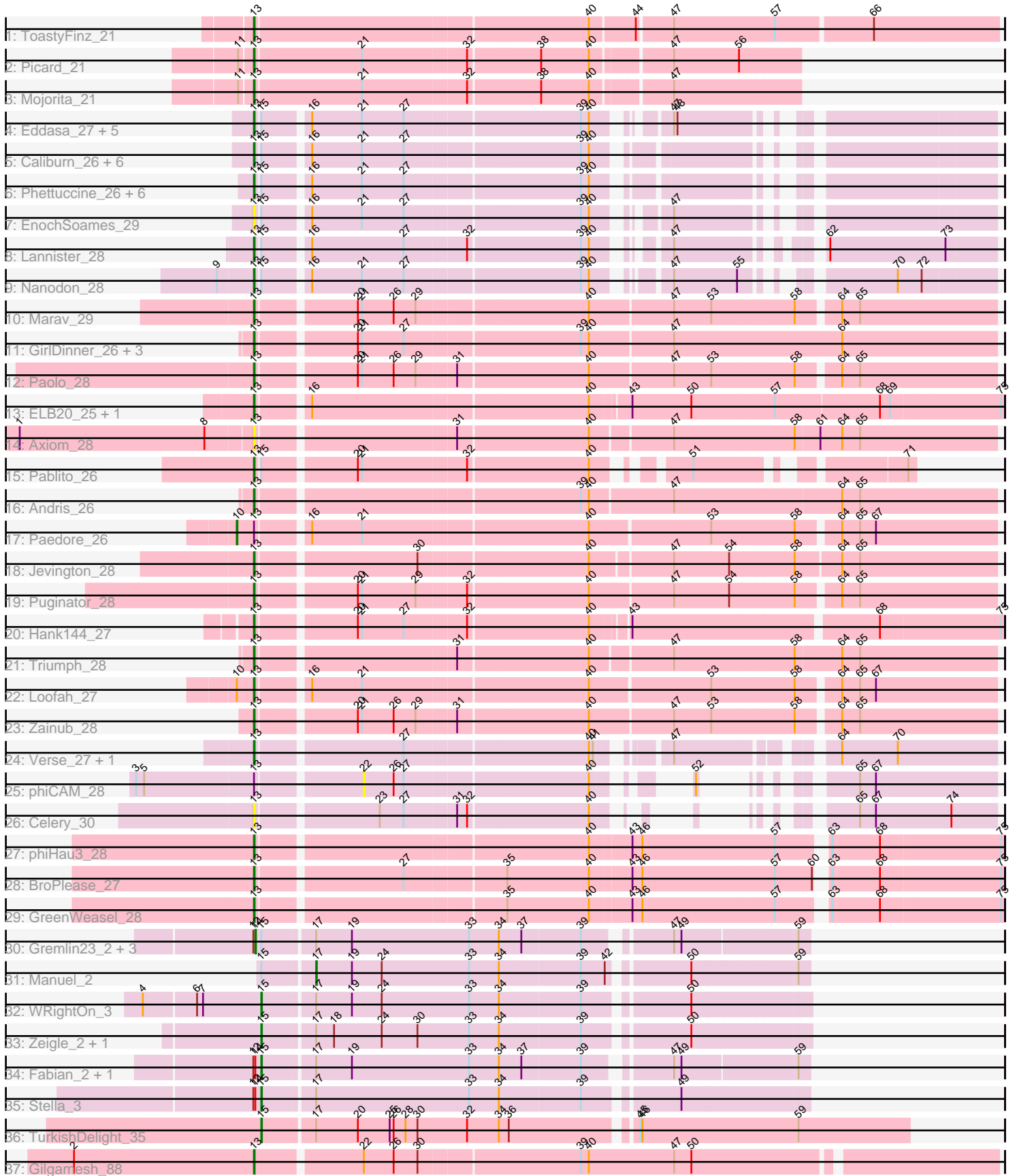


# Pham 214278



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 214278 Report

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

WARNING: Pham size does not match number of genes in report. Either unphamerated genes have been added (by you) or starterator has removed genes due to invalid start codon.

Pham number 214278 has 64 members, 5 are drafts.

Phages represented in each track:

- Track 1 : ToastyFinz\_21
- Track 2 : Picard\_21
- Track 3 : Mojorita\_21
- Track 4 : Eddasa\_27, Izzy\_27, Jash\_27, Oliynyk\_27, BryanRecycles\_27, Rusticus\_27
- Track 5 : Caliburn\_26, Aaronocolus\_26, Hydra\_28, Legacy\_26, Unstoppable\_26, Leviticus\_26, Ozzie\_26
- Track 6 : Phettuccine\_26, Indigo\_25, Esperer\_26, Bovely\_26, BeardedLady\_27, Nerdos\_26, SunsetPointe\_26
- Track 7 : EnochSoames\_29
- Track 8 : Lannister\_28
- Track 9 : Nanodon\_28
- Track 10 : Marav\_29
- Track 11 : GirlDinner\_26, Animus\_27, Janus\_27, SqueakyClean\_27
- Track 12 : Paolo\_28
- Track 13 : ELB20\_25, R4\_26
- Track 14 : Axiom\_28
- Track 15 : Pablito\_26
- Track 16 : Andris\_26
- Track 17 : Paedore\_26
- Track 18 : Jevington\_28
- Track 19 : Puginator\_28
- Track 20 : Hank144\_27
- Track 21 : Triumph\_28
- Track 22 : Loofah\_27
- Track 23 : Zainub\_28
- Track 24 : Verse\_27, Amela\_27
- Track 25 : phiCAM\_28
- Track 26 : Celery\_30
- Track 27 : phiHau3\_28
- Track 28 : BroPlease\_27
- Track 29 : GreenWeasel\_28
- Track 30 : Gremlin23\_2, FlowerPower\_2, Geostin\_2, Vorvolakos\_2

- Track 31 : Manuel\_2
- Track 32 : WRightOn\_3
- Track 33 : Zeigle\_2, Kumquat\_2
- Track 34 : Fabian\_2, RetrieverFever\_2
- Track 35 : Stella\_3
- Track 36 : TurkishDelight\_35
- Track 37 : Gilgamesh\_88

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

The start number called the most often in the published annotations is 13, it was called in 47 of the 59 non-draft genes in the pham.

Genes that call this "Most Annotated" start:

- Aaronocolus\_26, Amela\_27, Andris\_26, Animus\_27, Axiom\_28, BeardedLady\_27, Bovely\_26, BroPlease\_27, BryanRecycles\_27, Caliburn\_26, Celery\_30, ELB20\_25, Eddasa\_27, EnochSoames\_29, Esperer\_26, Gilgamesh\_88, GirlDinner\_26, GreenWeasel\_28, Hank144\_27, Hydra\_28, Indigo\_25, Izzy\_27, Janus\_27, Jash\_27, Jevington\_28, Lannister\_28, Legacy\_26, Leviticus\_26, Loofah\_27, Marav\_29, Mojorita\_21, Nanodon\_28, Nerdos\_26, Oliynyk\_27, Ozzie\_26, Pablito\_26, Paolo\_28, Phettuccine\_26, Picard\_21, Puginator\_28, R4\_26, Rusticus\_27, SqueakyClean\_27, SunsetPointe\_26, ToastyFinz\_21, Triumph\_28, Unstoppable\_26, Verse\_27, Zainub\_28, phiHau3\_28,

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

- Paedore\_26, phiCAM\_28,

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

- Fabian\_2, FlowerPower\_2, Geostin\_2, Gremlin23\_2, Kumquat\_2, Manuel\_2, RetrieverFever\_2, Stella\_3, TurkishDelight\_35, Vorvolakos\_2, WRightOn\_3, Zeigle\_2,

**Summary by start number:**

Start 10:

- Found in 2 of 64 ( 3.1% ) of genes in pham
- Manual Annotations of this start: 1 of 59
- Called 50.0% of time when present
- Phage (with cluster) where this start called: Paedore\_26 (BD2),

Start 13:

- Found in 52 of 64 ( 81.2% ) of genes in pham
- Manual Annotations of this start: 47 of 59
- Called 96.2% of time when present
- Phage (with cluster) where this start called: Aaronocolus\_26 (BD1), Amela\_27 (BD3), Andris\_26 (BD2), Animus\_27 (BD2), Axiom\_28 (BD2), BeardedLady\_27 (BD1), Bovely\_26 (BD1), BroPlease\_27 (BD4), BryanRecycles\_27 (BD1), Caliburn\_26 (BD1), Celery\_30 (BD3), ELB20\_25 (BD2), Eddasa\_27 (BD1), EnochSoames\_29 (BD1), Esperer\_26 (BD1), Gilgamesh\_88 (singleton), GirlDinner\_26 (BD2), GreenWeasel\_28 (BD4), Hank144\_27 (BD2), Hydra\_28 (BD1),

Indigo\_25 (BD1), Izzy\_27 (BD1), Janus\_27 (BD2), Jash\_27 (BD1), Jevington\_28 (BD2), Lannister\_28 (BD1), Legacy\_26 (BD1), Leviticus\_26 (BD1), Loofah\_27 (BD2), Marav\_29 (BD2), Mojorita\_21 (BC1), Nanodon\_28 (BD1), Nerdos\_26 (BD1), Oliynyk\_27 (BD1), Ozzie\_26 (BD1), Pablito\_26 (BD2), Paolo\_28 (BD2), Phettuccine\_26 (BD1), Picard\_21 (BC1), Puginator\_28 (BD2), R4\_26 (BD2), Rusticus\_27 (BD1), SqueakyClean\_27 (BD2), SunsetPointe\_26 (BD1), ToastyFinz\_21 (BC1), Triumph\_28 (BD2), Unstoppable\_26 (BD1), Verse\_27 (BD3), Zainub\_28 (BD2), phiHau3\_28 (BD4),

Start 14:

- Found in 7 of 64 ( 10.9% ) of genes in pham
- Manual Annotations of this start: 3 of 59
- Called 57.1% of time when present
- Phage (with cluster) where this start called: FlowerPower\_2 (BF), Geostin\_2 (BF), Gremlin23\_2 (BF), Vorvolakos\_2 (BF),

Start 15:

- Found in 36 of 64 ( 56.2% ) of genes in pham
- Manual Annotations of this start: 7 of 59
- Called 19.4% of time when present
- Phage (with cluster) where this start called: Fabian\_2 (BF), Kumquat\_2 (BF), RetrieverFever\_2 (BF), Stella\_3 (BF), TurkishDelight\_35 (singleton), WRightOn\_3 (BF), Zeigle\_2 (BF),

Start 17:

- Found in 12 of 64 ( 18.8% ) of genes in pham
- Manual Annotations of this start: 1 of 59
- Called 8.3% of time when present
- Phage (with cluster) where this start called: Manuel\_2 (BF),

Start 22:

- Found in 2 of 64 ( 3.1% ) of genes in pham
- No Manual Annotations of this start.
- Called 50.0% of time when present
- Phage (with cluster) where this start called: phiCAM\_28 (BD3),

### **Summary by clusters:**

There are 7 clusters represented in this pham: BF, singleton, BD4, BD1, BD3, BD2, BC1,

Info for manual annotations of cluster BC1:

- Start number 13 was manually annotated 3 times for cluster BC1.

Info for manual annotations of cluster BD1:

- Start number 13 was manually annotated 22 times for cluster BD1.

Info for manual annotations of cluster BD2:

- Start number 10 was manually annotated 1 time for cluster BD2.
- Start number 13 was manually annotated 16 times for cluster BD2.

Info for manual annotations of cluster BD3:

- Start number 13 was manually annotated 2 times for cluster BD3.

Info for manual annotations of cluster BD4:

- Start number 13 was manually annotated 3 times for cluster BD4.

Info for manual annotations of cluster BF:

- Start number 14 was manually annotated 3 times for cluster BF.
- Start number 15 was manually annotated 6 times for cluster BF.
- Start number 17 was manually annotated 1 time for cluster BF.

### ***Gene Information:***

Gene: Aaronocolus\_26 Start: 20975, Stop: 21928, Start Num: 13

Candidate Starts for Aaronocolus\_26:

(Start: 13 @20975 has 47 MA's), (Start: 15 @20981 has 7 MA's), (16, 21041), (21, 21116), (27, 21179), (39, 21434), (40, 21446),

Gene: Amela\_27 Start: 23390, Stop: 24361, Start Num: 13

Candidate Starts for Amela\_27:

(Start: 13 @23390 has 47 MA's), (27, 23594), (40, 23861), (41, 23867), (47, 23936), (64, 24131), (70, 24212),

Gene: Andris\_26 Start: 21446, Stop: 22519, Start Num: 13

Candidate Starts for Andris\_26:

(Start: 13 @21446 has 47 MA's), (39, 21905), (40, 21917), (47, 22040), (64, 22286), (65, 22313),

Gene: Animus\_27 Start: 21785, Stop: 22861, Start Num: 13

Candidate Starts for Animus\_27:

(Start: 13 @21785 has 47 MA's), (20, 21920), (21, 21926), (27, 21989), (39, 22244), (40, 22256), (47, 22379), (64, 22628),

Gene: Axiom\_28 Start: 21619, Stop: 22686, Start Num: 13

Candidate Starts for Axiom\_28:

(1, 21274), (8, 21553), (Start: 13 @21619 has 47 MA's), (31, 21898), (40, 22090), (47, 22207), (58, 22384), (61, 22420), (64, 22453), (65, 22480),

Gene: BeardedLady\_27 Start: 21228, Stop: 22181, Start Num: 13

Candidate Starts for BeardedLady\_27:

(Start: 13 @21228 has 47 MA's), (Start: 15 @21234 has 7 MA's), (16, 21294), (21, 21369), (27, 21432), (39, 21687), (40, 21699),

Gene: Bovely\_26 Start: 20981, Stop: 21934, Start Num: 13

Candidate Starts for Bovely\_26:

(Start: 13 @20981 has 47 MA's), (Start: 15 @20987 has 7 MA's), (16, 21047), (21, 21122), (27, 21185), (39, 21440), (40, 21452),

Gene: BroPlease\_27 Start: 21400, Stop: 22452, Start Num: 13

Candidate Starts for BroPlease\_27:

(Start: 13 @21400 has 47 MA's), (27, 21604), (35, 21748), (40, 21871), (43, 21931), (46, 21946), (57, 22141), (60, 22195), (63, 22201), (68, 22270), (75, 22447),

Gene: BryanRecycles\_27 Start: 21344, Stop: 22285, Start Num: 13

Candidate Starts for BryanRecycles\_27:

(Start: 13 @21344 has 47 MA's), (Start: 15 @21350 has 7 MA's), (16, 21410), (21, 21485), (27, 21548), (39, 21803), (40, 21815), (47, 21887), (48, 21890),

Gene: Caliburn\_26 Start: 20958, Stop: 21911, Start Num: 13

Candidate Starts for Caliburn\_26:

(Start: 13 @20958 has 47 MA's), (Start: 15 @20964 has 7 MA's), (16, 21024), (21, 21099), (27, 21162), (39, 21417), (40, 21429),

Gene: Celery\_30 Start: 22672, Stop: 23478, Start Num: 13

Candidate Starts for Celery\_30:

(Start: 13 @22672 has 47 MA's), (23, 22840), (27, 22876), (31, 22951), (32, 22966), (40, 23143), (65, 23275), (67, 23299), (74, 23410),

Gene: ELB20\_25 Start: 21866, Stop: 22936, Start Num: 13

Candidate Starts for ELB20\_25:

(Start: 13 @21866 has 47 MA's), (16, 21932), (40, 22337), (43, 22391), (50, 22478), (57, 22601), (68, 22754), (69, 22769), (75, 22931),

Gene: Eddasa\_27 Start: 21344, Stop: 22285, Start Num: 13

Candidate Starts for Eddasa\_27:

(Start: 13 @21344 has 47 MA's), (Start: 15 @21350 has 7 MA's), (16, 21410), (21, 21485), (27, 21548), (39, 21803), (40, 21815), (47, 21887), (48, 21890),

Gene: EnochSoames\_29 Start: 21339, Stop: 22280, Start Num: 13

Candidate Starts for EnochSoames\_29:

(Start: 13 @21339 has 47 MA's), (Start: 15 @21345 has 7 MA's), (16, 21405), (21, 21480), (27, 21543), (39, 21798), (40, 21810), (47, 21882),

Gene: Esperer\_26 Start: 20794, Stop: 21747, Start Num: 13

Candidate Starts for Esperer\_26:

(Start: 13 @20794 has 47 MA's), (Start: 15 @20800 has 7 MA's), (16, 20860), (21, 20935), (27, 20998), (39, 21253), (40, 21265),

Gene: Fabian\_2 Start: 2609, Stop: 3376, Start Num: 15

Candidate Starts for Fabian\_2:

(12, 2600), (Start: 14 @2603 has 3 MA's), (Start: 15 @2609 has 7 MA's), (Start: 17 @2681 has 1 MA's), (19, 2735), (33, 2912), (34, 2957), (37, 2990), (39, 3077), (47, 3185), (49, 3194), (59, 3359),

Gene: FlowerPower\_2 Start: 2603, Stop: 3376, Start Num: 14

Candidate Starts for FlowerPower\_2:

(12, 2600), (Start: 14 @2603 has 3 MA's), (Start: 15 @2609 has 7 MA's), (Start: 17 @2681 has 1 MA's), (19, 2735), (33, 2912), (34, 2957), (37, 2990), (39, 3077), (47, 3185), (49, 3194), (59, 3359),

Gene: Geostin\_2 Start: 2603, Stop: 3376, Start Num: 14

Candidate Starts for Geostin\_2:

(12, 2600), (Start: 14 @2603 has 3 MA's), (Start: 15 @2609 has 7 MA's), (Start: 17 @2681 has 1 MA's), (19, 2735), (33, 2912), (34, 2957), (37, 2990), (39, 3077), (47, 3185), (49, 3194), (59, 3359),

Gene: Gilgamesh\_88 Start: 82382, Stop: 83437, Start Num: 13

Candidate Starts for Gilgamesh\_88:

(2, 82112), (Start: 13 @82382 has 47 MA's), (22, 82529), (26, 82574), (30, 82610), (39, 82844), (40, 82856), (47, 82985), (50, 83009),

Gene: GirlDinner\_26 Start: 21447, Stop: 22523, Start Num: 13

Candidate Starts for GirlDinner\_26:

(Start: 13 @21447 has 47 MA's), (20, 21582), (21, 21588), (27, 21651), (39, 21906), (40, 21918), (47, 22041), (64, 22290),

Gene: GreenWeasel\_28 Start: 21409, Stop: 22461, Start Num: 13

Candidate Starts for GreenWeasel\_28:

(Start: 13 @21409 has 47 MA's), (35, 21757), (40, 21880), (43, 21940), (46, 21955), (57, 22150), (63, 22210), (68, 22279), (75, 22456),

Gene: Gremlin23\_2 Start: 2603, Stop: 3376, Start Num: 14

Candidate Starts for Gremlin23\_2:

(12, 2600), (Start: 14 @2603 has 3 MA's), (Start: 15 @2609 has 7 MA's), (Start: 17 @2681 has 1 MA's), (19, 2735), (33, 2912), (34, 2957), (37, 2990), (39, 3077), (47, 3185), (49, 3194), (59, 3359),

Gene: Hank144\_27 Start: 21897, Stop: 22949, Start Num: 13

Candidate Starts for Hank144\_27:

(Start: 13 @21897 has 47 MA's), (20, 22032), (21, 22038), (27, 22101), (32, 22191), (40, 22368), (43, 22416), (68, 22767), (75, 22944),

Gene: Hydra\_28 Start: 21506, Stop: 22459, Start Num: 13

Candidate Starts for Hydra\_28:

(Start: 13 @21506 has 47 MA's), (Start: 15 @21512 has 7 MA's), (16, 21572), (21, 21647), (27, 21710), (39, 21965), (40, 21977),

Gene: Indigo\_25 Start: 20974, Stop: 21927, Start Num: 13

Candidate Starts for Indigo\_25:

(Start: 13 @20974 has 47 MA's), (Start: 15 @20980 has 7 MA's), (16, 21040), (21, 21115), (27, 21178), (39, 21433), (40, 21445),

Gene: Izzy\_27 Start: 21391, Stop: 22332, Start Num: 13

Candidate Starts for Izzy\_27:

(Start: 13 @21391 has 47 MA's), (Start: 15 @21397 has 7 MA's), (16, 21457), (21, 21532), (27, 21595), (39, 21850), (40, 21862), (47, 21934), (48, 21937),

Gene: Janus\_27 Start: 21785, Stop: 22861, Start Num: 13

Candidate Starts for Janus\_27:

(Start: 13 @21785 has 47 MA's), (20, 21920), (21, 21926), (27, 21989), (39, 22244), (40, 22256), (47, 22379), (64, 22628),

Gene: Jash\_27 Start: 21344, Stop: 22285, Start Num: 13

Candidate Starts for Jash\_27:

(Start: 13 @21344 has 47 MA's), (Start: 15 @21350 has 7 MA's), (16, 21410), (21, 21485), (27, 21548), (39, 21803), (40, 21815), (47, 21887), (48, 21890),

Gene: Jevington\_28 Start: 22132, Stop: 23196, Start Num: 13

Candidate Starts for Jevington\_28:

(Start: 13 @22132 has 47 MA's), (30, 22357), (40, 22603), (47, 22720), (54, 22801), (58, 22897), (64, 22963), (65, 22990),

Gene: Kumquat\_2 Start: 2632, Stop: 3411, Start Num: 15

Candidate Starts for Kumquat\_2:

(Start: 15 @2632 has 7 MA's), (Start: 17 @2704 has 1 MA's), (18, 2731), (24, 2803), (30, 2857), (33, 2935), (34, 2980), (39, 3100), (50, 3238),

Gene: Lannister\_28 Start: 22046, Stop: 22999, Start Num: 13

Candidate Starts for Lannister\_28:

(Start: 13 @22046 has 47 MA's), (Start: 15 @22052 has 7 MA's), (16, 22112), (27, 22250), (32, 22340), (39, 22505), (40, 22517), (47, 22586), (62, 22751), (73, 22925),

Gene: Legacy\_26 Start: 20949, Stop: 21902, Start Num: 13

Candidate Starts for Legacy\_26:

(Start: 13 @20949 has 47 MA's), (Start: 15 @20955 has 7 MA's), (16, 21015), (21, 21090), (27, 21153), (39, 21408), (40, 21420),

Gene: Leviticus\_26 Start: 20978, Stop: 21931, Start Num: 13

Candidate Starts for Leviticus\_26:

(Start: 13 @20978 has 47 MA's), (Start: 15 @20984 has 7 MA's), (16, 21044), (21, 21119), (27, 21182), (39, 21437), (40, 21449),

Gene: Loofah\_27 Start: 21786, Stop: 22841, Start Num: 13

Candidate Starts for Loofah\_27:

(Start: 10 @21765 has 1 MA's), (Start: 13 @21786 has 47 MA's), (16, 21852), (21, 21927), (40, 22257), (53, 22428), (58, 22551), (64, 22608), (65, 22635), (67, 22659),

Gene: Manuel\_2 Start: 2715, Stop: 3416, Start Num: 17

Candidate Starts for Manuel\_2:

(Start: 15 @2643 has 7 MA's), (Start: 17 @2715 has 1 MA's), (19, 2769), (24, 2814), (33, 2946), (34, 2991), (39, 3111), (42, 3144), (50, 3246), (59, 3399),

Gene: Marav\_29 Start: 22471, Stop: 23532, Start Num: 13

Candidate Starts for Marav\_29:

(Start: 13 @22471 has 47 MA's), (20, 22606), (21, 22612), (26, 22660), (29, 22693), (40, 22942), (47, 23065), (53, 23119), (58, 23242), (64, 23299), (65, 23326),

Gene: Mojarita\_21 Start: 16303, Stop: 17085, Start Num: 13

Candidate Starts for Mojarita\_21:

(11, 16285), (Start: 13 @16303 has 47 MA's), (21, 16459), (32, 16612), (38, 16717), (40, 16789), (47, 16900),

Gene: Nanodon\_28 Start: 21617, Stop: 22561, Start Num: 13

Candidate Starts for Nanodon\_28:

(9, 21566), (Start: 13 @21617 has 47 MA's), (Start: 15 @21623 has 7 MA's), (16, 21683), (21, 21758), (27, 21821), (39, 22076), (40, 22088), (47, 22163), (55, 22256), (70, 22418), (72, 22454),

Gene: Nerdos\_26 Start: 20972, Stop: 21925, Start Num: 13

Candidate Starts for Nerdos\_26:

(Start: 13 @20972 has 47 MA's), (Start: 15 @20978 has 7 MA's), (16, 21038), (21, 21113), (27, 21176), (39, 21431), (40, 21443),

Gene: Oliynyk\_27 Start: 21344, Stop: 22285, Start Num: 13

Candidate Starts for Oliynyk\_27:

(Start: 13 @21344 has 47 MA's), (Start: 15 @21350 has 7 MA's), (16, 21410), (21, 21485), (27, 21548), (39, 21803), (40, 21815), (47, 21887), (48, 21890),



Gene: Ozzie\_26 Start: 20958, Stop: 21911, Start Num: 13

Candidate Starts for Ozzie\_26:

(Start: 13 @20958 has 47 MA's), (Start: 15 @20964 has 7 MA's), (16, 21024), (21, 21099), (27, 21162), (39, 21417), (40, 21429),

Gene: Pablito\_26 Start: 21573, Stop: 22406, Start Num: 13

Candidate Starts for Pablito\_26:

(Start: 13 @21573 has 47 MA's), (Start: 15 @21579 has 7 MA's), (20, 21708), (21, 21714), (32, 21867), (40, 22044), (51, 22140), (71, 22395),

Gene: Paedore\_26 Start: 21765, Stop: 22841, Start Num: 10

Candidate Starts for Paedore\_26:

(Start: 10 @21765 has 1 MA's), (Start: 13 @21786 has 47 MA's), (16, 21852), (21, 21927), (40, 22257), (53, 22428), (58, 22551), (64, 22608), (65, 22635), (67, 22659),

Gene: Paolo\_28 Start: 22134, Stop: 23195, Start Num: 13

Candidate Starts for Paolo\_28:

(Start: 13 @22134 has 47 MA's), (20, 22269), (21, 22275), (26, 22323), (29, 22356), (31, 22413), (40, 22605), (47, 22728), (53, 22782), (58, 22905), (64, 22962), (65, 22989),

Gene: Phettuccine\_26 Start: 20974, Stop: 21927, Start Num: 13

Candidate Starts for Phettuccine\_26:

(Start: 13 @20974 has 47 MA's), (Start: 15 @20980 has 7 MA's), (16, 21040), (21, 21115), (27, 21178), (39, 21433), (40, 21445),

Gene: Picard\_21 Start: 16297, Stop: 17079, Start Num: 13

Candidate Starts for Picard\_21:

(11, 16279), (Start: 13 @16297 has 47 MA's), (21, 16453), (32, 16606), (38, 16711), (40, 16783), (47, 16894), (56, 16990),

Gene: Puginator\_28 Start: 22149, Stop: 23210, Start Num: 13

Candidate Starts for Puginator\_28:

(Start: 13 @22149 has 47 MA's), (20, 22284), (21, 22290), (29, 22371), (32, 22443), (40, 22620), (47, 22743), (54, 22824), (58, 22920), (64, 22977), (65, 23004),

Gene: R4\_26 Start: 21877, Stop: 22947, Start Num: 13

Candidate Starts for R4\_26:

(Start: 13 @21877 has 47 MA's), (16, 21943), (40, 22348), (43, 22402), (50, 22489), (57, 22612), (68, 22765), (69, 22780), (75, 22942),

Gene: RetrieverFever\_2 Start: 2609, Stop: 3376, Start Num: 15

Candidate Starts for RetrieverFever\_2:

(12, 2600), (Start: 14 @2603 has 3 MA's), (Start: 15 @2609 has 7 MA's), (Start: 17 @2681 has 1 MA's), (19, 2735), (33, 2912), (34, 2957), (37, 2990), (39, 3077), (47, 3185), (49, 3194), (59, 3359),

Gene: Rusticus\_27 Start: 21344, Stop: 22285, Start Num: 13

Candidate Starts for Rusticus\_27:

(Start: 13 @21344 has 47 MA's), (Start: 15 @21350 has 7 MA's), (16, 21410), (21, 21485), (27, 21548), (39, 21803), (40, 21815), (47, 21887), (48, 21890),

Gene: SqueakyClean\_27 Start: 21711, Stop: 22787, Start Num: 13

Candidate Starts for SqueakyClean\_27:

(Start: 13 @21711 has 47 MA's), (20, 21846), (21, 21852), (27, 21915), (39, 22170), (40, 22182), (47, 22305), (64, 22554),

Gene: Stella\_3 Start: 2613, Stop: 3389, Start Num: 15

Candidate Starts for Stella\_3:

(12, 2601), (Start: 14 @2604 has 3 MA's), (Start: 15 @2613 has 7 MA's), (Start: 17 @2685 has 1 MA's), (33, 2916), (34, 2961), (39, 3081), (49, 3204),

Gene: SunsetPointe\_26 Start: 20965, Stop: 21918, Start Num: 13

Candidate Starts for SunsetPointe\_26:

(Start: 13 @20965 has 47 MA's), (Start: 15 @20971 has 7 MA's), (16, 21031), (21, 21106), (27, 21169), (39, 21424), (40, 21436),

Gene: ToastyFinz\_21 Start: 17938, Stop: 19005, Start Num: 13

Candidate Starts for ToastyFinz\_21:

(Start: 13 @17938 has 47 MA's), (40, 18424), (44, 18487), (47, 18535), (57, 18682), (66, 18820),

Gene: Triumph\_28 Start: 21635, Stop: 22702, Start Num: 13

Candidate Starts for Triumph\_28:

(Start: 13 @21635 has 47 MA's), (31, 21914), (40, 22106), (47, 22223), (58, 22400), (64, 22469), (65, 22496),

Gene: TurkishDelight\_35 Start: 33300, Stop: 34241, Start Num: 15

Candidate Starts for TurkishDelight\_35:

(Start: 15 @33300 has 7 MA's), (Start: 17 @33375 has 1 MA's), (20, 33438), (25, 33486), (26, 33492), (28, 33510), (30, 33528), (32, 33603), (34, 33651), (36, 33666), (45, 33837), (46, 33840), (59, 34074),

Gene: Unstoppable\_26 Start: 20969, Stop: 21922, Start Num: 13

Candidate Starts for Unstoppable\_26:

(Start: 13 @20969 has 47 MA's), (Start: 15 @20975 has 7 MA's), (16, 21035), (21, 21110), (27, 21173), (39, 21428), (40, 21440),

Gene: Verse\_27 Start: 23384, Stop: 24355, Start Num: 13

Candidate Starts for Verse\_27:

(Start: 13 @23384 has 47 MA's), (27, 23588), (40, 23855), (41, 23861), (47, 23930), (64, 24125), (70, 24206),

Gene: Vorvolakos\_2 Start: 2602, Stop: 3375, Start Num: 14

Candidate Starts for Vorvolakos\_2:

(12, 2599), (Start: 14 @2602 has 3 MA's), (Start: 15 @2608 has 7 MA's), (Start: 17 @2680 has 1 MA's), (19, 2734), (33, 2911), (34, 2956), (37, 2989), (39, 3076), (47, 3184), (49, 3193), (59, 3358),

Gene: WRightOn\_3 Start: 2976, Stop: 3755, Start Num: 15

Candidate Starts for WRightOn\_3:

(4, 2811), (6, 2886), (7, 2895), (Start: 15 @2976 has 7 MA's), (Start: 17 @3048 has 1 MA's), (19, 3102), (24, 3147), (33, 3279), (34, 3324), (39, 3444), (50, 3582),

Gene: Zainub\_28 Start: 22098, Stop: 23159, Start Num: 13

Candidate Starts for Zainub\_28:

(Start: 13 @22098 has 47 MA's), (20, 22233), (21, 22239), (26, 22287), (29, 22320), (31, 22377), (40, 22569), (47, 22692), (53, 22746), (58, 22869), (64, 22926), (65, 22953),

Gene: Zeigle\_2 Start: 2632, Stop: 3411, Start Num: 15

Candidate Starts for Zeigle\_2:

(Start: 15 @2632 has 7 MA's), (Start: 17 @2704 has 1 MA's), (18, 2731), (24, 2803), (30, 2857), (33, 2935), (34, 2980), (39, 3100), (50, 3238),

Gene: phiCAM\_28 Start: 24820, Stop: 25500, Start Num: 22

Candidate Starts for phiCAM\_28:

(3, 24505), (5, 24517), (Start: 13 @24676 has 47 MA's), (22, 24820), (26, 24865), (27, 24880), (40, 25147), (52, 25204), (65, 25297), (67, 25321),

Gene: phiHau3\_28 Start: 21373, Stop: 22425, Start Num: 13

Candidate Starts for phiHau3\_28:

(Start: 13 @21373 has 47 MA's), (40, 21844), (43, 21904), (46, 21919), (57, 22114), (63, 22174), (68, 22243), (75, 22420),