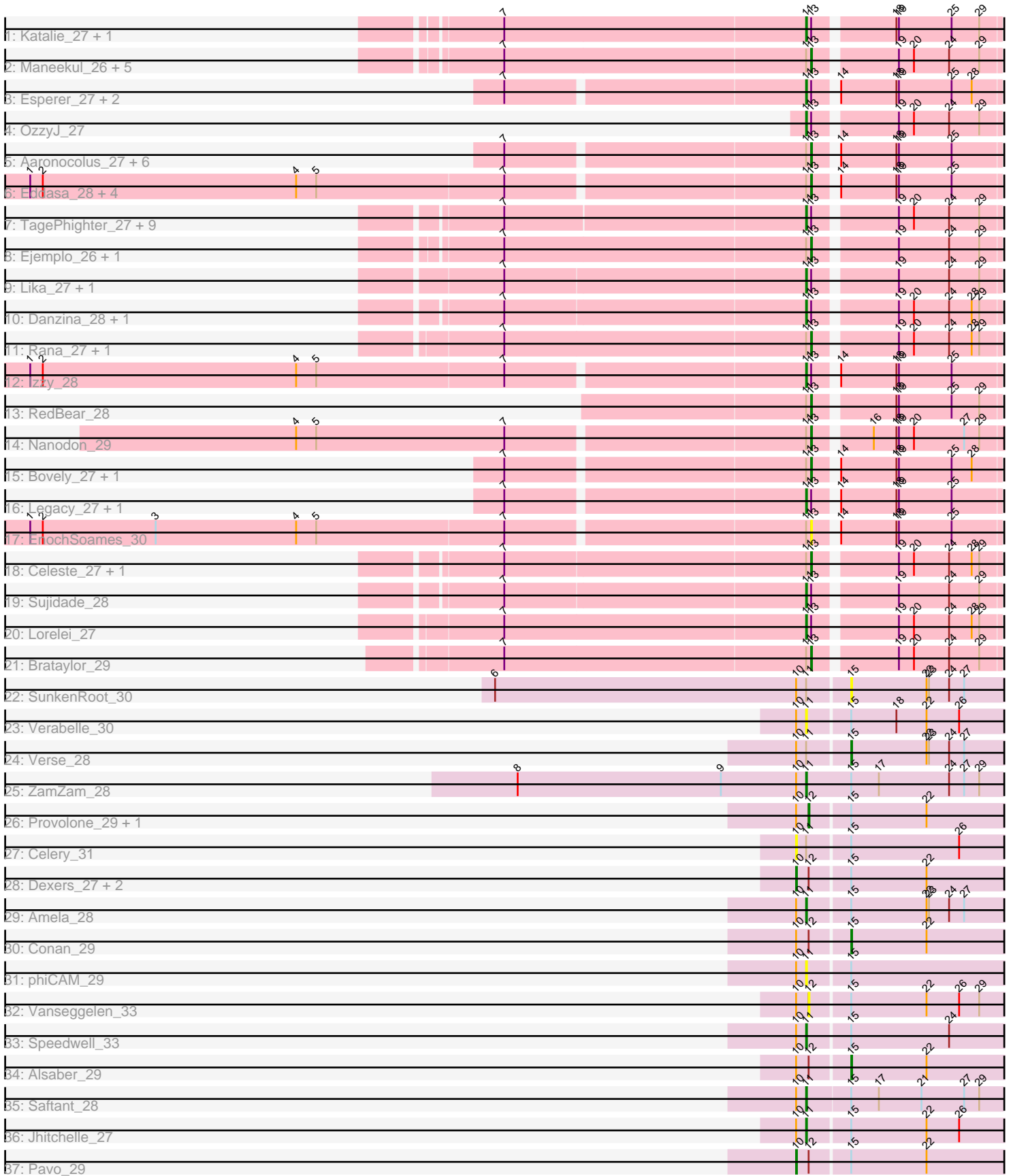


Pham 296522



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 296522 Report

This analysis was run 04/25/26 on database version 644.

Pham number 296522 has 74 members, 6 are drafts.

Phages represented in each track:

- Track 1 : Katalie\_27, South40\_27
- Track 2 : Maneekul\_26, Yasdnil\_26, Emaanora\_28, Goby\_27, Asten\_26, Toma\_27
- Track 3 : Esperer\_27, Indigo\_26, Nerdos\_27
- Track 4 : OzzyJ\_27
- Track 5 : Aaronocolus\_27, Caliburn\_27, Phettuccine\_27, Hydra\_29, BeardedLady\_28, Leviticus\_27, Ozzie\_27
- Track 6 : Eddasa\_28, Jash\_28, Oliynyk\_28, BryanRecycles\_28, Rusticus\_28
- Track 7 : TagePhighter\_27, SarahRose\_26, Triste\_26, BarryBee\_28, Hippo\_26, Werner\_26, Dwayne\_26, Whatever\_26, Chucky\_26, Snorlax\_26
- Track 8 : Ejemplo\_26, TuanPN\_26
- Track 9 : Lika\_27, Godpower\_28
- Track 10 : Danzina\_28, Zemlya\_28
- Track 11 : Rana\_27, Nabi\_27
- Track 12 : Izzy\_28
- Track 13 : RedBear\_28
- Track 14 : Nanodon\_29
- Track 15 : Bovely\_27, SunsetPointe\_27
- Track 16 : Legacy\_27, Unstoppable\_27
- Track 17 : EnochSoames\_30
- Track 18 : Celeste\_27, Dattran\_28
- Track 19 : Sujidade\_28
- Track 20 : Lorelei\_27
- Track 21 : Brataylor\_29
- Track 22 : SunkenRoot\_30
- Track 23 : Verabelle\_30
- Track 24 : Verse\_28
- Track 25 : ZamZam\_28
- Track 26 : Provolone\_29, ElGato\_29
- Track 27 : Celery\_31
- Track 28 : Dexers\_27, Sudan\_28, Kaine\_28
- Track 29 : Amela\_28
- Track 30 : Conan\_29
- Track 31 : phiCAM\_29
- Track 32 : Vanseggelen\_33
- Track 33 : Speedwell\_33
- Track 34 : Alsaber\_29
- Track 35 : Saftant\_28

- Track 36 : Jhitchelle\_27
- Track 37 : Pavo\_29

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

The start number called the most often in the published annotations is 11, it was called in 30 of the 68 non-draft genes in the pham.

Genes that call this "Most Annotated" start:

- Amela\_28, BarryBee\_28, Chucky\_26, Danzina\_28, Dwayne\_26, Esperer\_27, Godpower\_28, Hippo\_26, Indigo\_26, Izzy\_28, Jhitchelle\_27, Katalie\_27, Legacy\_27, Lika\_27, Lorelei\_27, Nerdos\_27, OzzyJ\_27, Saftant\_28, SarahRose\_26, Snorlax\_26, South40\_27, Speedwell\_33, Sujidade\_28, TagePhighter\_27, Triste\_26, Unstoppable\_27, Verabelle\_30, Werner\_26, Whatever\_26, ZamZam\_28, Zemlya\_28, phiCAM\_29,

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

- Aaronocolus\_27, Asten\_26, BeardedLady\_28, Bovely\_27, Brataylor\_29, BryanRecycles\_28, Caliburn\_27, Celery\_31, Celeste\_27, Dattran\_28, Eddasa\_28, Ejemplo\_26, Emaanora\_28, EnochSoames\_30, Goby\_27, Hydra\_29, Jash\_28, Leviticus\_27, Maneekul\_26, Nabi\_27, Nanodon\_29, Oliynyk\_28, Ozzie\_27, Phettuccine\_27, Rana\_27, RedBear\_28, Rusticus\_28, SunkenRoot\_30, SunsetPointe\_27, Toma\_27, TuanPN\_26, Verse\_28, Yasdnil\_26,

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

- Alsaber\_29, Conan\_29, Dexers\_27, ElGato\_29, Kaine\_28, Pavo\_29, Provolone\_29, Sudan\_28, Vanseggelen\_33,

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

Start 10:

- Found in 19 of 74 ( 25.7% ) of genes in pham
- Manual Annotations of this start: 4 of 68
- Called 26.3% of time when present
- Phage (with cluster) where this start called: Celery\_31 (BD3), Dexers\_27 (BD3), Kaine\_28 (BD3), Pavo\_29 (BD3), Sudan\_28 (BD3),

Start 11:

- Found in 65 of 74 ( 87.8% ) of genes in pham
- Manual Annotations of this start: 30 of 68
- Called 49.2% of time when present
- Phage (with cluster) where this start called: Amela\_28 (BD3), BarryBee\_28 (BD1), Chucky\_26 (BD1), Danzina\_28 (BD1), Dwayne\_26 (BD1), Esperer\_27 (BD1), Godpower\_28 (BD1), Hippo\_26 (BD1), Indigo\_26 (BD1), Izzy\_28 (BD1), Jhitchelle\_27 (BD3), Katalie\_27 (BD1), Legacy\_27 (BD1), Lika\_27 (BD1), Lorelei\_27 (BD1), Nerdos\_27 (BD1), OzzyJ\_27 (BD1), Saftant\_28 (BD3), SarahRose\_26 (BD1), Snorlax\_26 (BD1), South40\_27 (BD1), Speedwell\_33 (BD3), Sujidade\_28 (BD1), TagePhighter\_27 (BD1), Triste\_26 (BD1), Unstoppable\_27 (BD1), Verabelle\_30 (BD3), Werner\_26 (BD1), Whatever\_26 (BD1), ZamZam\_28 (BD3), Zemlya\_28 (BD1), phiCAM\_29 (BD3),

Start 12:

- Found in 9 of 74 ( 12.2% ) of genes in pham
- Manual Annotations of this start: 2 of 68
- Called 33.3% of time when present
- Phage (with cluster) where this start called: ElGato\_29 (BD3), Provolone\_29 (BD3), Vanseggelen\_33 (BD3),

Start 13:

- Found in 55 of 74 ( 74.3% ) of genes in pham
- Manual Annotations of this start: 29 of 68
- Called 54.5% of time when present
- Phage (with cluster) where this start called: Aaronocolus\_27 (BD1), Asten\_26 (BD1), BeardedLady\_28 (BD1), Bovely\_27 (BD1), Brataylor\_29 (BD1), BryanRecycles\_28 (BD1), Caliburn\_27 (BD1), Celeste\_27 (BD1), Dattran\_28 (BD1), Eddasa\_28 (BD1), Ejemplo\_26 (BD1), Emaanora\_28 (BD1), EnochSoames\_30 (BD1), Goby\_27 (BD1), Hydra\_29 (BD1), Jash\_28 (BD1), Leviticus\_27 (BD1), Maneekul\_26 (BD1), Nabi\_27 (BD1), Nanodon\_29 (BD1), Oliynyk\_28 (BD1), Ozzie\_27 (BD1), Phettuccine\_27 (BD1), Rana\_27 (BD1), RedBear\_28 (BD1), Rusticus\_28 (BD1), SunsetPointe\_27 (BD1), Toma\_27 (BD1), TuanPN\_26 (BD1), Yasdnii\_26 (BD1),

Start 15:

- Found in 19 of 74 ( 25.7% ) of genes in pham
- Manual Annotations of this start: 3 of 68
- Called 21.1% of time when present
- Phage (with cluster) where this start called: Alsaber\_29 (BD3), Conan\_29 (BD3), SunkenRoot\_30 (BD3), Verse\_28 (BD3),

**Summary by clusters:**

There are 2 clusters represented in this pham: BD1, BD3,

Info for manual annotations of cluster BD1:

- Start number 11 was manually annotated 25 times for cluster BD1.
- Start number 13 was manually annotated 29 times for cluster BD1.

Info for manual annotations of cluster BD3:

- Start number 10 was manually annotated 4 times for cluster BD3.
- Start number 11 was manually annotated 5 times for cluster BD3.
- Start number 12 was manually annotated 2 times for cluster BD3.
- Start number 15 was manually annotated 3 times for cluster BD3.

**Gene Information:**

Gene: Aaronocolus\_27 Start: 21931, Stop: 22191, Start Num: 13

Candidate Starts for Aaronocolus\_27:

(7, 21580), (Start: 11 @21925 has 30 MA's), (Start: 13 @21931 has 29 MA's), (14, 21952), (18, 22018), (19, 22021), (25, 22084),

Gene: Alsaber\_29 Start: 23589, Stop: 23822, Start Num: 15

Candidate Starts for Alsaber\_29:

(Start: 10 @23529 has 4 MA's), (Start: 12 @23544 has 2 MA's), (Start: 15 @23589 has 3 MA's), (22, 23679),

Gene: Amela\_28 Start: 24358, Stop: 24642, Start Num: 11

Candidate Starts for Amela\_28:

(Start: 10 @24346 has 4 MA's), (Start: 11 @24358 has 30 MA's), (Start: 15 @24406 has 3 MA's), (22, 24496), (23, 24499), (24, 24523), (27, 24541),

Gene: Asten\_26 Start: 22171, Stop: 22434, Start Num: 13

Candidate Starts for Asten\_26:

(7, 21811), (Start: 11 @22165 has 30 MA's), (Start: 13 @22171 has 29 MA's), (19, 22261), (20, 22279), (24, 22321), (29, 22357),

Gene: BarryBee\_28 Start: 22175, Stop: 22444, Start Num: 11

Candidate Starts for BarryBee\_28:

(7, 21821), (Start: 11 @22175 has 30 MA's), (Start: 13 @22181 has 29 MA's), (19, 22271), (20, 22289), (24, 22331), (29, 22367),

Gene: BeardedLady\_28 Start: 22184, Stop: 22444, Start Num: 13

Candidate Starts for BeardedLady\_28:

(7, 21833), (Start: 11 @22178 has 30 MA's), (Start: 13 @22184 has 29 MA's), (14, 22205), (18, 22271), (19, 22274), (25, 22337),

Gene: Bovely\_27 Start: 21937, Stop: 22197, Start Num: 13

Candidate Starts for Bovely\_27:

(7, 21586), (Start: 11 @21931 has 30 MA's), (Start: 13 @21937 has 29 MA's), (14, 21958), (18, 22024), (19, 22027), (25, 22090), (28, 22114),

Gene: Brataylor\_29 Start: 23190, Stop: 23453, Start Num: 13

Candidate Starts for Brataylor\_29:

(7, 22827), (Start: 11 @23184 has 30 MA's), (Start: 13 @23190 has 29 MA's), (19, 23280), (20, 23298), (24, 23340), (29, 23376),

Gene: BryanRecycles\_28 Start: 22288, Stop: 22548, Start Num: 13

Candidate Starts for BryanRecycles\_28:

(1, 21373), (2, 21388), (4, 21691), (5, 21715), (7, 21937), (Start: 11 @22282 has 30 MA's), (Start: 13 @22288 has 29 MA's), (14, 22309), (18, 22375), (19, 22378), (25, 22441),

Gene: Caliburn\_27 Start: 21914, Stop: 22174, Start Num: 13

Candidate Starts for Caliburn\_27:

(7, 21563), (Start: 11 @21908 has 30 MA's), (Start: 13 @21914 has 29 MA's), (14, 21935), (18, 22001), (19, 22004), (25, 22067),

Gene: Celery\_31 Start: 23463, Stop: 23756, Start Num: 10

Candidate Starts for Celery\_31:

(Start: 10 @23463 has 4 MA's), (Start: 11 @23475 has 30 MA's), (Start: 15 @23523 has 3 MA's), (26, 23652),

Gene: Celeste\_27 Start: 22637, Stop: 22900, Start Num: 13

Candidate Starts for Celeste\_27:

(7, 22277), (Start: 11 @22631 has 30 MA's), (Start: 13 @22637 has 29 MA's), (19, 22727), (20, 22745), (24, 22787), (28, 22814), (29, 22823),

Gene: Chucky\_26 Start: 22179, Stop: 22448, Start Num: 11

Candidate Starts for Chucky\_26:

(7, 21825), (Start: 11 @22179 has 30 MA's), (Start: 13 @22185 has 29 MA's), (19, 22275), (20, 22293), (24, 22335), (29, 22371),

Gene: Conan\_29 Start: 23488, Stop: 23721, Start Num: 15

Candidate Starts for Conan\_29:

(Start: 10 @23428 has 4 MA's), (Start: 12 @23443 has 2 MA's), (Start: 15 @23488 has 3 MA's), (22, 23578),

Gene: Danzina\_28 Start: 22932, Stop: 23201, Start Num: 11

Candidate Starts for Danzina\_28:

(7, 22578), (Start: 11 @22932 has 30 MA's), (Start: 13 @22938 has 29 MA's), (19, 23028), (20, 23046), (24, 23088), (28, 23115), (29, 23124),

Gene: Dattran\_28 Start: 22747, Stop: 23010, Start Num: 13

Candidate Starts for Dattran\_28:

(7, 22387), (Start: 11 @22741 has 30 MA's), (Start: 13 @22747 has 29 MA's), (19, 22837), (20, 22855), (24, 22897), (28, 22924), (29, 22933),

Gene: Dexers\_27 Start: 23450, Stop: 23743, Start Num: 10

Candidate Starts for Dexers\_27:

(Start: 10 @23450 has 4 MA's), (Start: 12 @23465 has 2 MA's), (Start: 15 @23510 has 3 MA's), (22, 23600),

Gene: Dwayne\_26 Start: 22166, Stop: 22435, Start Num: 11

Candidate Starts for Dwayne\_26:

(7, 21812), (Start: 11 @22166 has 30 MA's), (Start: 13 @22172 has 29 MA's), (19, 22262), (20, 22280), (24, 22322), (29, 22358),

Gene: Eddasa\_28 Start: 22288, Stop: 22548, Start Num: 13

Candidate Starts for Eddasa\_28:

(1, 21373), (2, 21388), (4, 21691), (5, 21715), (7, 21937), (Start: 11 @22282 has 30 MA's), (Start: 13 @22288 has 29 MA's), (14, 22309), (18, 22375), (19, 22378), (25, 22441),

Gene: Ejemplo\_26 Start: 22207, Stop: 22467, Start Num: 13

Candidate Starts for Ejemplo\_26:

(7, 21844), (Start: 11 @22201 has 30 MA's), (Start: 13 @22207 has 29 MA's), (19, 22297), (24, 22357), (29, 22393),

Gene: ElGato\_29 Start: 23103, Stop: 23381, Start Num: 12

Candidate Starts for ElGato\_29:

(Start: 10 @23088 has 4 MA's), (Start: 12 @23103 has 2 MA's), (Start: 15 @23148 has 3 MA's), (22, 23238),

Gene: Emaanora\_28 Start: 22130, Stop: 22393, Start Num: 13

Candidate Starts for Emaanora\_28:

(7, 21770), (Start: 11 @22124 has 30 MA's), (Start: 13 @22130 has 29 MA's), (19, 22220), (20, 22238), (24, 22280), (29, 22316),

Gene: EnochSoames\_30 Start: 22283, Stop: 22543, Start Num: 13

Candidate Starts for EnochSoames\_30:

(1, 21368), (2, 21383), (3, 21518), (4, 21686), (5, 21710), (7, 21932), (Start: 11 @22277 has 30 MA's), (Start: 13 @22283 has 29 MA's), (14, 22304), (18, 22370), (19, 22373), (25, 22436),

Gene: Esperer\_27 Start: 21744, Stop: 22010, Start Num: 11

Candidate Starts for Esperer\_27:

(7, 21399), (Start: 11 @21744 has 30 MA's), (Start: 13 @21750 has 29 MA's), (14, 21771), (18, 21837), (19, 21840), (25, 21903), (28, 21927),

Gene: Goby\_27 Start: 22752, Stop: 23015, Start Num: 13

Candidate Starts for Goby\_27:

(7, 22392), (Start: 11 @22746 has 30 MA's), (Start: 13 @22752 has 29 MA's), (19, 22842), (20, 22860), (24, 22902), (29, 22938),

Gene: Godpower\_28 Start: 22745, Stop: 23014, Start Num: 11

Candidate Starts for Godpower\_28:

(7, 22391), (Start: 11 @22745 has 30 MA's), (Start: 13 @22751 has 29 MA's), (19, 22841), (24, 22901), (29, 22937),

Gene: Hippo\_26 Start: 22175, Stop: 22444, Start Num: 11

Candidate Starts for Hippo\_26:

(7, 21821), (Start: 11 @22175 has 30 MA's), (Start: 13 @22181 has 29 MA's), (19, 22271), (20, 22289), (24, 22331), (29, 22367),

Gene: Hydra\_29 Start: 22462, Stop: 22722, Start Num: 13

Candidate Starts for Hydra\_29:

(7, 22111), (Start: 11 @22456 has 30 MA's), (Start: 13 @22462 has 29 MA's), (14, 22483), (18, 22549), (19, 22552), (25, 22615),

Gene: Indigo\_26 Start: 21924, Stop: 22190, Start Num: 11

Candidate Starts for Indigo\_26:

(7, 21579), (Start: 11 @21924 has 30 MA's), (Start: 13 @21930 has 29 MA's), (14, 21951), (18, 22017), (19, 22020), (25, 22083), (28, 22107),

Gene: Izzy\_28 Start: 22329, Stop: 22595, Start Num: 11

Candidate Starts for Izzy\_28:

(1, 21420), (2, 21435), (4, 21738), (5, 21762), (7, 21984), (Start: 11 @22329 has 30 MA's), (Start: 13 @22335 has 29 MA's), (14, 22356), (18, 22422), (19, 22425), (25, 22488),

Gene: Jash\_28 Start: 22288, Stop: 22548, Start Num: 13

Candidate Starts for Jash\_28:

(1, 21373), (2, 21388), (4, 21691), (5, 21715), (7, 21937), (Start: 11 @22282 has 30 MA's), (Start: 13 @22288 has 29 MA's), (14, 22309), (18, 22375), (19, 22378), (25, 22441),

Gene: Jhitchelle\_27 Start: 23035, Stop: 23316, Start Num: 11

Candidate Starts for Jhitchelle\_27:

(Start: 10 @23023 has 4 MA's), (Start: 11 @23035 has 30 MA's), (Start: 15 @23083 has 3 MA's), (22, 23173), (26, 23212),

Gene: Kaine\_28 Start: 23238, Stop: 23531, Start Num: 10

Candidate Starts for Kaine\_28:

(Start: 10 @23238 has 4 MA's), (Start: 12 @23253 has 2 MA's), (Start: 15 @23298 has 3 MA's), (22, 23388),

Gene: Katalie\_27 Start: 22461, Stop: 22727, Start Num: 11

Candidate Starts for Katalie\_27:

(7, 22104), (Start: 11 @22461 has 30 MA's), (Start: 13 @22467 has 29 MA's), (18, 22554), (19, 22557), (25, 22620), (29, 22653),

Gene: Legacy\_27 Start: 21899, Stop: 22165, Start Num: 11

Candidate Starts for Legacy\_27:

(7, 21554), (Start: 11 @21899 has 30 MA's), (Start: 13 @21905 has 29 MA's), (14, 21926), (18, 21992), (19, 21995), (25, 22058),

Gene: Leviticus\_27 Start: 21934, Stop: 22194, Start Num: 13

Candidate Starts for Leviticus\_27:

(7, 21583), (Start: 11 @21928 has 30 MA's), (Start: 13 @21934 has 29 MA's), (14, 21955), (18, 22021), (19, 22024), (25, 22087),

Gene: Lika\_27 Start: 22749, Stop: 23018, Start Num: 11

Candidate Starts for Lika\_27:

(7, 22395), (Start: 11 @22749 has 30 MA's), (Start: 13 @22755 has 29 MA's), (19, 22845), (24, 22905), (29, 22941),

Gene: Lorelei\_27 Start: 22718, Stop: 22987, Start Num: 11

Candidate Starts for Lorelei\_27:

(7, 22361), (Start: 11 @22718 has 30 MA's), (Start: 13 @22724 has 29 MA's), (19, 22814), (20, 22832), (24, 22874), (28, 22901), (29, 22910),

Gene: Maneekul\_26 Start: 22206, Stop: 22466, Start Num: 13

Candidate Starts for Maneekul\_26:

(7, 21843), (Start: 11 @22200 has 30 MA's), (Start: 13 @22206 has 29 MA's), (19, 22296), (20, 22314), (24, 22356), (29, 22392),

Gene: Nabi\_27 Start: 22724, Stop: 22987, Start Num: 13

Candidate Starts for Nabi\_27:

(7, 22361), (Start: 11 @22718 has 30 MA's), (Start: 13 @22724 has 29 MA's), (19, 22814), (20, 22832), (24, 22874), (28, 22901), (29, 22910),

Gene: Nanodon\_29 Start: 22564, Stop: 22827, Start Num: 13

Candidate Starts for Nanodon\_29:

(4, 21964), (5, 21988), (7, 22213), (Start: 11 @22558 has 30 MA's), (Start: 13 @22564 has 29 MA's), (16, 22624), (18, 22651), (19, 22654), (20, 22672), (27, 22732), (29, 22750),

Gene: Nerdos\_27 Start: 21922, Stop: 22188, Start Num: 11

Candidate Starts for Nerdos\_27:

(7, 21577), (Start: 11 @21922 has 30 MA's), (Start: 13 @21928 has 29 MA's), (14, 21949), (18, 22015), (19, 22018), (25, 22081), (28, 22105),

Gene: Oliynyk\_28 Start: 22288, Stop: 22548, Start Num: 13

Candidate Starts for Oliynyk\_28:

(1, 21373), (2, 21388), (4, 21691), (5, 21715), (7, 21937), (Start: 11 @22282 has 30 MA's), (Start: 13 @22288 has 29 MA's), (14, 22309), (18, 22375), (19, 22378), (25, 22441),

Gene: Ozzie\_27 Start: 21914, Stop: 22174, Start Num: 13

Candidate Starts for Ozzie\_27:

(7, 21563), (Start: 11 @21908 has 30 MA's), (Start: 13 @21914 has 29 MA's), (14, 21935), (18, 22001), (19, 22004), (25, 22067),

Gene: OzzyJ\_27 Start: 22166, Stop: 22435, Start Num: 11

Candidate Starts for OzzyJ\_27:

(Start: 11 @22166 has 30 MA's), (Start: 13 @22172 has 29 MA's), (19, 22262), (20, 22280), (24, 22322), (29, 22358),

Gene: Pavo\_29 Start: 23701, Stop: 23994, Start Num: 10

Candidate Starts for Pavo\_29:

(Start: 10 @23701 has 4 MA's), (Start: 12 @23716 has 2 MA's), (Start: 15 @23761 has 3 MA's), (22, 23851),

Gene: Phettuccine\_27 Start: 21930, Stop: 22190, Start Num: 13

Candidate Starts for Phettuccine\_27:

(7, 21579), (Start: 11 @21924 has 30 MA's), (Start: 13 @21930 has 29 MA's), (14, 21951), (18, 22017), (19, 22020), (25, 22083),

Gene: Provolone\_29 Start: 23095, Stop: 23373, Start Num: 12

Candidate Starts for Provolone\_29:

(Start: 10 @23080 has 4 MA's), (Start: 12 @23095 has 2 MA's), (Start: 15 @23140 has 3 MA's), (22, 23230),

Gene: Rana\_27 Start: 22724, Stop: 22987, Start Num: 13

Candidate Starts for Rana\_27:

(7, 22361), (Start: 11 @22718 has 30 MA's), (Start: 13 @22724 has 29 MA's), (19, 22814), (20, 22832), (24, 22874), (28, 22901), (29, 22910),

Gene: RedBear\_28 Start: 22467, Stop: 22727, Start Num: 13

Candidate Starts for RedBear\_28:

(Start: 11 @22461 has 30 MA's), (Start: 13 @22467 has 29 MA's), (18, 22554), (19, 22557), (25, 22620), (29, 22653),

Gene: Rusticus\_28 Start: 22288, Stop: 22548, Start Num: 13

Candidate Starts for Rusticus\_28:

(1, 21373), (2, 21388), (4, 21691), (5, 21715), (7, 21937), (Start: 11 @22282 has 30 MA's), (Start: 13 @22288 has 29 MA's), (14, 22309), (18, 22375), (19, 22378), (25, 22441),

Gene: Saftant\_28 Start: 23714, Stop: 24013, Start Num: 11

Candidate Starts for Saftant\_28:

(Start: 10 @23702 has 4 MA's), (Start: 11 @23714 has 30 MA's), (Start: 15 @23765 has 3 MA's), (17, 23798), (21, 23849), (27, 23900), (29, 23918),

Gene: SarahRose\_26 Start: 22175, Stop: 22444, Start Num: 11

Candidate Starts for SarahRose\_26:

(7, 21821), (Start: 11 @22175 has 30 MA's), (Start: 13 @22181 has 29 MA's), (19, 22271), (20, 22289), (24, 22331), (29, 22367),

Gene: Snorlax\_26 Start: 22178, Stop: 22447, Start Num: 11

Candidate Starts for Snorlax\_26:

(7, 21824), (Start: 11 @22178 has 30 MA's), (Start: 13 @22184 has 29 MA's), (19, 22274), (20, 22292), (24, 22334), (29, 22370),

Gene: South40\_27 Start: 22461, Stop: 22727, Start Num: 11

Candidate Starts for South40\_27:

(7, 22104), (Start: 11 @22461 has 30 MA's), (Start: 13 @22467 has 29 MA's), (18, 22554), (19, 22557), (25, 22620), (29, 22653),

Gene: Speedwell\_33 Start: 24981, Stop: 25262, Start Num: 11

Candidate Starts for Speedwell\_33:

(Start: 10 @24969 has 4 MA's), (Start: 11 @24981 has 30 MA's), (Start: 15 @25029 has 3 MA's), (24, 25146),

Gene: Sudan\_28 Start: 23525, Stop: 23818, Start Num: 10

Candidate Starts for Sudan\_28:

(Start: 10 @23525 has 4 MA's), (Start: 12 @23540 has 2 MA's), (Start: 15 @23585 has 3 MA's), (22, 23675),

Gene: Sujidade\_28 Start: 23034, Stop: 23303, Start Num: 11

Candidate Starts for Sujidade\_28:

(7, 22680), (Start: 11 @23034 has 30 MA's), (Start: 13 @23040 has 29 MA's), (19, 23130), (24, 23190), (29, 23226),

Gene: SunkenRoot\_30 Start: 24203, Stop: 24439, Start Num: 15

Candidate Starts for SunkenRoot\_30:

(6, 23783), (Start: 10 @24143 has 4 MA's), (Start: 11 @24155 has 30 MA's), (Start: 15 @24203 has 3 MA's), (22, 24293), (23, 24296), (24, 24320), (27, 24338),

Gene: SunsetPointe\_27 Start: 21921, Stop: 22181, Start Num: 13

Candidate Starts for SunsetPointe\_27:

(7, 21570), (Start: 11 @21915 has 30 MA's), (Start: 13 @21921 has 29 MA's), (14, 21942), (18, 22008), (19, 22011), (25, 22074), (28, 22098),

Gene: TagePighther\_27 Start: 22178, Stop: 22447, Start Num: 11

Candidate Starts for TagePighther\_27:

(7, 21824), (Start: 11 @22178 has 30 MA's), (Start: 13 @22184 has 29 MA's), (19, 22274), (20, 22292), (24, 22334), (29, 22370),

Gene: Toma\_27 Start: 22752, Stop: 23015, Start Num: 13

Candidate Starts for Toma\_27:

(7, 22392), (Start: 11 @22746 has 30 MA's), (Start: 13 @22752 has 29 MA's), (19, 22842), (20, 22860), (24, 22902), (29, 22938),

Gene: Triste\_26 Start: 22166, Stop: 22435, Start Num: 11

Candidate Starts for Triste\_26:

(7, 21812), (Start: 11 @22166 has 30 MA's), (Start: 13 @22172 has 29 MA's), (19, 22262), (20, 22280), (24, 22322), (29, 22358),

Gene: TuanPN\_26 Start: 22207, Stop: 22467, Start Num: 13

Candidate Starts for TuanPN\_26:

(7, 21844), (Start: 11 @22201 has 30 MA's), (Start: 13 @22207 has 29 MA's), (19, 22297), (24, 22357), (29, 22393),

Gene: Unstoppable\_27 Start: 21919, Stop: 22185, Start Num: 11

Candidate Starts for Unstoppable\_27:

(7, 21574), (Start: 11 @21919 has 30 MA's), (Start: 13 @21925 has 29 MA's), (14, 21946), (18, 22012), (19, 22015), (25, 22078),

Gene: Vanseggelen\_33 Start: 23285, Stop: 23563, Start Num: 12

Candidate Starts for Vanseggelen\_33:

(Start: 10 @23270 has 4 MA's), (Start: 12 @23285 has 2 MA's), (Start: 15 @23330 has 3 MA's), (22, 23420), (26, 23459), (29, 23483),

Gene: Verabelle\_30 Start: 23699, Stop: 23980, Start Num: 11

Candidate Starts for Verabelle\_30:

(Start: 10 @23687 has 4 MA's), (Start: 11 @23699 has 30 MA's), (Start: 15 @23747 has 3 MA's), (18, 23801), (22, 23837), (26, 23876),

Gene: Verse\_28 Start: 24400, Stop: 24636, Start Num: 15

Candidate Starts for Verse\_28:

(Start: 10 @24340 has 4 MA's), (Start: 11 @24352 has 30 MA's), (Start: 15 @24400 has 3 MA's), (22, 24490), (23, 24493), (24, 24517), (27, 24535),

Gene: Werner\_26 Start: 22176, Stop: 22445, Start Num: 11

Candidate Starts for Werner\_26:

(7, 21822), (Start: 11 @22176 has 30 MA's), (Start: 13 @22182 has 29 MA's), (19, 22272), (20, 22290), (24, 22332), (29, 22368),

Gene: Whatever\_26 Start: 22176, Stop: 22445, Start Num: 11

Candidate Starts for Whatever\_26:

(7, 21822), (Start: 11 @22176 has 30 MA's), (Start: 13 @22182 has 29 MA's), (19, 22272), (20, 22290), (24, 22332), (29, 22368),

Gene: Yasdniil\_26 Start: 22203, Stop: 22463, Start Num: 13

Candidate Starts for Yasdniil\_26:

(7, 21840), (Start: 11 @22197 has 30 MA's), (Start: 13 @22203 has 29 MA's), (19, 22293), (20, 22311), (24, 22353), (29, 22389),

Gene: ZamZam\_28 Start: 23634, Stop: 23936, Start Num: 11

Candidate Starts for ZamZam\_28:

(8, 23289), (9, 23532), (Start: 10 @23622 has 4 MA's), (Start: 11 @23634 has 30 MA's), (Start: 15 @23688 has 3 MA's), (17, 23721), (24, 23805), (27, 23823), (29, 23841),

Gene: Zemlya\_28 Start: 22738, Stop: 23007, Start Num: 11

Candidate Starts for Zemlya\_28:

(7, 22384), (Start: 11 @22738 has 30 MA's), (Start: 13 @22744 has 29 MA's), (19, 22834), (20, 22852), (24, 22894), (28, 22921), (29, 22930),

Gene: phiCAM\_29 Start: 25497, Stop: 25778, Start Num: 11

Candidate Starts for phiCAM\_29:

(Start: 10 @25485 has 4 MA's), (Start: 11 @25497 has 30 MA's), (Start: 15 @25545 has 3 MA's),