), (142, 22515), (143, 22527), (146, 22539), (150, 22602), (151, 22608), (155, 22644), (159, 22725),

Gene: Bolt007\_24 Start: 19247, Stop: 20917, Start Num: 3

Candidate Starts for Bolt007\_24:

(Start: 3 @19247 has 46 MA's), (14, 19364), (26, 19616), (57, 19967), (108, 20246), (123, 20408), (129, 20486), (133, 20513), (136, 20570), (138, 20591), (159, 20849), (163, 20903),

Gene: BossLady\_24 Start: 20943, Stop: 22802, Start Num: 3

Candidate Starts for BossLady\_24:

(Start: 3 @20943 has 46 MA's), (5, 20979), (7, 21033), (9, 21039), (15, 21132), (26, 21312), (48, 21570), (54, 21633), (76, 21858), (78, 21870), (82, 21891), (85, 21909), (102, 21999), (106, 22056), (108, 22089), (110, 22110), (115, 22155), (122, 22239), (142, 22503), (143, 22515), (146, 22527), (150, 22590), (151, 22596), (155, 22632), (159, 22713),

Gene: Brent\_22 Start: 20617, Stop: 22473, Start Num: 3

Candidate Starts for Brent\_22:

(Start: 3 @20617 has 46 MA's), (7, 20707), (16, 20815), (26, 20986), (32, 21049), (35, 21079), (41, 21193), (49, 21262), (54, 21307), (72, 21502), (77, 21541), (82, 21565), (108, 21763), (115, 21829), (119, 21895), (122, 21913), (128, 22006), (130, 22018), (142, 22177), (143, 22189), (151, 22267), (157, 22360), (159, 22384), (160, 22387), (162, 22396),

Gene: Bumble\_23 Start: 19960, Stop: 21765, Start Num: 2

Candidate Starts for Bumble\_23:

(Start: 2 @19960 has 1 MA's), (Start: 3 @19966 has 46 MA's), (6, 20053), (15, 20155), (17, 20197), (19, 20233), (21, 20239), (29, 20359), (60, 20731), (154, 21589), (160, 21679),

Gene: CalWood4100\_25 Start: 19237, Stop: 20907, Start Num: 3

Candidate Starts for CalWood4100\_25:

(Start: 3 @19237 has 46 MA's), (4, 19267), (26, 19606), (57, 19957), (77, 20077), (108, 20236), (129, 20476), (153, 20740),

Gene: Chipper1996\_270 Start: 23710, Stop: 25647, Start Num: 3

Candidate Starts for Chipper1996\_270:

(Start: 3 @23710 has 46 MA's), (7, 23800), (22, 24046), (23, 24052), (25, 24067), (26, 24079), (31, 24139), (32, 24142), (33, 24145), (35, 24172), (42, 24289), (43, 24304), (48, 24337), (50, 24361), (56, 24406), (66, 24544), (70, 24592), (74, 24655), (80, 24718), (81, 24721), (84, 24748), (88, 24793), (106, 24916), (108, 24949), (115, 25015), (122, 25099), (125, 25129), (126, 25135), (130, 25204), (132, 25225), (139, 25309), (142, 25363), (144, 25378), (148, 25420), (149, 25429), (158, 25558), (159, 25561), (163, 25615), (165, 25636),

Gene: Chocolat\_27 Start: 23710, Stop: 25647, Start Num: 3

Candidate Starts for Chocolat\_27:

(Start: 3 @23710 has 46 MA's), (7, 23800), (22, 24046), (23, 24052), (25, 24067), (26, 24079), (31, 24139), (32, 24142), (33, 24145), (35, 24172), (42, 24289), (43, 24304), (48, 24337), (50, 24361), (56, 24406), (66, 24544), (70, 24592), (74, 24655), (80, 24718), (81, 24721), (84, 24748), (88, 24793), (106, 24916), (108, 24949), (115, 25015), (122, 25099), (125, 25129), (126, 25135), (130, 25204), (132, 25225), (139, 25309), (142, 25363), (144, 25378), (148, 25420), (149, 25429), (158, 25558), (159, 25561), (163, 25615), (165, 25636),

Gene: Chubster\_27 Start: 23481, Stop: 25418, Start Num: 3

Candidate Starts for Chubster\_27:

(Start: 3 @23481 has 46 MA's), (7, 23571), (22, 23817), (23, 23823), (25, 23838), (26, 23850), (31, 23910), (32, 23913), (33, 23916), (35, 23943), (42, 24060), (43, 24075), (48, 24108), (50, 24132), (56, 24177), (66, 24315), (74, 24426), (80, 24489), (81, 24492), (84, 24519), (88, 24564), (106, 24687), (108, 24720), (115, 24786), (122, 24870), (125, 24900), (126, 24906), (130, 24975), (132, 24996), (139, 25080), (142, 25134), (144, 25149), (148, 25191), (149, 25200), (158, 25329), (159, 25332), (163, 25386), (165, 25407),

Gene: Circuit\_23 Start: 20077, Stop: 21828, Start Num: 3

Candidate Starts for Circuit\_23:

(Start: 2 @20071 has 1 MA's), (Start: 3 @20077 has 46 MA's), (6, 20164), (26, 20446), (30, 20482), (101, 21070), (151, 21631), (156, 21679), (159, 21739),

Gene: Colucci\_26 Start: 23173, Stop: 25110, Start Num: 3

Candidate Starts for Colucci\_26:

(Start: 3 @23173 has 46 MA's), (11, 23281), (12, 23284), (20, 23443), (26, 23542), (32, 23605), (33, 23608), (36, 23680), (39, 23719), (40, 23737), (41, 23749), (44, 23773), (47, 23788), (48, 23800), (49, 23818), (51, 23842), (54, 23863), (55, 23866), (57, 23893), (60, 23938), (68, 24037), (74, 24118), (81, 24184), (106, 24379), (108, 24412), (115, 24478), (122, 24562), (130, 24667), (132, 24688), (133, 24691), (139, 24772), (144, 24841), (148, 24883), (149, 24892), (159, 25027), (160, 25030), (162, 25039),

Gene: Conboy\_27 Start: 23709, Stop: 25646, Start Num: 3

Candidate Starts for Conboy\_27:

(Start: 3 @23709 has 46 MA's), (7, 23799), (22, 24045), (23, 24051), (25, 24066), (26, 24078), (31, 24138), (32, 24141), (33, 24144), (35, 24171), (36, 24216), (42, 24288), (43, 24303), (48, 24336), (50, 24360), (56, 24405), (66, 24543), (70, 24591), (74, 24654), (80, 24717), (81, 24720), (84, 24747), (88, 24792), (106, 24915), (108, 24948), (115, 25014), (122, 25098), (125, 25128), (126, 25134), (130, 25203), (132, 25224), (139, 25308), (142, 25362), (144, 25377), (148, 25419), (149, 25428), (158, 25557), (159, 25560), (163, 25614), (165, 25635),

Gene: DrYang\_27 Start: 24422, Stop: 26734, Start Num: 3

Candidate Starts for DrYang\_27:

(Start: 3 @24422 has 46 MA's), (7, 24512), (11, 24530), (22, 24758), (23, 24764), (25, 24779), (26, 24791), (29, 24815), (32, 24854), (33, 24857), (35, 24884), (36, 24929), (38, 24959), (48, 25049), (49, 25067), (54, 25112), (55, 25115), (56, 25118), (61, 25199), (66, 25256), (74, 25367), (79, 25427), (80, 25430), (81, 25433), (84, 25460), (88, 25505), (90, 25517), (91, 25628), (92, 25739), (93, 25763), (94, 25802), (95, 25805), (96, 25808), (98, 25847), (99, 25877), (100, 25886), (106, 26000), (108, 26033), (115, 26099), (120, 26171), (121, 26180), (122, 26183), (124, 26207), (125, 26213), (132, 26309), (133, 26312), (136, 26369), (137, 26375), (141, 26405), (142, 26447), (143, 26459), (144, 26462), (148, 26504), (149, 26513), (156, 26588), (159, 26648), (160, 26651), (163, 26702), (167, 26726),

Gene: EastWest\_25 Start: 20811, Stop: 22751, Start Num: 3

Candidate Starts for EastWest\_25:

(Start: 3 @20811 has 46 MA's), (7, 20901), (9, 20907), (26, 21180), (45, 21414), (48, 21438), (83, 21843), (101, 21942), (103, 21966), (108, 22062), (115, 22128), (137, 22392), (138, 22407), (143, 22476), (157, 22638), (159, 22662),

Gene: EdgarPoe\_27 Start: 23709, Stop: 25646, Start Num: 3

Candidate Starts for EdgarPoe\_27:

(Start: 3 @23709 has 46 MA's), (7, 23799), (22, 24045), (23, 24051), (25, 24066), (26, 24078), (31, 24138), (32, 24141), (33, 24144), (35, 24171), (36, 24216), (42, 24288), (43, 24303), (48, 24336), (50, 24360), (56, 24405), (66, 24543), (70, 24591), (74, 24654), (80, 24717), (81, 24720), (84, 24747), (88, 24792), (106, 24915), (108, 24948), (115, 25014), (122, 25098), (125, 25128), (126, 25134), (130, 25203), (132, 25224), (139, 25308), (142, 25362), (144, 25377), (148, 25419), (149, 25428), (158, 25557), (159, 25560), (163, 25614), (165, 25635),

Gene: Franzy\_22 Start: 20616, Stop: 22472, Start Num: 3

Candidate Starts for Franzy\_22:

(Start: 1 @20592 has 4 MA's), (Start: 3 @20616 has 46 MA's), (7, 20706), (26, 20985), (32, 21048), (35, 21078), (41, 21192), (49, 21261), (72, 21501), (82, 21564), (108, 21762), (115, 21828), (122, 21912), (128, 22005), (130, 22017), (142, 22176), (143, 22188), (151, 22266), (157, 22359), (159, 22383), (160, 22386), (162, 22395),

Gene: GravityBall\_24 Start: 20965, Stop: 22824, Start Num: 3

Candidate Starts for GravityBall\_24:

(Start: 3 @20965 has 46 MA's), (7, 21055), (15, 21154), (26, 21334), (32, 21397), (48, 21592), (54, 21655), (72, 21850), (87, 21955), (106, 22078), (107, 22108), (108, 22111), (115, 22177), (122, 22261), (139, 22471), (142, 22525), (143, 22537), (146, 22549), (150, 22612), (151, 22618), (155, 22654), (159, 22735),

Gene: Grekaycon\_24 Start: 20952, Stop: 22811, Start Num: 3

Candidate Starts for Grekaycon\_24:

(Start: 3 @20952 has 46 MA's), (5, 20988), (7, 21042), (9, 21048), (15, 21141), (26, 21321), (48, 21579), (54, 21642), (76, 21867), (78, 21879), (82, 21900), (85, 21918), (102, 22008), (106, 22065), (108, 22098), (110, 22119), (115, 22164), (122, 22248), (142, 22512), (143, 22524), (146, 22536), (150, 22599), (151, 22605), (155, 22641), (159, 22722), (164, 22788), (165, 22797),

Gene: HumptyDumpty\_27 Start: 23708, Stop: 25645, Start Num: 3

Candidate Starts for HumptyDumpty\_27:

(Start: 3 @23708 has 46 MA's), (7, 23798), (22, 24044), (23, 24050), (25, 24065), (26, 24077), (31, 24137), (32, 24140), (33, 24143), (35, 24170), (42, 24287), (43, 24302), (48, 24335), (50, 24359), (56, 24404), (66, 24542), (70, 24590), (74, 24653), (80, 24716), (81, 24719), (84, 24746), (88, 24791), (106,

24914), (108, 24947), (115, 25013), (122, 25097), (125, 25127), (126, 25133), (130, 25202), (132, 25223), (139, 25307), (142, 25361), (144, 25376), (148, 25418), (149, 25427), (158, 25556), (159, 25559), (163, 25613), (165, 25634),

Gene: JKerns\_24 Start: 20979, Stop: 22838, Start Num: 3

Candidate Starts for JKerns\_24:

(Start: 3 @20979 has 46 MA's), (5, 21015), (7, 21069), (9, 21075), (15, 21168), (26, 21348), (48, 21606), (54, 21669), (76, 21894), (78, 21906), (82, 21927), (85, 21945), (102, 22035), (106, 22092), (108, 22125), (110, 22146), (115, 22191), (122, 22275), (142, 22539), (143, 22551), (146, 22563), (150, 22626), (151, 22632), (155, 22668), (159, 22749), (164, 22815), (165, 22824),

Gene: JaNo\_27 Start: 23708, Stop: 25645, Start Num: 3

Candidate Starts for JaNo\_27:

(Start: 3 @23708 has 46 MA's), (7, 23798), (22, 24044), (23, 24050), (25, 24065), (26, 24077), (31, 24137), (32, 24140), (33, 24143), (35, 24170), (42, 24287), (43, 24302), (48, 24335), (50, 24359), (56, 24404), (66, 24542), (70, 24590), (74, 24653), (80, 24716), (81, 24719), (84, 24746), (88, 24791), (106, 24914), (108, 24947), (115, 25013), (122, 25097), (125, 25127), (126, 25133), (130, 25202), (132, 25223), (139, 25307), (142, 25361), (144, 25376), (148, 25418), (149, 25427), (158, 25556), (159, 25559), (163, 25613), (165, 25634),

Gene: Jawnski\_22 Start: 20606, Stop: 22486, Start Num: 1

Candidate Starts for Jawnski\_22:

(Start: 1 @20606 has 4 MA's), (Start: 3 @20630 has 46 MA's), (7, 20720), (18, 20894), (26, 20999), (32, 21062), (41, 21206), (49, 21275), (54, 21320), (58, 21365), (72, 21515), (86, 21599), (87, 21620), (101, 21677), (108, 21776), (115, 21842), (122, 21926), (130, 22031), (142, 22190), (143, 22202), (151, 22280), (157, 22373), (159, 22397),

Gene: JayCookie\_27 Start: 23711, Stop: 25648, Start Num: 3

Candidate Starts for JayCookie\_27:

(Start: 3 @23711 has 46 MA's), (7, 23801), (22, 24047), (23, 24053), (25, 24068), (26, 24080), (31, 24140), (32, 24143), (33, 24146), (35, 24173), (42, 24290), (43, 24305), (48, 24338), (50, 24362), (55, 24404), (56, 24407), (66, 24545), (74, 24656), (80, 24719), (81, 24722), (84, 24749), (88, 24794), (106, 24917), (108, 24950), (115, 25016), (122, 25100), (125, 25130), (126, 25136), (130, 25205), (132, 25226), (139, 25310), (142, 25364), (144, 25379), (148, 25421), (149, 25430), (158, 25559), (159, 25562), (163, 25616), (165, 25637),

Gene: Jordan\_24 Start: 20949, Stop: 22808, Start Num: 3

Candidate Starts for Jordan\_24:

(Start: 3 @20949 has 46 MA's), (5, 20985), (7, 21039), (9, 21045), (15, 21138), (26, 21318), (48, 21576), (54, 21639), (76, 21864), (78, 21876), (82, 21897), (85, 21915), (102, 22005), (108, 22095), (110, 22116), (115, 22161), (122, 22245), (142, 22509), (143, 22521), (146, 22533), (150, 22596), (151, 22602), (155, 22638), (159, 22719), (164, 22785), (165, 22794),

Gene: KBurrousTX\_27 Start: 24247, Stop: 26559, Start Num: 3

Candidate Starts for KBurrousTX\_27:

(Start: 3 @24247 has 46 MA's), (7, 24337), (10, 24346), (12, 24358), (22, 24583), (23, 24589), (26, 24616), (33, 24682), (34, 24685), (35, 24709), (44, 24847), (48, 24874), (50, 24898), (55, 24940), (60, 25012), (61, 25024), (66, 25081), (74, 25192), (79, 25252), (80, 25255), (81, 25258), (84, 25285), (88, 25330), (90, 25342), (92, 25564), (94, 25627), (96, 25633), (97, 25657), (98, 25672), (99, 25702), (100, 25711), (108, 25858), (115, 25924), (122, 26008), (130, 26113), (132, 26134), (133, 26137), (136, 26194), (137, 26200), (142, 26272), (146, 26296), (148, 26329), (149, 26338), (151, 26362), (159, 26470), (165, 26545),



Gene: Kabreeze\_27 Start: 23708, Stop: 25645, Start Num: 3

Candidate Starts for Kabreeze\_27:

(Start: 3 @23708 has 46 MA's), (7, 23798), (22, 24044), (23, 24050), (25, 24065), (26, 24077), (31, 24137), (32, 24140), (33, 24143), (35, 24170), (42, 24287), (43, 24302), (48, 24335), (50, 24359), (56, 24404), (66, 24542), (70, 24590), (74, 24653), (80, 24716), (81, 24719), (84, 24746), (88, 24791), (106, 24914), (108, 24947), (115, 25013), (122, 25097), (125, 25127), (126, 25133), (130, 25202), (132, 25223), (139, 25307), (142, 25361), (144, 25376), (148, 25418), (149, 25427), (158, 25556), (159, 25559), (163, 25613), (165, 25634),

Gene: King2\_22 Start: 20620, Stop: 22476, Start Num: 3

Candidate Starts for King2\_22:

(Start: 3 @20620 has 46 MA's), (7, 20710), (26, 20989), (32, 21052), (35, 21082), (48, 21247), (54, 21310), (62, 21415), (75, 21526), (78, 21547), (105, 21724), (106, 21733), (108, 21766), (115, 21832), (122, 21916), (130, 22021), (142, 22180), (143, 22192), (151, 22270), (157, 22363), (159, 22387), (160, 22390),

Gene: Klevey\_24 Start: 19247, Stop: 20917, Start Num: 3

Candidate Starts for Klevey\_24:

(Start: 3 @19247 has 46 MA's), (4, 19277), (16, 19445), (26, 19616), (57, 19967), (77, 20087), (108, 20246), (129, 20486), (153, 20750),

Gene: LeeroyJ\_24 Start: 20965, Stop: 22824, Start Num: 3

Candidate Starts for LeeroyJ\_24:

(Start: 3 @20965 has 46 MA's), (7, 21055), (15, 21154), (26, 21334), (32, 21397), (48, 21592), (54, 21655), (72, 21850), (87, 21955), (106, 22078), (107, 22108), (108, 22111), (115, 22177), (122, 22261), (139, 22471), (142, 22525), (143, 22537), (146, 22549), (150, 22612), (151, 22618), (155, 22654), (159, 22735),

Gene: Lilmac1015\_25 Start: 19237, Stop: 20907, Start Num: 3

Candidate Starts for Lilmac1015\_25:

(Start: 3 @19237 has 46 MA's), (4, 19267), (26, 19606), (57, 19957), (77, 20077), (108, 20236), (129, 20476), (153, 20740),

Gene: Linus\_27 Start: 23708, Stop: 25645, Start Num: 3

Candidate Starts for Linus\_27:

(Start: 3 @23708 has 46 MA's), (7, 23798), (22, 24044), (23, 24050), (25, 24065), (26, 24077), (31, 24137), (32, 24140), (33, 24143), (35, 24170), (36, 24215), (42, 24287), (43, 24302), (48, 24335), (50, 24359), (56, 24404), (66, 24542), (74, 24653), (80, 24716), (81, 24719), (84, 24746), (88, 24791), (106, 24914), (108, 24947), (115, 25013), (122, 25097), (125, 25127), (126, 25133), (130, 25202), (132, 25223), (139, 25307), (142, 25361), (144, 25376), (148, 25418), (149, 25427), (158, 25556), (159, 25559), (163, 25613), (165, 25634),

Gene: Lukepolites\_23 Start: 19724, Stop: 21529, Start Num: 3

Candidate Starts for Lukepolites\_23:

(Start: 3 @19724 has 46 MA's), (6, 19811), (13, 19838), (22, 20057), (24, 20066), (26, 20090), (27, 20108), (33, 20156), (37, 20237), (52, 20399), (59, 20462), (64, 20525), (65, 20528), (67, 20555), (76, 20633), (77, 20642), (84, 20690), (85, 20693), (104, 20816), (114, 20948), (134, 21188), (145, 21311), (147, 21320), (152, 21377), (154, 21392), (156, 21416), (158, 21473), (162, 21488),

Gene: Lymara\_27 Start: 23706, Stop: 25643, Start Num: 3

Candidate Starts for Lymara\_27:

(Start: 3 @23706 has 46 MA's), (7, 23796), (22, 24042), (23, 24048), (25, 24063), (26, 24075), (31, 24135), (32, 24138), (33, 24141), (35, 24168), (42, 24285), (43, 24300), (48, 24333), (56, 24402), (63,

24504), (66, 24540), (71, 24600), (74, 24651), (80, 24714), (81, 24717), (84, 24744), (106, 24912), (108, 24945), (115, 25011), (122, 25095), (126, 25131), (128, 25188), (130, 25200), (132, 25221), (139, 25305), (142, 25359), (148, 25416), (149, 25425), (151, 25449), (158, 25554), (161, 25566), (163, 25611), (165, 25632),

Gene: Martha\_24 Start: 20890, Stop: 22749, Start Num: 3

Candidate Starts for Martha\_24:

(Start: 3 @20890 has 46 MA's), (5, 20926), (7, 20980), (9, 20986), (15, 21079), (26, 21259), (48, 21517), (54, 21580), (76, 21805), (78, 21817), (82, 21838), (85, 21856), (102, 21946), (106, 22003), (108, 22036), (110, 22057), (115, 22102), (122, 22186), (142, 22450), (143, 22462), (146, 22474), (150, 22537), (151, 22543), (155, 22579), (159, 22660), (160, 22663), (162, 22672),

Gene: Mordred\_27 Start: 23708, Stop: 25645, Start Num: 3

Candidate Starts for Mordred\_27:

(Start: 3 @23708 has 46 MA's), (7, 23798), (22, 24044), (23, 24050), (25, 24065), (26, 24077), (31, 24137), (32, 24140), (33, 24143), (35, 24170), (42, 24287), (43, 24302), (48, 24335), (50, 24359), (56, 24404), (66, 24542), (70, 24590), (74, 24653), (80, 24716), (81, 24719), (84, 24746), (88, 24791), (106, 24914), (108, 24947), (115, 25013), (122, 25097), (125, 25127), (126, 25133), (130, 25202), (132, 25223), (139, 25307), (142, 25361), (144, 25376), (148, 25418), (149, 25427), (158, 25556), (159, 25559), (163, 25613), (165, 25634),

Gene: MoyaNatalis\_27 Start: 23711, Stop: 25648, Start Num: 3

Candidate Starts for MoyaNatalis\_27:

(Start: 3 @23711 has 46 MA's), (7, 23801), (22, 24047), (23, 24053), (25, 24068), (26, 24080), (31, 24140), (32, 24143), (33, 24146), (35, 24173), (42, 24290), (43, 24305), (48, 24338), (50, 24362), (55, 24404), (56, 24407), (66, 24545), (74, 24656), (80, 24719), (81, 24722), (84, 24749), (88, 24794), (106, 24917), (108, 24950), (115, 25016), (122, 25100), (125, 25130), (126, 25136), (130, 25205), (132, 25226), (139, 25310), (142, 25364), (144, 25379), (148, 25421), (149, 25430), (158, 25559), (159, 25562), (163, 25616), (165, 25637),

Gene: NathanVaag\_22 Start: 20602, Stop: 22467, Start Num: 1

Candidate Starts for NathanVaag\_22:

(Start: 1 @20602 has 4 MA's), (Start: 3 @20626 has 46 MA's), (7, 20716), (32, 21058), (35, 21088), (48, 21253), (49, 21271), (54, 21316), (72, 21511), (75, 21532), (86, 21595), (108, 21772), (115, 21838), (122, 21922), (142, 22186), (143, 22198), (150, 22273), (151, 22279), (155, 22315), (158, 22393), (159, 22396),

Gene: Nostromo\_24 Start: 20794, Stop: 22545, Start Num: 3

Candidate Starts for Nostromo\_24:

(Start: 3 @20794 has 46 MA's), (8, 20887), (9, 20890), (14, 20911), (17, 21025), (28, 21184), (48, 21421), (55, 21487), (87, 21757), (117, 21982), (133, 22144), (140, 22225), (142, 22279), (144, 22294), (151, 22372), (159, 22480),

Gene: Piccoletto\_22 Start: 20601, Stop: 22466, Start Num: 1

Candidate Starts for Piccoletto\_22:

(Start: 1 @20601 has 4 MA's), (Start: 3 @20625 has 46 MA's), (7, 20715), (32, 21057), (35, 21087), (48, 21252), (49, 21270), (54, 21315), (72, 21510), (75, 21531), (86, 21594), (108, 21771), (115, 21837), (122, 21921), (142, 22185), (143, 22197), (150, 22272), (151, 22278), (155, 22314), (158, 22392), (159, 22395),

Gene: Pippa\_24 Start: 20988, Stop: 22847, Start Num: 3

Candidate Starts for Pippa\_24:

(Start: 3 @20988 has 46 MA's), (5, 21024), (7, 21078), (9, 21084), (15, 21177), (26, 21357), (32, 21420), (47, 21603), (48, 21615), (49, 21633), (76, 21903), (78, 21915), (82, 21936), (89, 21996), (105, 22092), (106, 22101), (108, 22134), (115, 22200), (118, 22239), (122, 22284), (142, 22548), (143, 22560), (146, 22572), (150, 22635), (151, 22641), (155, 22677), (159, 22758), (160, 22761),

Gene: Prairie\_23 Start: 19265, Stop: 20935, Start Num: 3

Candidate Starts for Prairie\_23:

(Start: 3 @19265 has 46 MA's), (4, 19295), (16, 19463), (26, 19634), (57, 19985), (77, 20105), (108, 20264), (129, 20504), (153, 20768),

Gene: PrincessTrina\_27 Start: 23711, Stop: 25648, Start Num: 3

Candidate Starts for PrincessTrina\_27:

(Start: 3 @23711 has 46 MA's), (7, 23801), (22, 24047), (23, 24053), (25, 24068), (26, 24080), (31, 24140), (32, 24143), (33, 24146), (35, 24173), (42, 24290), (43, 24305), (48, 24338), (50, 24362), (56, 24407), (66, 24545), (74, 24656), (80, 24719), (81, 24722), (84, 24749), (88, 24794), (106, 24917), (108, 24950), (115, 25016), (122, 25100), (125, 25130), (126, 25136), (130, 25205), (132, 25226), (139, 25310), (142, 25364), (144, 25379), (148, 25421), (149, 25430), (158, 25559), (159, 25562), (163, 25616), (165, 25637),

Gene: RosiePosie\_27 Start: 23711, Stop: 25648, Start Num: 3

Candidate Starts for RosiePosie\_27:

(Start: 3 @23711 has 46 MA's), (7, 23801), (22, 24047), (23, 24053), (25, 24068), (26, 24080), (31, 24140), (32, 24143), (33, 24146), (35, 24173), (42, 24290), (43, 24305), (48, 24338), (50, 24362), (56, 24407), (66, 24545), (74, 24656), (80, 24719), (81, 24722), (84, 24749), (88, 24794), (106, 24917), (108, 24950), (115, 25016), (122, 25100), (125, 25130), (126, 25136), (130, 25205), (139, 25310), (142, 25364), (144, 25379), (148, 25421), (149, 25430), (158, 25559), (159, 25562), (163, 25616), (165, 25637),

Gene: Scavito\_27 Start: 23708, Stop: 25645, Start Num: 3

Candidate Starts for Scavito\_27:

(Start: 3 @23708 has 46 MA's), (7, 23798), (22, 24044), (23, 24050), (25, 24065), (26, 24077), (31, 24137), (32, 24140), (33, 24143), (35, 24170), (42, 24287), (43, 24302), (48, 24335), (50, 24359), (56, 24404), (66, 24542), (70, 24590), (74, 24653), (80, 24716), (81, 24719), (84, 24746), (88, 24791), (106, 24914), (108, 24947), (115, 25013), (122, 25097), (125, 25127), (126, 25133), (130, 25202), (132, 25223), (139, 25307), (142, 25361), (144, 25376), (148, 25418), (149, 25427), (158, 25556), (159, 25559), (163, 25613), (165, 25634),

Gene: Shade\_24 Start: 20928, Stop: 22787, Start Num: 3

Candidate Starts for Shade\_24:

(Start: 3 @20928 has 46 MA's), (5, 20964), (7, 21018), (9, 21024), (15, 21117), (26, 21297), (48, 21555), (54, 21618), (76, 21843), (78, 21855), (82, 21876), (85, 21894), (102, 21984), (106, 22041), (108, 22074), (110, 22095), (115, 22140), (122, 22224), (142, 22488), (143, 22500), (146, 22512), (150, 22575), (151, 22581), (155, 22617), (159, 22698), (164, 22764), (165, 22773),

Gene: Sicarius2\_25 Start: 21364, Stop: 23226, Start Num: 3

Candidate Starts for Sicarius2\_25:

(Start: 3 @21364 has 46 MA's), (7, 21454), (26, 21733), (32, 21796), (45, 21967), (46, 21973), (48, 21991), (54, 22054), (69, 22237), (73, 22291), (108, 22531), (109, 22546), (111, 22573), (113, 22594), (132, 22795), (135, 22828), (142, 22933), (143, 22945), (151, 23026), (157, 23110), (159, 23134), (160, 23137),

Gene: Sonny\_24 Start: 20949, Stop: 22808, Start Num: 3

Candidate Starts for Sonny\_24:

(Start: 3 @20949 has 46 MA's), (5, 20985), (7, 21039), (9, 21045), (15, 21138), (26, 21318), (48, 21576), (54, 21639), (76, 21864), (78, 21876), (82, 21897), (85, 21915), (102, 22005), (106, 22062), (108, 22095), (110, 22116), (115, 22161), (122, 22245), (142, 22509), (143, 22521), (146, 22533), (150, 22596), (151, 22602), (155, 22638), (159, 22719), (164, 22785), (165, 22794),

Gene: StevieBAY\_24 Start: 20965, Stop: 22824, Start Num: 3

Candidate Starts for StevieBAY\_24:

(Start: 3 @20965 has 46 MA's), (7, 21055), (15, 21154), (26, 21334), (32, 21397), (48, 21592), (54, 21655), (72, 21850), (87, 21955), (106, 22078), (107, 22108), (108, 22111), (115, 22177), (122, 22261), (139, 22471), (142, 22525), (143, 22537), (146, 22549), (150, 22612), (151, 22618), (155, 22654), (159, 22735),

Gene: TaeYoung\_24 Start: 20953, Stop: 22812, Start Num: 3

Candidate Starts for TaeYoung\_24:

(Start: 3 @20953 has 46 MA's), (5, 20989), (7, 21043), (9, 21049), (15, 21142), (26, 21322), (48, 21580), (54, 21643), (76, 21868), (78, 21880), (82, 21901), (85, 21919), (102, 22009), (106, 22066), (108, 22099), (110, 22120), (115, 22165), (122, 22249), (142, 22513), (143, 22525), (146, 22537), (150, 22600), (151, 22606), (155, 22642), (159, 22723), (164, 22789), (165, 22798),

Gene: Timinator\_24 Start: 20965, Stop: 22824, Start Num: 3

Candidate Starts for Timinator\_24:

(Start: 3 @20965 has 46 MA's), (7, 21055), (15, 21154), (26, 21334), (32, 21397), (48, 21592), (54, 21655), (72, 21850), (87, 21955), (106, 22078), (107, 22108), (108, 22111), (115, 22177), (122, 22261), (139, 22471), (142, 22525), (143, 22537), (146, 22549), (150, 22612), (151, 22618), (155, 22654), (159, 22735),

Gene: Tophat\_27 Start: 23710, Stop: 25647, Start Num: 3

Candidate Starts for Tophat\_27:

(Start: 3 @23710 has 46 MA's), (7, 23800), (22, 24046), (23, 24052), (25, 24067), (26, 24079), (31, 24139), (32, 24142), (33, 24145), (35, 24172), (42, 24289), (43, 24304), (48, 24337), (50, 24361), (56, 24406), (66, 24544), (70, 24592), (74, 24655), (80, 24718), (81, 24721), (84, 24748), (88, 24793), (106, 24916), (108, 24949), (115, 25015), (122, 25099), (125, 25129), (126, 25135), (130, 25204), (132, 25225), (139, 25309), (142, 25363), (144, 25378), (148, 25420), (149, 25429), (158, 25558), (159, 25561), (163, 25615), (165, 25636),

Gene: Wyborn\_25 Start: 21342, Stop: 23201, Start Num: 3

Candidate Starts for Wyborn\_25:

(Start: 3 @21342 has 46 MA's), (7, 21432), (26, 21711), (48, 21969), (54, 22032), (69, 22215), (73, 22269), (102, 22398), (103, 22413), (108, 22509), (112, 22554), (115, 22575), (116, 22596), (127, 22701), (131, 22758), (137, 22836), (138, 22851), (142, 22908), (143, 22920), (146, 22932), (151, 23001), (159, 23109),

Gene: Zartrosa\_24 Start: 20952, Stop: 22811, Start Num: 3

Candidate Starts for Zartrosa\_24:

(Start: 3 @20952 has 46 MA's), (5, 20988), (7, 21042), (9, 21048), (15, 21141), (26, 21321), (48, 21579), (54, 21642), (76, 21867), (78, 21879), (82, 21900), (85, 21918), (102, 22008), (106, 22065), (108, 22098), (110, 22119), (115, 22164), (122, 22248), (142, 22512), (143, 22524), (146, 22536), (150, 22599), (151, 22605), (155, 22641), (159, 22722), (164, 22788), (165, 22797),