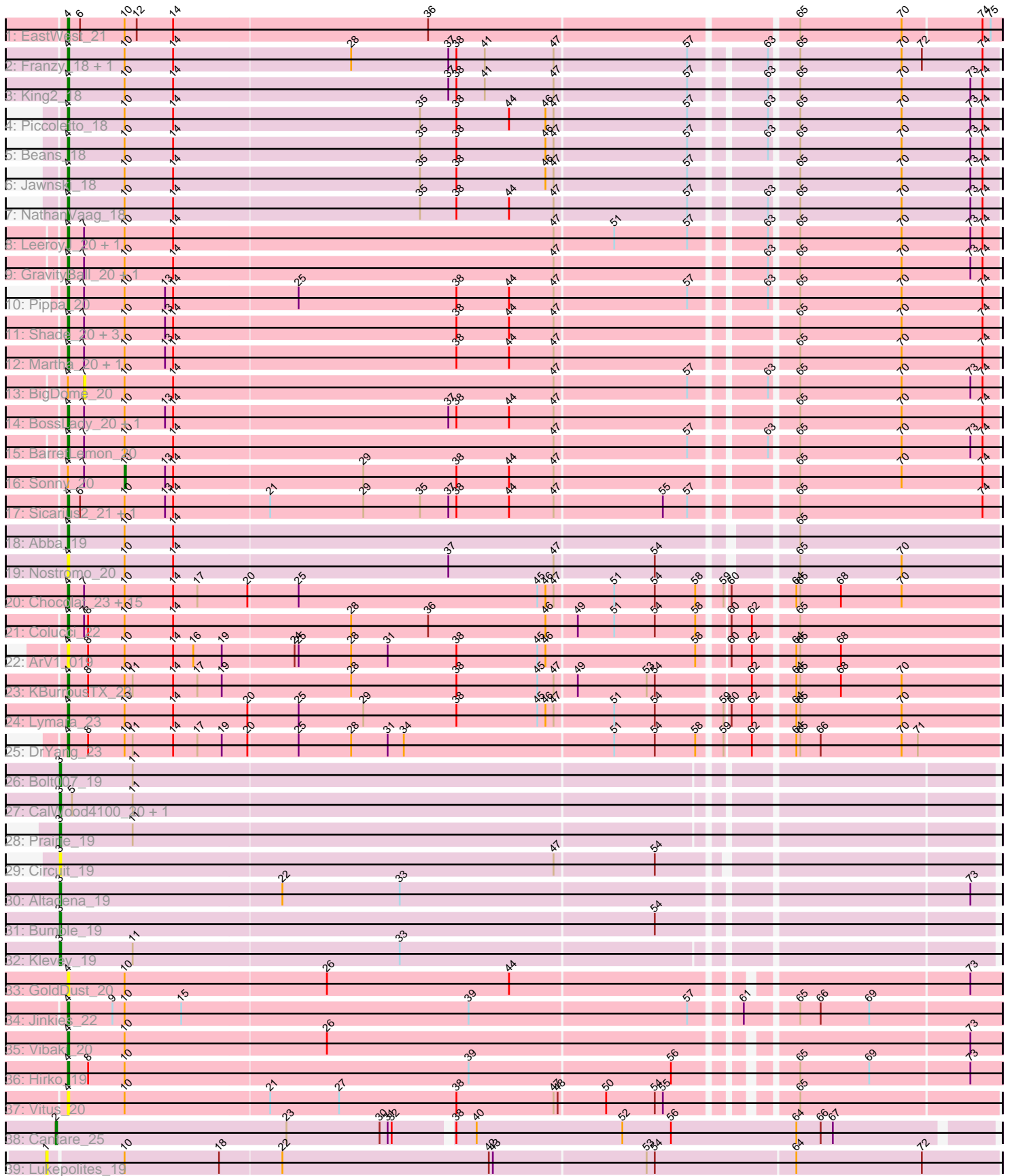


Pham 214282



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 214282 Report

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

Pham number 214282 has 64 members, 9 are drafts.

Phages represented in each track:

- Track 1 : EastWest\_21
- Track 2 : Franzy\_18, Brent\_18
- Track 3 : King2\_18
- Track 4 : Piccoletto\_18
- Track 5 : Beans\_18
- Track 6 : Jawnski\_18
- Track 7 : NathanVaag\_18
- Track 8 : LeeroyJ\_20, Timinator\_20
- Track 9 : GravityBall\_20, StevieBAY\_20
- Track 10 : Pippa\_20
- Track 11 : Shade\_20, Zartrosa\_20, JKerns\_20, Jordan\_20
- Track 12 : Martha\_20, TaeYoung\_20
- Track 13 : BigDome\_20
- Track 14 : BossLady\_20, Grekaycon\_20
- Track 15 : BarretLemon\_20
- Track 16 : Sonny\_20
- Track 17 : Sicarius2\_21, Wyborn\_21
- Track 18 : Abba\_19
- Track 19 : Nostromo\_20
- Track 20 : Chocolat\_23, MoyaNatalis\_23, Kabreeze\_23, Scavito\_23, Conboy\_23, PrincessTrina\_23, Chipper1996\_230, JaNo\_23, Chubster\_23, HumptyDumpty\_23, RosiePosie\_23, EdgarPoe\_23, Linus\_23, Mordred\_23, Tophat\_23, JayCookie\_23
- Track 21 : Colucci\_22
- Track 22 : ArV1\_019
- Track 23 : KBurrousTX\_23
- Track 24 : Lymara\_23
- Track 25 : DrYang\_23
- Track 26 : Bolt007\_19
- Track 27 : CalWood4100\_20, Lilmac1015\_20
- Track 28 : Prairie\_19
- Track 29 : Circuit\_19
- Track 30 : Altadena\_19
- Track 31 : Bumble\_19
- Track 32 : Klevey\_19
- Track 33 : GoldDust\_20
- Track 34 : Jinkies\_22
- Track 35 : Vibaki\_20

- Track 36 : Hirko\_19
- Track 37 : Vitus\_20
- Track 38 : Cantare\_25
- Track 39 : Lukepolites\_19

**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 47 of the 55 non-draft genes in the pham.

Genes that call this "Most Annotated" start:

- Abba\_19, ArV1\_019, BarretLemon\_20, Beans\_18, BossLady\_20, Brent\_18, Chipper1996\_230, Chocolat\_23, Chubster\_23, Colucci\_22, Conboy\_23, DrYang\_23, EastWest\_21, EdgarPoe\_23, Franzy\_18, GoldDust\_20, GravityBall\_20, Grekaycon\_20, Hirko\_19, HumptyDumpty\_23, JKerns\_20, JaNo\_23, Jawnski\_18, JayCookie\_23, Jinkies\_22, Jordan\_20, KBurrousTX\_23, Kabreeze\_23, King2\_18, LeeroyJ\_20, Linus\_23, Lymara\_23, Martha\_20, Mordred\_23, MoyaNatalis\_23, NathanVaag\_18, Nostromo\_20, Piccoletto\_18, Pippa\_20, PrincessTrina\_23, RosiePosie\_23, Scavito\_23, Shade\_20, Sicarius2\_21, StevieBAY\_20, TaeYoung\_20, Timinator\_20, Tophat\_23, Vibaki\_20, Vitus\_20, Wyborn\_21, Zartrosa\_20,

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

- BigDome\_20, Sonny\_20,

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

- Altadena\_19, Bolt007\_19, Bumble\_19, CalWood4100\_20, Cantare\_25, Circuit\_19, Klevey\_19, Lilmac1015\_20, Lukepolites\_19, Prairie\_19,

**Summary by start number:**

Start 1:

- Found in 1 of 64 ( 1.6% ) of genes in pham
- No Manual Annotations of this start.
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Lukepolites\_19 (singleton),

Start 2:

- Found in 1 of 64 ( 1.6% ) of genes in pham
- Manual Annotations of this start: 1 of 55
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Cantare\_25 (singleton),

Start 3:

- Found in 8 of 64 ( 12.5% ) of genes in pham
- Manual Annotations of this start: 6 of 55
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Altadena\_19 (FH), Bolt007\_19 (FH), Bumble\_19 (FH), CalWood4100\_20 (FH), Circuit\_19 (FH), Klevey\_19 (FH), Lilmac1015\_20 (FH), Prairie\_19 (FH),

#### Start 4:

- Found in 54 of 64 ( 84.4% ) of genes in pham
- Manual Annotations of this start: 47 of 55
- Called 96.3% of time when present
- Phage (with cluster) where this start called: Abba\_19 (AO3), ArV1\_019 (AR), BarretLemon\_20 (AO2), Beans\_18 (AO1), BossLady\_20 (AO2), Brent\_18 (AO1), Chipper1996\_230 (AR), Chocolat\_23 (AR), Chubster\_23 (AR), Colucci\_22 (AR), Conboy\_23 (AR), DrYang\_23 (AR), EastWest\_21 (AO), EdgarPoe\_23 (AR), Franzy\_18 (AO1), GoldDust\_20 (FL), GravityBall\_20 (AO2), Grekaycon\_20 (AO2), Hirko\_19 (FL), HumptyDumpty\_23 (AR), JKerns\_20 (AO2), JaNo\_23 (AR), Jawnski\_18 (AO1), JayCookie\_23 (AR), Jinkies\_22 (FL), Jordan\_20 (AO2), KBurrousTX\_23 (AR), Kabreeze\_23 (AR), King2\_18 (AO1), LeeroyJ\_20 (AO2), Linus\_23 (AR), Lymara\_23 (AR), Martha\_20 (AO2), Mordred\_23 (AR), MoyaNatalis\_23 (AR), NathanVaag\_18 (AO1), Nostromo\_20 (AO3), Piccoletto\_18 (AO1), Pippa\_20 (AO2), PrincessTrina\_23 (AR), RosiePosie\_23 (AR), Scavito\_23 (AR), Shade\_20 (AO2), Sicarius2\_21 (AO2), StevieBAY\_20 (AO2), TaeYoung\_20 (AO2), Timinator\_20 (AO2), Tophat\_23 (AR), Vibaki\_20 (FL), Vitus\_20 (FL), Wyborn\_21 (AO2), Zartrosa\_20 (AO2),

#### Start 7:

- Found in 33 of 64 ( 51.6% ) of genes in pham
- No Manual Annotations of this start.
- Called 3.0% of time when present
- Phage (with cluster) where this start called: BigDome\_20 (AO2),

#### Start 10:

- Found in 55 of 64 ( 85.9% ) of genes in pham
- Manual Annotations of this start: 1 of 55
- Called 1.8% of time when present
- Phage (with cluster) where this start called: Sonny\_20 (AO2),

### Summary by clusters:

There are 8 clusters represented in this pham: singleton, AO, AR, AO3, AO2, AO1, FH, FL,

Info for manual annotations of cluster AO:

- Start number 4 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.
- Start number 10 was manually annotated 1 time for cluster AO2.

Info for manual annotations of cluster AO3:

- Start number 4 was manually annotated 1 time for cluster AO3.

Info for manual annotations of cluster AR:

- Start number 4 was manually annotated 19 times for cluster AR.

Info for manual annotations of cluster FH:

- Start number 3 was manually annotated 6 times for cluster FH.

Info for manual annotations of cluster FL:

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

### **Gene Information:**

Gene: Abba\_19 Start: 16706, Stop: 17368, Start Num: 4

Candidate Starts for Abba\_19:

(Start: 4 @16706 has 47 MA's), (Start: 10 @16748 has 1 MA's), (14, 16784), (65, 17222),

Gene: Altadena\_19 Start: 15733, Stop: 16398, Start Num: 3

Candidate Starts for Altadena\_19:

(Start: 3 @15733 has 6 MA's), (22, 15895), (33, 15982), (73, 16381),

Gene: ArV1\_019 Start: 17587, Stop: 18255, Start Num: 4

Candidate Starts for ArV1\_019:

(Start: 4 @17587 has 47 MA's), (8, 17602), (Start: 10 @17629 has 1 MA's), (14, 17665), (16, 17680), (19, 17701), (24, 17752), (25, 17755), (28, 17794), (31, 17821), (38, 17872), (45, 17932), (46, 17938), (58, 18046), (60, 18064), (62, 18079), (64, 18106), (65, 18109), (68, 18139),

Gene: BarretLemon\_20 Start: 16382, Stop: 17047, Start Num: 4

Candidate Starts for BarretLemon\_20:

(Start: 4 @16382 has 47 MA's), (7, 16394), (Start: 10 @16424 has 1 MA's), (14, 16460), (47, 16739), (57, 16835), (63, 16883), (65, 16901), (70, 16976), (73, 17027), (74, 17036),

Gene: Beans\_18 Start: 16085, Stop: 16750, Start Num: 4

Candidate Starts for Beans\_18:

(Start: 4 @16085 has 47 MA's), (Start: 10 @16127 has 1 MA's), (14, 16163), (35, 16343), (38, 16370), (46, 16436), (47, 16442), (57, 16538), (63, 16586), (65, 16604), (70, 16679), (73, 16730), (74, 16739),

Gene: BigDome\_20 Start: 16382, Stop: 17035, Start Num: 7

Candidate Starts for BigDome\_20:

(Start: 4 @16370 has 47 MA's), (7, 16382), (Start: 10 @16412 has 1 MA's), (14, 16448), (47, 16727), (57, 16823), (63, 16871), (65, 16889), (70, 16964), (73, 17015), (74, 17024),

Gene: Bolt007\_19 Start: 15564, Stop: 16226, Start Num: 3

Candidate Starts for Bolt007\_19:

(Start: 3 @15564 has 6 MA's), (11, 15618),

Gene: BossLady\_20 Start: 16396, Stop: 17061, Start Num: 4

Candidate Starts for BossLady\_20:

(Start: 4 @16396 has 47 MA's), (7, 16408), (Start: 10 @16438 has 1 MA's), (13, 16468), (14, 16474), (37, 16675), (38, 16681), (44, 16720), (47, 16753), (65, 16915), (70, 16990), (74, 17050),

Gene: Brent\_18 Start: 16067, Stop: 16732, Start Num: 4

Candidate Starts for Brent\_18:

(Start: 4 @16067 has 47 MA's), (Start: 10 @16109 has 1 MA's), (14, 16145), (28, 16274), (37, 16346), (38, 16352), (41, 16373), (47, 16424), (57, 16520), (63, 16568), (65, 16586), (70, 16661), (72, 16676), (74, 16721),

Gene: Bumble\_19 Start: 15738, Stop: 16403, Start Num: 3

Candidate Starts for Bumble\_19:

(Start: 3 @15738 has 6 MA's), (54, 16173),

Gene: CalWood4100\_20 Start: 15544, Stop: 16206, Start Num: 3

Candidate Starts for CalWood4100\_20:

(Start: 3 @15544 has 6 MA's), (5, 15553), (11, 15598),

Gene: Cantare\_25 Start: 24469, Stop: 25146, Start Num: 2

Candidate Starts for Cantare\_25:

(Start: 2 @24469 has 1 MA's), (23, 24640), (30, 24709), (31, 24715), (32, 24718), (38, 24757), (40, 24772), (52, 24880), (56, 24916), (64, 25009), (66, 25027), (67, 25036),

Gene: Chipper1996\_230 Start: 19266, Stop: 19934, Start Num: 4

Candidate Starts for Chipper1996\_230:

(Start: 4 @19266 has 47 MA's), (7, 19278), (Start: 10 @19308 has 1 MA's), (14, 19344), (17, 19362), (20, 19398), (25, 19434), (45, 19611), (46, 19617), (47, 19623), (51, 19665), (54, 19695), (58, 19725), (59, 19740), (60, 19743), (64, 19785), (65, 19788), (68, 19818), (70, 19863),

Gene: Chocolat\_23 Start: 19267, Stop: 19935, Start Num: 4

Candidate Starts for Chocolat\_23:

(Start: 4 @19267 has 47 MA's), (7, 19279), (Start: 10 @19309 has 1 MA's), (14, 19345), (17, 19363), (20, 19399), (25, 19435), (45, 19612), (46, 19618), (47, 19624), (51, 19666), (54, 19696), (58, 19726), (59, 19741), (60, 19744), (64, 19786), (65, 19789), (68, 19819), (70, 19864),

Gene: Chubster\_23 Start: 19037, Stop: 19705, Start Num: 4

Candidate Starts for Chubster\_23:

(Start: 4 @19037 has 47 MA's), (7, 19049), (Start: 10 @19079 has 1 MA's), (14, 19115), (17, 19133), (20, 19169), (25, 19205), (45, 19382), (46, 19388), (47, 19394), (51, 19436), (54, 19466), (58, 19496), (59, 19511), (60, 19514), (64, 19556), (65, 19559), (68, 19589), (70, 19634),

Gene: Circuit\_19 Start: 15736, Stop: 16398, Start Num: 3

Candidate Starts for Circuit\_19:

(Start: 3 @15736 has 6 MA's), (47, 16099), (54, 16171),

Gene: Colucci\_22 Start: 18736, Stop: 19404, Start Num: 4

Candidate Starts for Colucci\_22:

(Start: 4 @18736 has 47 MA's), (7, 18748), (8, 18751), (Start: 10 @18778 has 1 MA's), (14, 18814), (28, 18943), (36, 19000), (46, 19087), (49, 19108), (51, 19135), (54, 19165), (58, 19195), (60, 19213), (62, 19228), (65, 19258),

Gene: Conboy\_23 Start: 19265, Stop: 19933, Start Num: 4

Candidate Starts for Conboy\_23:

(Start: 4 @19265 has 47 MA's), (7, 19277), (Start: 10 @19307 has 1 MA's), (14, 19343), (17, 19361), (20, 19397), (25, 19433), (45, 19610), (46, 19616), (47, 19622), (51, 19664), (54, 19694), (58, 19724), (59, 19739), (60, 19742), (64, 19784), (65, 19787), (68, 19817), (70, 19862),

Gene: DrYang\_23 Start: 19463, Stop: 20131, Start Num: 4

Candidate Starts for DrYang\_23:

(Start: 4 @19463 has 47 MA's), (8, 19478), (Start: 10 @19505 has 1 MA's), (11, 19511), (14, 19541), (17, 19559), (19, 19577), (20, 19595), (25, 19631), (28, 19670), (31, 19697), (34, 19709), (51, 19862), (54, 19892), (58, 19922), (59, 19937), (62, 19955), (64, 19982), (65, 19985), (66, 20000), (70, 20060), (71, 20072),

Gene: EastWest\_21 Start: 16369, Stop: 17040, Start Num: 4

Candidate Starts for EastWest\_21:

(Start: 4 @16369 has 47 MA's), (6, 16378), (Start: 10 @16411 has 1 MA's), (12, 16420), (14, 16447), (36, 16633), (65, 16894), (70, 16969), (74, 17026), (75, 17032),

Gene: EdgarPoe\_23 Start: 19265, Stop: 19933, Start Num: 4

Candidate Starts for EdgarPoe\_23:

(Start: 4 @19265 has 47 MA's), (7, 19277), (Start: 10 @19307 has 1 MA's), (14, 19343), (17, 19361), (20, 19397), (25, 19433), (45, 19610), (46, 19616), (47, 19622), (51, 19664), (54, 19694), (58, 19724), (59, 19739), (60, 19742), (64, 19784), (65, 19787), (68, 19817), (70, 19862),

Gene: Franzy\_18 Start: 16067, Stop: 16732, Start Num: 4

Candidate Starts for Franzy\_18:

(Start: 4 @16067 has 47 MA's), (Start: 10 @16109 has 1 MA's), (14, 16145), (28, 16274), (37, 16346), (38, 16352), (41, 16373), (47, 16424), (57, 16520), (63, 16568), (65, 16586), (70, 16661), (72, 16676), (74, 16721),

Gene: GoldDust\_20 Start: 18471, Stop: 19127, Start Num: 4

Candidate Starts for GoldDust\_20:

(Start: 4 @18471 has 47 MA's), (Start: 10 @18513 has 1 MA's), (26, 18660), (44, 18795), (73, 19104),

Gene: GravityBall\_20 Start: 16381, Stop: 17046, Start Num: 4

Candidate Starts for GravityBall\_20:

(Start: 4 @16381 has 47 MA's), (7, 16393), (Start: 10 @16423 has 1 MA's), (14, 16459), (47, 16738), (63, 16882), (65, 16900), (70, 16975), (73, 17026), (74, 17035),

Gene: Grekaycon\_20 Start: 16405, Stop: 17070, Start Num: 4

Candidate Starts for Grekaycon\_20:

(Start: 4 @16405 has 47 MA's), (7, 16417), (Start: 10 @16447 has 1 MA's), (13, 16477), (14, 16483), (37, 16684), (38, 16690), (44, 16729), (47, 16762), (65, 16924), (70, 16999), (74, 17059),

Gene: Hirko\_19 Start: 17966, Stop: 18622, Start Num: 4

Candidate Starts for Hirko\_19:

(Start: 4 @17966 has 47 MA's), (8, 17981), (Start: 10 @18008 has 1 MA's), (39, 18260), (56, 18407), (65, 18476), (69, 18527), (73, 18599),

Gene: HumptyDumpty\_23 Start: 19264, Stop: 19932, Start Num: 4

Candidate Starts for HumptyDumpty\_23:

(Start: 4 @19264 has 47 MA's), (7, 19276), (Start: 10 @19306 has 1 MA's), (14, 19342), (17, 19360), (20, 19396), (25, 19432), (45, 19609), (46, 19615), (47, 19621), (51, 19663), (54, 19693), (58, 19723), (59, 19738), (60, 19741), (64, 19783), (65, 19786), (68, 19816), (70, 19861),

Gene: JKerns\_20 Start: 16432, Stop: 17097, Start Num: 4

Candidate Starts for JKerns\_20:

(Start: 4 @16432 has 47 MA's), (7, 16444), (Start: 10 @16474 has 1 MA's), (13, 16504), (14, 16510), (38, 16717), (44, 16756), (47, 16789), (65, 16951), (70, 17026), (74, 17086),

Gene: JaNo\_23 Start: 19264, Stop: 19932, Start Num: 4

Candidate Starts for JaNo\_23:

(Start: 4 @19264 has 47 MA's), (7, 19276), (Start: 10 @19306 has 1 MA's), (14, 19342), (17, 19360), (20, 19396), (25, 19432), (45, 19609), (46, 19615), (47, 19621), (51, 19663), (54, 19693), (58, 19723), (59, 19738), (60, 19741), (64, 19783), (65, 19786), (68, 19816), (70, 19861),

Gene: Jawnski\_18 Start: 16080, Stop: 16745, Start Num: 4

Candidate Starts for Jawnski\_18:

(Start: 4 @16080 has 47 MA's), (Start: 10 @16122 has 1 MA's), (14, 16158), (35, 16338), (38, 16365), (46, 16431), (47, 16437), (57, 16533), (65, 16599), (70, 16674), (73, 16725), (74, 16734),

Gene: JayCookie\_23 Start: 19267, Stop: 19935, Start Num: 4

Candidate Starts for JayCookie\_23:

(Start: 4 @19267 has 47 MA's), (7, 19279), (Start: 10 @19309 has 1 MA's), (14, 19345), (17, 19363), (20, 19399), (25, 19435), (45, 19612), (46, 19618), (47, 19624), (51, 19666), (54, 19696), (58, 19726), (59, 19741), (60, 19744), (64, 19786), (65, 19789), (68, 19819), (70, 19864),

Gene: Jinkies\_22 Start: 18541, Stop: 19206, Start Num: 4

Candidate Starts for Jinkies\_22:

(Start: 4 @18541 has 47 MA's), (9, 18574), (Start: 10 @18583 has 1 MA's), (15, 18625), (39, 18835), (57, 18994), (61, 19024), (65, 19060), (66, 19075), (69, 19111),

Gene: Jordan\_20 Start: 16402, Stop: 17067, Start Num: 4

Candidate Starts for Jordan\_20:

(Start: 4 @16402 has 47 MA's), (7, 16414), (Start: 10 @16444 has 1 MA's), (13, 16474), (14, 16480), (38, 16687), (44, 16726), (47, 16759), (65, 16921), (70, 16996), (74, 17056),

Gene: KBurrousTX\_23 Start: 19298, Stop: 19966, Start Num: 4

Candidate Starts for KBurrousTX\_23:

(Start: 4 @19298 has 47 MA's), (8, 19313), (Start: 10 @19340 has 1 MA's), (11, 19346), (14, 19376), (17, 19394), (19, 19412), (28, 19505), (38, 19583), (45, 19643), (47, 19655), (49, 19670), (53, 19721), (54, 19727), (62, 19790), (64, 19817), (65, 19820), (68, 19850), (70, 19895),

Gene: Kabreeze\_23 Start: 19264, Stop: 19932, Start Num: 4

Candidate Starts for Kabreeze\_23:

(Start: 4 @19264 has 47 MA's), (7, 19276), (Start: 10 @19306 has 1 MA's), (14, 19342), (17, 19360), (20, 19396), (25, 19432), (45, 19609), (46, 19615), (47, 19621), (51, 19663), (54, 19693), (58, 19723), (59, 19738), (60, 19741), (64, 19783), (65, 19786), (68, 19816), (70, 19861),

Gene: King2\_18 Start: 16067, Stop: 16732, Start Num: 4

Candidate Starts for King2\_18:

(Start: 4 @16067 has 47 MA's), (Start: 10 @16109 has 1 MA's), (14, 16145), (37, 16346), (38, 16352), (41, 16373), (47, 16424), (57, 16520), (63, 16568), (65, 16586), (70, 16661), (73, 16712), (74, 16721),

Gene: Klevey\_19 Start: 15554, Stop: 16216, Start Num: 3

Candidate Starts for Klevey\_19:

(Start: 3 @15554 has 6 MA's), (11, 15608), (33, 15803),

Gene: LeeroyJ\_20 Start: 16381, Stop: 17046, Start Num: 4

Candidate Starts for LeeroyJ\_20:

(Start: 4 @16381 has 47 MA's), (7, 16393), (Start: 10 @16423 has 1 MA's), (14, 16459), (47, 16738), (51, 16780), (57, 16834), (63, 16882), (65, 16900), (70, 16975), (73, 17026), (74, 17035),

Gene: Lilmac1015\_20 Start: 15544, Stop: 16206, Start Num: 3

Candidate Starts for Lilmac1015\_20:

(Start: 3 @15544 has 6 MA's), (5, 15553), (11, 15598),

Gene: Linus\_23 Start: 19264, Stop: 19932, Start Num: 4



Candidate Starts for Linus\_23:

(Start: 4 @19264 has 47 MA's), (7, 19276), (Start: 10 @19306 has 1 MA's), (14, 19342), (17, 19360), (20, 19396), (25, 19432), (45, 19609), (46, 19615), (47, 19621), (51, 19663), (54, 19693), (58, 19723), (59, 19738), (60, 19741), (64, 19783), (65, 19786), (68, 19816), (70, 19861),

Gene: Lukepolites\_19 Start: 15532, Stop: 16224, Start Num: 1

Candidate Starts for Lukepolites\_19:

(1, 15532), (Start: 10 @15586 has 1 MA's), (18, 15655), (22, 15700), (42, 15853), (43, 15856), (53, 15967), (54, 15973), (64, 16075), (72, 16168),

Gene: Lymara\_23 Start: 19262, Stop: 19930, Start Num: 4

Candidate Starts for Lymara\_23:

(Start: 4 @19262 has 47 MA's), (Start: 10 @19304 has 1 MA's), (14, 19340), (20, 19394), (25, 19430), (29, 19478), (38, 19547), (45, 19607), (46, 19613), (47, 19619), (51, 19661), (54, 19691), (59, 19736), (60, 19739), (62, 19754), (64, 19781), (65, 19784), (70, 19859),

Gene: Martha\_20 Start: 16343, Stop: 17008, Start Num: 4

Candidate Starts for Martha\_20:

(Start: 4 @16343 has 47 MA's), (7, 16355), (Start: 10 @16385 has 1 MA's), (13, 16415), (14, 16421), (38, 16628), (44, 16667), (47, 16700), (65, 16862), (70, 16937), (74, 16997),

Gene: Mordred\_23 Start: 19264, Stop: 19932, Start Num: 4

Candidate Starts for Mordred\_23:

(Start: 4 @19264 has 47 MA's), (7, 19276), (Start: 10 @19306 has 1 MA's), (14, 19342), (17, 19360), (20, 19396), (25, 19432), (45, 19609), (46, 19615), (47, 19621), (51, 19663), (54, 19693), (58, 19723), (59, 19738), (60, 19741), (64, 19783), (65, 19786), (68, 19816), (70, 19861),

Gene: MoyaNatalis\_23 Start: 19267, Stop: 19935, Start Num: 4

Candidate Starts for MoyaNatalis\_23:

(Start: 4 @19267 has 47 MA's), (7, 19279), (Start: 10 @19309 has 1 MA's), (14, 19345), (17, 19363), (20, 19399), (25, 19435), (45, 19612), (46, 19618), (47, 19624), (51, 19666), (54, 19696), (58, 19726), (59, 19741), (60, 19744), (64, 19786), (65, 19789), (68, 19819), (70, 19864),

Gene: NathanVaag\_18 Start: 16073, Stop: 16738, Start Num: 4

Candidate Starts for NathanVaag\_18:

(Start: 4 @16073 has 47 MA's), (Start: 10 @16115 has 1 MA's), (14, 16151), (35, 16331), (38, 16358), (44, 16397), (47, 16430), (57, 16526), (63, 16574), (65, 16592), (70, 16667), (73, 16718), (74, 16727),

Gene: Nostromo\_20 Start: 16341, Stop: 17003, Start Num: 4

Candidate Starts for Nostromo\_20:

(Start: 4 @16341 has 47 MA's), (Start: 10 @16383 has 1 MA's), (14, 16419), (37, 16620), (47, 16698), (54, 16770), (65, 16857), (70, 16932),

Gene: Piccoletto\_18 Start: 16073, Stop: 16738, Start Num: 4

Candidate Starts for Piccoletto\_18:

(Start: 4 @16073 has 47 MA's), (Start: 10 @16115 has 1 MA's), (14, 16151), (35, 16331), (38, 16358), (44, 16397), (46, 16424), (47, 16430), (57, 16526), (63, 16574), (65, 16592), (70, 16667), (73, 16718), (74, 16727),

Gene: Pippa\_20 Start: 16434, Stop: 17099, Start Num: 4

Candidate Starts for Pippa\_20:

(Start: 4 @16434 has 47 MA's), (7, 16446), (Start: 10 @16476 has 1 MA's), (13, 16506), (14, 16512), (25, 16602), (38, 16719), (44, 16758), (47, 16791), (57, 16887), (63, 16935), (65, 16953), (70, 17028),

(74, 17088),

Gene: Prairie\_19 Start: 15551, Stop: 16213, Start Num: 3

Candidate Starts for Prairie\_19:

(Start: 3 @15551 has 6 MA's), (11, 15605),

Gene: PrincessTrina\_23 Start: 19267, Stop: 19935, Start Num: 4

Candidate Starts for PrincessTrina\_23:

(Start: 4 @19267 has 47 MA's), (7, 19279), (Start: 10 @19309 has 1 MA's), (14, 19345), (17, 19363), (20, 19399), (25, 19435), (45, 19612), (46, 19618), (47, 19624), (51, 19666), (54, 19696), (58, 19726), (59, 19741), (60, 19744), (64, 19786), (65, 19789), (68, 19819), (70, 19864),

Gene: RosiePosie\_23 Start: 19267, Stop: 19935, Start Num: 4

Candidate Starts for RosiePosie\_23:

(Start: 4 @19267 has 47 MA's), (7, 19279), (Start: 10 @19309 has 1 MA's), (14, 19345), (17, 19363), (20, 19399), (25, 19435), (45, 19612), (46, 19618), (47, 19624), (51, 19666), (54, 19696), (58, 19726), (59, 19741), (60, 19744), (64, 19786), (65, 19789), (68, 19819), (70, 19864),

Gene: Scavito\_23 Start: 19264, Stop: 19932, Start Num: 4

Candidate Starts for Scavito\_23:

(Start: 4 @19264 has 47 MA's), (7, 19276), (Start: 10 @19306 has 1 MA's), (14, 19342), (17, 19360), (20, 19396), (25, 19432), (45, 19609), (46, 19615), (47, 19621), (51, 19663), (54, 19693), (58, 19723), (59, 19738), (60, 19741), (64, 19783), (65, 19786), (68, 19816), (70, 19861),

Gene: Shade\_20 Start: 16381, Stop: 17046, Start Num: 4

Candidate Starts for Shade\_20:

(Start: 4 @16381 has 47 MA's), (7, 16393), (Start: 10 @16423 has 1 MA's), (13, 16453), (14, 16459), (38, 16666), (44, 16705), (47, 16738), (65, 16900), (70, 16975), (74, 17035),

Gene: Sicarius2\_21 Start: 16888, Stop: 17553, Start Num: 4

Candidate Starts for Sicarius2\_21:

(Start: 4 @16888 has 47 MA's), (6, 16897), (Start: 10 @16930 has 1 MA's), (13, 16960), (14, 16966), (21, 17035), (29, 17104), (35, 17146), (37, 17167), (38, 17173), (44, 17212), (47, 17245), (55, 17323), (57, 17341), (65, 17407), (74, 17542),

Gene: Sonny\_20 Start: 16444, Stop: 17067, Start Num: 10

Candidate Starts for Sonny\_20:

(Start: 4 @16402 has 47 MA's), (7, 16414), (Start: 10 @16444 has 1 MA's), (13, 16474), (14, 16480), (29, 16618), (38, 16687), (44, 16726), (47, 16759), (65, 16921), (70, 16996), (74, 17056),

Gene: StevieBAY\_20 Start: 16381, Stop: 17046, Start Num: 4

Candidate Starts for StevieBAY\_20:

(Start: 4 @16381 has 47 MA's), (7, 16393), (Start: 10 @16423 has 1 MA's), (14, 16459), (47, 16738), (63, 16882), (65, 16900), (70, 16975), (73, 17026), (74, 17035),

Gene: TaeYoung\_20 Start: 16406, Stop: 17071, Start Num: 4

Candidate Starts for TaeYoung\_20:

(Start: 4 @16406 has 47 MA's), (7, 16418), (Start: 10 @16448 has 1 MA's), (13, 16478), (14, 16484), (38, 16691), (44, 16730), (47, 16763), (65, 16925), (70, 17000), (74, 17060),

Gene: Timinator\_20 Start: 16381, Stop: 17046, Start Num: 4

Candidate Starts for Timinator\_20:

(Start: 4 @16381 has 47 MA's), (7, 16393), (Start: 10 @16423 has 1 MA's), (14, 16459), (47, 16738), (51, 16780), (57, 16834), (63, 16882), (65, 16900), (70, 16975), (73, 17026), (74, 17035),

Gene: Tophat\_23 Start: 19266, Stop: 19934, Start Num: 4

Candidate Starts for Tophat\_23:

(Start: 4 @19266 has 47 MA's), (7, 19278), (Start: 10 @19308 has 1 MA's), (14, 19344), (17, 19362), (20, 19398), (25, 19434), (45, 19611), (46, 19617), (47, 19623), (51, 19665), (54, 19695), (58, 19725), (59, 19740), (60, 19743), (64, 19785), (65, 19788), (68, 19818), (70, 19863),

Gene: Vibaki\_20 Start: 18352, Stop: 19008, Start Num: 4

Candidate Starts for Vibaki\_20:

(Start: 4 @18352 has 47 MA's), (Start: 10 @18394 has 1 MA's), (26, 18541), (73, 18985),

Gene: Vitus\_20 Start: 17510, Stop: 18163, Start Num: 4

Candidate Starts for Vitus\_20:

(Start: 4 @17510 has 47 MA's), (Start: 10 @17552 has 1 MA's), (21, 17657), (27, 17708), (38, 17795), (47, 17867), (48, 17870), (50, 17903), (54, 17939), (55, 17945), (65, 18020),

Gene: Wyborn\_21 Start: 16749, Stop: 17414, Start Num: 4

Candidate Starts for Wyborn\_21:

(Start: 4 @16749 has 47 MA's), (6, 16758), (Start: 10 @16791 has 1 MA's), (13, 16821), (14, 16827), (21, 16896), (29, 16965), (35, 17007), (37, 17028), (38, 17034), (44, 17073), (47, 17106), (55, 17184), (57, 17202), (65, 17268), (74, 17403),

Gene: Zartrosa\_20 Start: 16405, Stop: 17070, Start Num: 4

Candidate Starts for Zartrosa\_20:

(Start: 4 @16405 has 47 MA's), (7, 16417), (Start: 10 @16447 has 1 MA's), (13, 16477), (14, 16483), (38, 16690), (44, 16729), (47, 16762), (65, 16924), (70, 16999), (74, 17059),