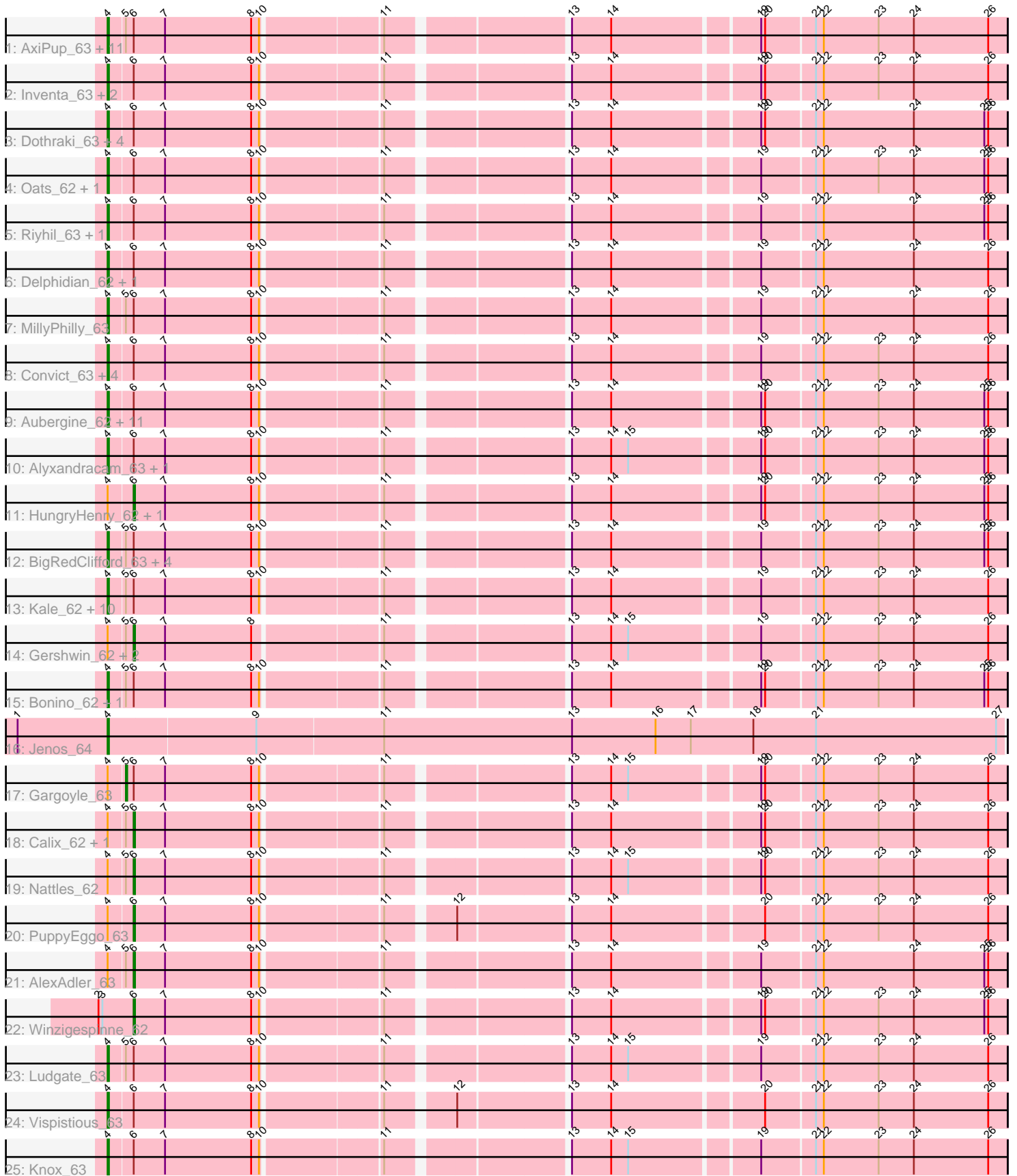


Pham 202883



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 202883 Report

This analysis was run 01/18/25 on database version 583.

Pham number 202883 has 80 members, 0 are drafts.

Phages represented in each track:

- Track 1 : AxiPup\_63, Erla\_62, Phireproof\_63, Martin\_64, Pherferi\_63, BeautPeep30\_63, Chamuel\_62, Thorongil\_63, ParleG\_63, TatarkaPM\_63, Shee\_63, TinSulphur\_64
- Track 2 : Inventa\_63, Bandik\_63, Zada\_64
- Track 3 : Dothraki\_63, Stanktossa\_62, Chako\_62, Ilzat\_62, JasperRussell\_62
- Track 4 : Oats\_62, Christoph\_62
- Track 5 : Riyhil\_63, Phriends\_62
- Track 6 : Delphidian\_62, Peep\_63
- Track 7 : MillyPhilly\_63
- Track 8 : Convict\_63, BonesMcCoy\_63, AranulaLuti\_62, Ioannes\_63, MaeLinda\_63
- Track 9 : Aubergine\_62, Tenda\_62, Baines\_62, Teagan\_63, Greys\_63, Espinosa\_62, HanSolo\_62, Strathdee\_63, Papafritta\_62, KannH\_62, Duocatuli\_62, Benjalauen\_63
- Track 10 : Alyxandracam\_63, WildNOOut\_63
- Track 11 : HungryHenry\_62, StingRay\_62
- Track 12 : BigRedClifford\_63, Garey24\_63, Nagem\_63, SJay\_63, Gubbabump\_62
- Track 13 : Kale\_62, Pocket\_62, Dave\_63, Robinson\_63, Renzie\_63, Antoinette\_63, Gelo\_62, Raptor\_63, Etta\_62, Klimt\_63, Thompsone\_63
- Track 14 : Gershwin\_62, TeddyBear\_62, Asta\_62
- Track 15 : Bonino\_62, ManRay\_62
- Track 16 : Jenos\_64
- Track 17 : Gargoyle\_63
- Track 18 : Calix\_62, Rog141\_62
- Track 19 : Nattles\_62
- Track 20 : PuppyEggo\_63
- Track 21 : AlexAdler\_63
- Track 22 : Winzigespinne\_62
- Track 23 : Ludgate\_63
- Track 24 : Vispistious\_63
- Track 25 : Knox\_63

***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 68 of the 80 non-draft genes in the pham.

Genes that call this "Most Annotated" start:

- Alyxandracam\_63, Antoinette\_63, AranulaLuti\_62, Aubergine\_62, AxiPup\_63, Baines\_62, Bandik\_63, BeautPeep30\_63, Benjalauren\_63, BigRedClifford\_63, BonesMcCoy\_63, Bonino\_62, Chako\_62, Chamuel\_62, Christoph\_62, Convict\_63, Dave\_63, Delphidian\_62, Dothraki\_63, Duocatuli\_62, Erla\_62, Espinosa\_62, Etta\_62, Garey24\_63, Gelo\_62, Greys\_63, Gubbabump\_62, HanSolo\_62, Ilzat\_62, Inventa\_63, Ioannes\_63, JasperRussell\_62, Jenos\_64, Kale\_62, KannH\_62, Klimt\_63, Knox\_63, Ludgate\_63, MaeLinda\_63, ManRay\_62, Martin\_64, MillyPhilly\_63, Nagem\_63, Oats\_62, Papafritta\_62, ParleG\_63, Peep\_63, Pherferi\_63, Phireproof\_63, Phriends\_62, Pocket\_62, Raptor\_63, Renzie\_63, Riyhil\_63, Robinson\_63, SJay\_63, Shee\_63, Stanktossa\_62, Strathdee\_63, TatarkaPM\_63, Teagan\_63, Tenda\_62, Thompsonsone\_63, Thorongil\_63, TinSulphur\_64, Vispistious\_63, WildNOut\_63, Zada\_64,

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

- AlexAdler\_63, Asta\_62, Calix\_62, Gargoyle\_63, Gershwin\_62, HungryHenry\_62, Nattles\_62, PuppyEggo\_63, Rog141\_62, StingRay\_62, TeddyBear\_62,

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

- Winzigespinne\_62,

### Summary by start number:

Start 4:

- Found in 79 of 80 ( 98.8% ) of genes in pham
- Manual Annotations of this start: 68 of 80
- Called 86.1% of time when present
- Phage (with cluster) where this start called: Alyxandracam\_63 (EA1), Antoinette\_63 (EA1), AranulaLuti\_62 (EA1), Aubergine\_62 (EA1), AxiPup\_63 (EA1), Baines\_62 (EA1), Bandik\_63 (EA1), BeautPeep30\_63 (EA1), Benjalauren\_63 (EA1), BigRedClifford\_63 (EA1), BonesMcCoy\_63 (EA1), Bonino\_62 (EA1), Chako\_62 (EA1), Chamuel\_62 (EA1), Christoph\_62 (EA1), Convict\_63 (EA1), Dave\_63 (EA1), Delphidian\_62 (EA1), Dothraki\_63 (EA1), Duocatuli\_62 (EA1), Erla\_62 (EA1), Espinosa\_62 (EA1), Etta\_62 (EA1), Garey24\_63 (EA1), Gelo\_62 (EA1), Greys\_63 (EA1), Gubbabump\_62 (EA1), HanSolo\_62 (EA1), Ilzat\_62 (EA1), Inventa\_63 (EA1), Ioannes\_63 (EA1), JasperRussell\_62 (EA1), Jenos\_64 (EA1), Kale\_62 (EA1), KannH\_62 (EA1), Klimt\_63 (EA1), Knox\_63 (EA1), Ludgate\_63 (EA1), MaeLinda\_63 (EA1), ManRay\_62 (EA1), Martin\_64 (EA1), MillyPhilly\_63 (EA1), Nagem\_63 (EA1), Oats\_62 (EA1), Papafritta\_62 (EA1), ParleG\_63 (EA1), Peep\_63 (EA1), Pherferi\_63 (EA1), Phireproof\_63 (EA1), Phriends\_62 (EA1), Pocket\_62 (EA1), Raptor\_63 (EA1), Renzie\_63 (EA1), Riyhil\_63 (EA1), Robinson\_63 (EA1), SJay\_63 (EA1), Shee\_63 (EA1), Stanktossa\_62 (EA1), Strathdee\_63 (EA1), TatarkaPM\_63 (EA1), Teagan\_63 (EA1), Tenda\_62 (EA1), Thompsonsone\_63 (EA1), Thorongil\_63 (EA1), TinSulphur\_64 (EA1), Vispistious\_63 (EA1), WildNOut\_63 (EA1), Zada\_64 (EA1),

Start 5:

- Found in 40 of 80 ( 50.0% ) of genes in pham
- Manual Annotations of this start: 1 of 80
- Called 2.5% of time when present
- Phage (with cluster) where this start called: Gargoyle\_63 (EA1),

Start 6:

- Found in 79 of 80 ( 98.8% ) of genes in pham
- Manual Annotations of this start: 11 of 80
- Called 13.9% of time when present
- Phage (with cluster) where this start called: AlexAdler\_63 (EA1), Asta\_62 (EA1), Calix\_62 (EA1), Gershwin\_62 (EA1), HungryHenry\_62 (EA1), Nattles\_62 (EA1), PuppyEggo\_63 (EA1), Rog141\_62 (EA1), StingRay\_62 (EA1), TeddyBear\_62 (EA1), Winzigespinne\_62 (EA1),

### **Summary by clusters:**

There is one cluster represented in this pham: EA1

Info for manual annotations of cluster EA1:

- Start number 4 was manually annotated 68 times for cluster EA1.
- Start number 5 was manually annotated 1 time for cluster EA1.
- Start number 6 was manually annotated 11 times for cluster EA1.

### **Gene Information:**

Gene: AlexAdler\_63 Start: 41027, Stop: 41650, Start Num: 6

Candidate Starts for AlexAdler\_63:

(Start: 4 @41009 has 68 MA's), (Start: 5 @41021 has 1 MA's), (Start: 6 @41027 has 11 MA's), (7, 41051), (8, 41117), (10, 41123), (11, 41207), (13, 41330), (14, 41360), (19, 41465), (21, 41504), (22, 41510), (24, 41579), (25, 41633), (26, 41636),

Gene: Alyxandracam\_63 Start: 40945, Stop: 41586, Start Num: 4

Candidate Starts for Alyxandracam\_63:

(Start: 4 @40945 has 68 MA's), (Start: 6 @40963 has 11 MA's), (7, 40987), (8, 41053), (10, 41059), (11, 41143), (13, 41266), (14, 41296), (15, 41308), (19, 41401), (20, 41404), (21, 41440), (22, 41446), (23, 41488), (24, 41515), (25, 41569), (26, 41572),

Gene: Antoinette\_63 Start: 41033, Stop: 41674, Start Num: 4

Candidate Starts for Antoinette\_63:

(Start: 4 @41033 has 68 MA's), (Start: 5 @41045 has 1 MA's), (Start: 6 @41051 has 11 MA's), (7, 41075), (8, 41141), (10, 41147), (11, 41231), (13, 41354), (14, 41384), (19, 41489), (21, 41528), (22, 41534), (23, 41576), (24, 41603), (26, 41660),

Gene: AranulaLuti\_62 Start: 40725, Stop: 41366, Start Num: 4

Candidate Starts for AranulaLuti\_62:

(Start: 4 @40725 has 68 MA's), (Start: 6 @40743 has 11 MA's), (7, 40767), (8, 40833), (10, 40839), (11, 40923), (13, 41046), (14, 41076), (19, 41181), (21, 41220), (22, 41226), (23, 41268), (24, 41295), (26, 41352),

Gene: Asta\_62 Start: 40748, Stop: 41371, Start Num: 6

Candidate Starts for Asta\_62:

(Start: 4 @40730 has 68 MA's), (Start: 5 @40742 has 1 MA's), (Start: 6 @40748 has 11 MA's), (7, 40772), (8, 40838), (11, 40928), (13, 41051), (14, 41081), (15, 41093), (19, 41186), (21, 41225), (22, 41231), (23, 41273), (24, 41300), (26, 41357),

Gene: Aubergine\_62 Start: 40730, Stop: 41371, Start Num: 4

Candidate Starts for Aubergine\_62:

(Start: 4 @40730 has 68 MA's), (Start: 6 @40748 has 11 MA's), (7, 40772), (8, 40838), (10, 40844), (11, 40928), (13, 41051), (14, 41081), (19, 41186), (20, 41189), (21, 41225), (22, 41231), (23, 41273), (24, 41300), (25, 41354), (26, 41357),

Gene: AxiPup\_63 Start: 40945, Stop: 41586, Start Num: 4

Candidate Starts for AxiPup\_63:

(Start: 4 @40945 has 68 MA's), (Start: 5 @40957 has 1 MA's), (Start: 6 @40963 has 11 MA's), (7, 40987), (8, 41053), (10, 41059), (11, 41143), (13, 41266), (14, 41296), (19, 41401), (20, 41404), (21, 41440), (22, 41446), (23, 41488), (24, 41515), (26, 41572),

Gene: Baines\_62 Start: 40730, Stop: 41371, Start Num: 4

Candidate Starts for Baines\_62:

(Start: 4 @40730 has 68 MA's), (Start: 6 @40748 has 11 MA's), (7, 40772), (8, 40838), (10, 40844), (11, 40928), (13, 41051), (14, 41081), (19, 41186), (20, 41189), (21, 41225), (22, 41231), (23, 41273), (24, 41300), (25, 41354), (26, 41357),

Gene: Bandik\_63 Start: 40979, Stop: 41620, Start Num: 4

Candidate Starts for Bandik\_63:

(Start: 4 @40979 has 68 MA's), (Start: 6 @40997 has 11 MA's), (7, 41021), (8, 41087), (10, 41093), (11, 41177), (13, 41300), (14, 41330), (19, 41435), (20, 41438), (21, 41474), (22, 41480), (23, 41522), (24, 41549), (26, 41606),

Gene: BeautPeep30\_63 Start: 40984, Stop: 41625, Start Num: 4

Candidate Starts for BeautPeep30\_63:

(Start: 4 @40984 has 68 MA's), (Start: 5 @40996 has 1 MA's), (Start: 6 @41002 has 11 MA's), (7, 41026), (8, 41092), (10, 41098), (11, 41182), (13, 41305), (14, 41335), (19, 41440), (20, 41443), (21, 41479), (22, 41485), (23, 41527), (24, 41554), (26, 41611),

Gene: Benjalauren\_63 Start: 40736, Stop: 41377, Start Num: 4

Candidate Starts for Benjalauren\_63:

(Start: 4 @40736 has 68 MA's), (Start: 6 @40754 has 11 MA's), (7, 40778), (8, 40844), (10, 40850), (11, 40934), (13, 41057), (14, 41087), (19, 41192), (20, 41195), (21, 41231), (22, 41237), (23, 41279), (24, 41306), (25, 41360), (26, 41363),

Gene: BigRedClifford\_63 Start: 40972, Stop: 41613, Start Num: 4

Candidate Starts for BigRedClifford\_63:

(Start: 4 @40972 has 68 MA's), (Start: 5 @40984 has 1 MA's), (Start: 6 @40990 has 11 MA's), (7, 41014), (8, 41080), (10, 41086), (11, 41170), (13, 41293), (14, 41323), (19, 41428), (21, 41467), (22, 41473), (23, 41515), (24, 41542), (25, 41596), (26, 41599),

Gene: BonesMcCoy\_63 Start: 40972, Stop: 41613, Start Num: 4

Candidate Starts for BonesMcCoy\_63:

(Start: 4 @40972 has 68 MA's), (Start: 6 @40990 has 11 MA's), (7, 41014), (8, 41080), (10, 41086), (11, 41170), (13, 41293), (14, 41323), (19, 41428), (21, 41467), (22, 41473), (23, 41515), (24, 41542), (26, 41599),

Gene: Bonino\_62 Start: 40709, Stop: 41350, Start Num: 4

Candidate Starts for Bonino\_62:

(Start: 4 @40709 has 68 MA's), (Start: 5 @40721 has 1 MA's), (Start: 6 @40727 has 11 MA's), (7, 40751), (8, 40817), (10, 40823), (11, 40907), (13, 41030), (14, 41060), (19, 41165), (20, 41168), (21, 41204), (22, 41210), (23, 41252), (24, 41279), (25, 41333), (26, 41336),

Gene: Calix\_62 Start: 40734, Stop: 41357, Start Num: 6

Candidate Starts for Calix\_62:

(Start: 4 @40716 has 68 MA's), (Start: 5 @40728 has 1 MA's), (Start: 6 @40734 has 11 MA's), (7, 40758), (8, 40824), (10, 40830), (11, 40914), (13, 41037), (14, 41067), (19, 41172), (20, 41175), (21, 41211), (22, 41217), (23, 41259), (24, 41286), (26, 41343),

Gene: Chako\_62 Start: 40725, Stop: 41366, Start Num: 4

Candidate Starts for Chako\_62:

(Start: 4 @40725 has 68 MA's), (Start: 6 @40743 has 11 MA's), (7, 40767), (8, 40833), (10, 40839), (11, 40923), (13, 41046), (14, 41076), (19, 41181), (20, 41184), (21, 41220), (22, 41226), (24, 41295), (25, 41349), (26, 41352),

Gene: Chamuel\_62 Start: 40743, Stop: 41384, Start Num: 4

Candidate Starts for Chamuel\_62:

(Start: 4 @40743 has 68 MA's), (Start: 5 @40755 has 1 MA's), (Start: 6 @40761 has 11 MA's), (7, 40785), (8, 40851), (10, 40857), (11, 40941), (13, 41064), (14, 41094), (19, 41199), (20, 41202), (21, 41238), (22, 41244), (23, 41286), (24, 41313), (26, 41370),

Gene: Christoph\_62 Start: 40729, Stop: 41370, Start Num: 4

Candidate Starts for Christoph\_62:

(Start: 4 @40729 has 68 MA's), (Start: 6 @40747 has 11 MA's), (7, 40771), (8, 40837), (10, 40843), (11, 40927), (13, 41050), (14, 41080), (19, 41185), (21, 41224), (22, 41230), (23, 41272), (24, 41299), (25, 41353), (26, 41356),

Gene: Convict\_63 Start: 40973, Stop: 41614, Start Num: 4

Candidate Starts for Convict\_63:

(Start: 4 @40973 has 68 MA's), (Start: 6 @40991 has 11 MA's), (7, 41015), (8, 41081), (10, 41087), (11, 41171), (13, 41294), (14, 41324), (19, 41429), (21, 41468), (22, 41474), (23, 41516), (24, 41543), (26, 41600),

Gene: Dave\_63 Start: 41033, Stop: 41674, Start Num: 4

Candidate Starts for Dave\_63:

(Start: 4 @41033 has 68 MA's), (Start: 5 @41045 has 1 MA's), (Start: 6 @41051 has 11 MA's), (7, 41075), (8, 41141), (10, 41147), (11, 41231), (13, 41354), (14, 41384), (19, 41489), (21, 41528), (22, 41534), (23, 41576), (24, 41603), (26, 41660),

Gene: Delphidian\_62 Start: 40770, Stop: 41411, Start Num: 4

Candidate Starts for Delphidian\_62:

(Start: 4 @40770 has 68 MA's), (Start: 6 @40788 has 11 MA's), (7, 40812), (8, 40878), (10, 40884), (11, 40968), (13, 41091), (14, 41121), (19, 41226), (21, 41265), (22, 41271), (24, 41340), (26, 41397),

Gene: Dothraki\_63 Start: 40982, Stop: 41623, Start Num: 4

Candidate Starts for Dothraki\_63:

(Start: 4 @40982 has 68 MA's), (Start: 6 @41000 has 11 MA's), (7, 41024), (8, 41090), (10, 41096), (11, 41180), (13, 41303), (14, 41333), (19, 41438), (20, 41441), (21, 41477), (22, 41483), (24, 41552), (25, 41606), (26, 41609),

Gene: Duocatuli\_62 Start: 40726, Stop: 41367, Start Num: 4

Candidate Starts for Duocatuli\_62:

(Start: 4 @40726 has 68 MA's), (Start: 6 @40744 has 11 MA's), (7, 40768), (8, 40834), (10, 40840), (11, 40924), (13, 41047), (14, 41077), (19, 41182), (20, 41185), (21, 41221), (22, 41227), (23, 41269), (24, 41296), (25, 41350), (26, 41353),

Gene: Erla\_62 Start: 40713, Stop: 41354, Start Num: 4

Candidate Starts for Erla\_62:

(Start: 4 @40713 has 68 MA's), (Start: 5 @40725 has 1 MA's), (Start: 6 @40731 has 11 MA's), (7, 40755), (8, 40821), (10, 40827), (11, 40911), (13, 41034), (14, 41064), (19, 41169), (20, 41172), (21, 41208), (22, 41214), (23, 41256), (24, 41283), (26, 41340),

Gene: Espinosa\_62 Start: 40728, Stop: 41369, Start Num: 4

Candidate Starts for Espinosa\_62:

(Start: 4 @40728 has 68 MA's), (Start: 6 @40746 has 11 MA's), (7, 40770), (8, 40836), (10, 40842), (11, 40926), (13, 41049), (14, 41079), (19, 41184), (20, 41187), (21, 41223), (22, 41229), (23, 41271), (24, 41298), (25, 41352), (26, 41355),

Gene: Etta\_62 Start: 40717, Stop: 41358, Start Num: 4

Candidate Starts for Etta\_62:

(Start: 4 @40717 has 68 MA's), (Start: 5 @40729 has 1 MA's), (Start: 6 @40735 has 11 MA's), (7, 40759), (8, 40825), (10, 40831), (11, 40915), (13, 41038), (14, 41068), (19, 41173), (21, 41212), (22, 41218), (23, 41260), (24, 41287), (26, 41344),

Gene: Garey24\_63 Start: 40697, Stop: 41338, Start Num: 4

Candidate Starts for Garey24\_63:

(Start: 4 @40697 has 68 MA's), (Start: 5 @40709 has 1 MA's), (Start: 6 @40715 has 11 MA's), (7, 40739), (8, 40805), (10, 40811), (11, 40895), (13, 41018), (14, 41048), (19, 41153), (21, 41192), (22, 41198), (23, 41240), (24, 41267), (25, 41321), (26, 41324),

Gene: Gargoyle\_63 Start: 40990, Stop: 41619, Start Num: 5

Candidate Starts for Gargoyle\_63:

(Start: 4 @40978 has 68 MA's), (Start: 5 @40990 has 1 MA's), (Start: 6 @40996 has 11 MA's), (7, 41020), (8, 41086), (10, 41092), (11, 41176), (13, 41299), (14, 41329), (15, 41341), (19, 41434), (20, 41437), (21, 41473), (22, 41479), (23, 41521), (24, 41548), (26, 41605),

Gene: Gelo\_62 Start: 40723, Stop: 41364, Start Num: 4

Candidate Starts for Gelo\_62:

(Start: 4 @40723 has 68 MA's), (Start: 5 @40735 has 1 MA's), (Start: 6 @40741 has 11 MA's), (7, 40765), (8, 40831), (10, 40837), (11, 40921), (13, 41044), (14, 41074), (19, 41179), (21, 41218), (22, 41224), (23, 41266), (24, 41293), (26, 41350),

Gene: Gershwin\_62 Start: 40748, Stop: 41371, Start Num: 6

Candidate Starts for Gershwin\_62:

(Start: 4 @40730 has 68 MA's), (Start: 5 @40742 has 1 MA's), (Start: 6 @40748 has 11 MA's), (7, 40772), (8, 40838), (11, 40928), (13, 41051), (14, 41081), (15, 41093), (19, 41186), (21, 41225), (22, 41231), (23, 41273), (24, 41300), (26, 41357),

Gene: Greys\_63 Start: 40972, Stop: 41613, Start Num: 4

Candidate Starts for Greys\_63:

(Start: 4 @40972 has 68 MA's), (Start: 6 @40990 has 11 MA's), (7, 41014), (8, 41080), (10, 41086), (11, 41170), (13, 41293), (14, 41323), (19, 41428), (20, 41431), (21, 41467), (22, 41473), (23, 41515), (24, 41542), (25, 41596), (26, 41599),

Gene: Gubbabump\_62 Start: 40667, Stop: 41308, Start Num: 4

Candidate Starts for Gubbabump\_62:

(Start: 4 @40667 has 68 MA's), (Start: 5 @40679 has 1 MA's), (Start: 6 @40685 has 11 MA's), (7, 40709), (8, 40775), (10, 40781), (11, 40865), (13, 40988), (14, 41018), (19, 41123), (21, 41162), (22,

41168), (23, 41210), (24, 41237), (25, 41291), (26, 41294),

Gene: HanSolo\_62 Start: 40678, Stop: 41319, Start Num: 4

Candidate Starts for HanSolo\_62:

(Start: 4 @40678 has 68 MA's), (Start: 6 @40696 has 11 MA's), (7, 40720), (8, 40786), (10, 40792), (11, 40876), (13, 40999), (14, 41029), (19, 41134), (20, 41137), (21, 41173), (22, 41179), (23, 41221), (24, 41248), (25, 41302), (26, 41305),

Gene: HungryHenry\_62 Start: 40709, Stop: 41332, Start Num: 6

Candidate Starts for HungryHenry\_62:

(Start: 4 @40691 has 68 MA's), (Start: 6 @40709 has 11 MA's), (7, 40733), (8, 40799), (10, 40805), (11, 40889), (13, 41012), (14, 41042), (19, 41147), (20, 41150), (21, 41186), (22, 41192), (23, 41234), (24, 41261), (25, 41315), (26, 41318),

Gene: Ilzat\_62 Start: 40700, Stop: 41341, Start Num: 4

Candidate Starts for Ilzat\_62:

(Start: 4 @40700 has 68 MA's), (Start: 6 @40718 has 11 MA's), (7, 40742), (8, 40808), (10, 40814), (11, 40898), (13, 41021), (14, 41051), (19, 41156), (20, 41159), (21, 41195), (22, 41201), (24, 41270), (25, 41324), (26, 41327),

Gene: Inventa\_63 Start: 40977, Stop: 41618, Start Num: 4

Candidate Starts for Inventa\_63:

(Start: 4 @40977 has 68 MA's), (Start: 6 @40995 has 11 MA's), (7, 41019), (8, 41085), (10, 41091), (11, 41175), (13, 41298), (14, 41328), (19, 41433), (20, 41436), (21, 41472), (22, 41478), (23, 41520), (24, 41547), (26, 41604),

Gene: loannes\_63 Start: 41054, Stop: 41695, Start Num: 4

Candidate Starts for loannes\_63:

(Start: 4 @41054 has 68 MA's), (Start: 6 @41072 has 11 MA's), (7, 41096), (8, 41162), (10, 41168), (11, 41252), (13, 41375), (14, 41405), (19, 41510), (21, 41549), (22, 41555), (23, 41597), (24, 41624), (26, 41681),

Gene: JasperRussell\_62 Start: 40725, Stop: 41366, Start Num: 4

Candidate Starts for JasperRussell\_62:

(Start: 4 @40725 has 68 MA's), (Start: 6 @40743 has 11 MA's), (7, 40767), (8, 40833), (10, 40839), (11, 40923), (13, 41046), (14, 41076), (19, 41181), (20, 41184), (21, 41220), (22, 41226), (24, 41295), (25, 41349), (26, 41352),

Gene: Jenos\_64 Start: 41567, Stop: 42247, Start Num: 4

Candidate Starts for Jenos\_64:

(1, 41498), (Start: 4 @41567 has 68 MA's), (9, 41678), (11, 41774), (13, 41918), (16, 41981), (17, 42008), (18, 42056), (21, 42104), (27, 42242),

Gene: Kale\_62 Start: 40733, Stop: 41374, Start Num: 4

Candidate Starts for Kale\_62:

(Start: 4 @40733 has 68 MA's), (Start: 5 @40745 has 1 MA's), (Start: 6 @40751 has 11 MA's), (7, 40775), (8, 40841), (10, 40847), (11, 40931), (13, 41054), (14, 41084), (19, 41189), (21, 41228), (22, 41234), (23, 41276), (24, 41303), (26, 41360),

Gene: KannH\_62 Start: 40726, Stop: 41367, Start Num: 4

Candidate Starts for KannH\_62:

(Start: 4 @40726 has 68 MA's), (Start: 6 @40744 has 11 MA's), (7, 40768), (8, 40834), (10, 40840), (11, 40924), (13, 41047), (14, 41077), (19, 41182), (20, 41185), (21, 41221), (22, 41227), (23, 41269),



(24, 41296), (25, 41350), (26, 41353),

Gene: Klimt\_63 Start: 40748, Stop: 41389, Start Num: 4

Candidate Starts for Klimt\_63:

(Start: 4 @40748 has 68 MA's), (Start: 5 @40760 has 1 MA's), (Start: 6 @40766 has 11 MA's), (7, 40790), (8, 40856), (10, 40862), (11, 40946), (13, 41069), (14, 41099), (19, 41204), (21, 41243), (22, 41249), (23, 41291), (24, 41318), (26, 41375),

Gene: Knox\_63 Start: 40972, Stop: 41613, Start Num: 4

Candidate Starts for Knox\_63:

(Start: 4 @40972 has 68 MA's), (Start: 6 @40990 has 11 MA's), (7, 41014), (8, 41080), (10, 41086), (11, 41170), (13, 41293), (14, 41323), (15, 41335), (19, 41428), (21, 41467), (22, 41473), (23, 41515), (24, 41542), (26, 41599),

Gene: Ludgate\_63 Start: 40974, Stop: 41615, Start Num: 4

Candidate Starts for Ludgate\_63:

(Start: 4 @40974 has 68 MA's), (Start: 5 @40986 has 1 MA's), (Start: 6 @40992 has 11 MA's), (7, 41016), (8, 41082), (10, 41088), (11, 41172), (13, 41295), (14, 41325), (15, 41337), (19, 41430), (21, 41469), (22, 41475), (23, 41517), (24, 41544), (26, 41601),

Gene: MaeLinda\_63 Start: 40984, Stop: 41625, Start Num: 4

Candidate Starts for MaeLinda\_63:

(Start: 4 @40984 has 68 MA's), (Start: 6 @41002 has 11 MA's), (7, 41026), (8, 41092), (10, 41098), (11, 41182), (13, 41305), (14, 41335), (19, 41440), (21, 41479), (22, 41485), (23, 41527), (24, 41554), (26, 41611),

Gene: ManRay\_62 Start: 40730, Stop: 41371, Start Num: 4

Candidate Starts for ManRay\_62:

(Start: 4 @40730 has 68 MA's), (Start: 5 @40742 has 1 MA's), (Start: 6 @40748 has 11 MA's), (7, 40772), (8, 40838), (10, 40844), (11, 40928), (13, 41051), (14, 41081), (19, 41186), (20, 41189), (21, 41225), (22, 41231), (23, 41273), (24, 41300), (25, 41354), (26, 41357),

Gene: Martin\_64 Start: 40987, Stop: 41628, Start Num: 4

Candidate Starts for Martin\_64:

(Start: 4 @40987 has 68 MA's), (Start: 5 @40999 has 1 MA's), (Start: 6 @41005 has 11 MA's), (7, 41029), (8, 41095), (10, 41101), (11, 41185), (13, 41308), (14, 41338), (19, 41443), (20, 41446), (21, 41482), (22, 41488), (23, 41530), (24, 41557), (26, 41614),

Gene: MillyPhilly\_63 Start: 40975, Stop: 41616, Start Num: 4

Candidate Starts for MillyPhilly\_63:

(Start: 4 @40975 has 68 MA's), (Start: 5 @40987 has 1 MA's), (Start: 6 @40993 has 11 MA's), (7, 41017), (8, 41083), (10, 41089), (11, 41173), (13, 41296), (14, 41326), (19, 41431), (21, 41470), (22, 41476), (24, 41545), (26, 41602),

Gene: Nagem\_63 Start: 41021, Stop: 41662, Start Num: 4

Candidate Starts for Nagem\_63:

(Start: 4 @41021 has 68 MA's), (Start: 5 @41033 has 1 MA's), (Start: 6 @41039 has 11 MA's), (7, 41063), (8, 41129), (10, 41135), (11, 41219), (13, 41342), (14, 41372), (19, 41477), (21, 41516), (22, 41522), (23, 41564), (24, 41591), (25, 41645), (26, 41648),

Gene: Nattles\_62 Start: 40736, Stop: 41359, Start Num: 6

Candidate Starts for Nattles\_62:

(Start: 4 @40718 has 68 MA's), (Start: 5 @40730 has 1 MA's), (Start: 6 @40736 has 11 MA's), (7, 40760), (8, 40826), (10, 40832), (11, 40916), (13, 41039), (14, 41069), (15, 41081), (19, 41174), (20, 41177), (21, 41213), (22, 41219), (23, 41261), (24, 41288), (26, 41345),

Gene: Oats\_62 Start: 40730, Stop: 41371, Start Num: 4

Candidate Starts for Oats\_62:

(Start: 4 @40730 has 68 MA's), (Start: 6 @40748 has 11 MA's), (7, 40772), (8, 40838), (10, 40844), (11, 40928), (13, 41051), (14, 41081), (19, 41186), (21, 41225), (22, 41231), (23, 41273), (24, 41300), (25, 41354), (26, 41357),

Gene: Papafritta\_62 Start: 40735, Stop: 41376, Start Num: 4

Candidate Starts for Papafritta\_62:

(Start: 4 @40735 has 68 MA's), (Start: 6 @40753 has 11 MA's), (7, 40777), (8, 40843), (10, 40849), (11, 40933), (13, 41056), (14, 41086), (19, 41191), (20, 41194), (21, 41230), (22, 41236), (23, 41278), (24, 41305), (25, 41359), (26, 41362),

Gene: ParleG\_63 Start: 40985, Stop: 41626, Start Num: 4

Candidate Starts for ParleG\_63:

(Start: 4 @40985 has 68 MA's), (Start: 5 @40997 has 1 MA's), (Start: 6 @41003 has 11 MA's), (7, 41027), (8, 41093), (10, 41099), (11, 41183), (13, 41306), (14, 41336), (19, 41441), (20, 41444), (21, 41480), (22, 41486), (23, 41528), (24, 41555), (26, 41612),

Gene: Peep\_63 Start: 41031, Stop: 41672, Start Num: 4

Candidate Starts for Peep\_63:

(Start: 4 @41031 has 68 MA's), (Start: 6 @41049 has 11 MA's), (7, 41073), (8, 41139), (10, 41145), (11, 41229), (13, 41352), (14, 41382), (19, 41487), (21, 41526), (22, 41532), (24, 41601), (26, 41658),

Gene: Pherferi\_63 Start: 40978, Stop: 41619, Start Num: 4

Candidate Starts for Pherferi\_63:

(Start: 4 @40978 has 68 MA's), (Start: 5 @40990 has 1 MA's), (Start: 6 @40996 has 11 MA's), (7, 41020), (8, 41086), (10, 41092), (11, 41176), (13, 41299), (14, 41329), (19, 41434), (20, 41437), (21, 41473), (22, 41479), (23, 41521), (24, 41548), (26, 41605),

Gene: Phireproof\_63 Start: 40984, Stop: 41625, Start Num: 4

Candidate Starts for Phireproof\_63:

(Start: 4 @40984 has 68 MA's), (Start: 5 @40996 has 1 MA's), (Start: 6 @41002 has 11 MA's), (7, 41026), (8, 41092), (10, 41098), (11, 41182), (13, 41305), (14, 41335), (19, 41440), (20, 41443), (21, 41479), (22, 41485), (23, 41527), (24, 41554), (26, 41611),

Gene: Phriends\_62 Start: 40779, Stop: 41420, Start Num: 4

Candidate Starts for Phriends\_62:

(Start: 4 @40779 has 68 MA's), (Start: 6 @40797 has 11 MA's), (7, 40821), (8, 40887), (10, 40893), (11, 40977), (13, 41100), (14, 41130), (19, 41235), (21, 41274), (22, 41280), (24, 41349), (25, 41403), (26, 41406),

Gene: Pocket\_62 Start: 40758, Stop: 41399, Start Num: 4

Candidate Starts for Pocket\_62:

(Start: 4 @40758 has 68 MA's), (Start: 5 @40770 has 1 MA's), (Start: 6 @40776 has 11 MA's), (7, 40800), (8, 40866), (10, 40872), (11, 40956), (13, 41079), (14, 41109), (19, 41214), (21, 41253), (22, 41259), (23, 41301), (24, 41328), (26, 41385),

Gene: PuppyEggo\_63 Start: 40996, Stop: 41619, Start Num: 6

Candidate Starts for PuppyEggo\_63:

(Start: 4 @40978 has 68 MA's), (Start: 6 @40996 has 11 MA's), (7, 41020), (8, 41086), (10, 41092), (11, 41176), (12, 41221), (13, 41299), (14, 41329), (20, 41437), (21, 41473), (22, 41479), (23, 41521), (24, 41548), (26, 41605),

Gene: Raptor\_63 Start: 40976, Stop: 41617, Start Num: 4

Candidate Starts for Raptor\_63:

(Start: 4 @40976 has 68 MA's), (Start: 5 @40988 has 1 MA's), (Start: 6 @40994 has 11 MA's), (7, 41018), (8, 41084), (10, 41090), (11, 41174), (13, 41297), (14, 41327), (19, 41432), (21, 41471), (22, 41477), (23, 41519), (24, 41546), (26, 41603),

Gene: Renzie\_63 Start: 41033, Stop: 41674, Start Num: 4

Candidate Starts for Renzie\_63:

(Start: 4 @41033 has 68 MA's), (Start: 5 @41045 has 1 MA's), (Start: 6 @41051 has 11 MA's), (7, 41075), (8, 41141), (10, 41147), (11, 41231), (13, 41354), (14, 41384), (19, 41489), (21, 41528), (22, 41534), (23, 41576), (24, 41603), (26, 41660),

Gene: Riyhil\_63 Start: 40987, Stop: 41628, Start Num: 4

Candidate Starts for Riyhil\_63:

(Start: 4 @40987 has 68 MA's), (Start: 6 @41005 has 11 MA's), (7, 41029), (8, 41095), (10, 41101), (11, 41185), (13, 41308), (14, 41338), (19, 41443), (21, 41482), (22, 41488), (24, 41557), (25, 41611), (26, 41614),

Gene: Robinson\_63 Start: 41049, Stop: 41690, Start Num: 4

Candidate Starts for Robinson\_63:

(Start: 4 @41049 has 68 MA's), (Start: 5 @41061 has 1 MA's), (Start: 6 @41067 has 11 MA's), (7, 41091), (8, 41157), (10, 41163), (11, 41247), (13, 41370), (14, 41400), (19, 41505), (21, 41544), (22, 41550), (23, 41592), (24, 41619), (26, 41676),

Gene: Rog141\_62 Start: 40739, Stop: 41362, Start Num: 6

Candidate Starts for Rog141\_62:

(Start: 4 @40721 has 68 MA's), (Start: 5 @40733 has 1 MA's), (Start: 6 @40739 has 11 MA's), (7, 40763), (8, 40829), (10, 40835), (11, 40919), (13, 41042), (14, 41072), (19, 41177), (20, 41180), (21, 41216), (22, 41222), (23, 41264), (24, 41291), (26, 41348),

Gene: SJay\_63 Start: 41022, Stop: 41663, Start Num: 4

Candidate Starts for SJay\_63:

(Start: 4 @41022 has 68 MA's), (Start: 5 @41034 has 1 MA's), (Start: 6 @41040 has 11 MA's), (7, 41064), (8, 41130), (10, 41136), (11, 41220), (13, 41343), (14, 41373), (19, 41478), (21, 41517), (22, 41523), (23, 41565), (24, 41592), (25, 41646), (26, 41649),

Gene: Shee\_63 Start: 40974, Stop: 41615, Start Num: 4

Candidate Starts for Shee\_63:

(Start: 4 @40974 has 68 MA's), (Start: 5 @40986 has 1 MA's), (Start: 6 @40992 has 11 MA's), (7, 41016), (8, 41082), (10, 41088), (11, 41172), (13, 41295), (14, 41325), (19, 41430), (20, 41433), (21, 41469), (22, 41475), (23, 41517), (24, 41544), (26, 41601),

Gene: Stanktossa\_62 Start: 40979, Stop: 41620, Start Num: 4

Candidate Starts for Stanktossa\_62:

(Start: 4 @40979 has 68 MA's), (Start: 6 @40997 has 11 MA's), (7, 41021), (8, 41087), (10, 41093), (11, 41177), (13, 41300), (14, 41330), (19, 41435), (20, 41438), (21, 41474), (22, 41480), (24, 41549), (25, 41603), (26, 41606),

Gene: StingRay\_62 Start: 40790, Stop: 41413, Start Num: 6

Candidate Starts for StingRay\_62:

(Start: 4 @40772 has 68 MA's), (Start: 6 @40790 has 11 MA's), (7, 40814), (8, 40880), (10, 40886), (11, 40970), (13, 41093), (14, 41123), (19, 41228), (20, 41231), (21, 41267), (22, 41273), (23, 41315), (24, 41342), (25, 41396), (26, 41399),

Gene: Strathdee\_63 Start: 40977, Stop: 41618, Start Num: 4

Candidate Starts for Strathdee\_63:

(Start: 4 @40977 has 68 MA's), (Start: 6 @40995 has 11 MA's), (7, 41019), (8, 41085), (10, 41091), (11, 41175), (13, 41298), (14, 41328), (19, 41433), (20, 41436), (21, 41472), (22, 41478), (23, 41520), (24, 41547), (25, 41601), (26, 41604),

Gene: TatarkaPM\_63 Start: 40988, Stop: 41629, Start Num: 4

Candidate Starts for TatarkaPM\_63:

(Start: 4 @40988 has 68 MA's), (Start: 5 @41000 has 1 MA's), (Start: 6 @41006 has 11 MA's), (7, 41030), (8, 41096), (10, 41102), (11, 41186), (13, 41309), (14, 41339), (19, 41444), (20, 41447), (21, 41483), (22, 41489), (23, 41531), (24, 41558), (26, 41615),

Gene: Teagan\_63 Start: 40968, Stop: 41609, Start Num: 4

Candidate Starts for Teagan\_63:

(Start: 4 @40968 has 68 MA's), (Start: 6 @40986 has 11 MA's), (7, 41010), (8, 41076), (10, 41082), (11, 41166), (13, 41289), (14, 41319), (19, 41424), (20, 41427), (21, 41463), (22, 41469), (23, 41511), (24, 41538), (25, 41592), (26, 41595),

Gene: TeddyBear\_62 Start: 40748, Stop: 41371, Start Num: 6

Candidate Starts for TeddyBear\_62:

(Start: 4 @40730 has 68 MA's), (Start: 5 @40742 has 1 MA's), (Start: 6 @40748 has 11 MA's), (7, 40772), (8, 40838), (11, 40928), (13, 41051), (14, 41081), (15, 41093), (19, 41186), (21, 41225), (22, 41231), (23, 41273), (24, 41300), (26, 41357),

Gene: Tenda\_62 Start: 40728, Stop: 41369, Start Num: 4

Candidate Starts for Tenda\_62:

(Start: 4 @40728 has 68 MA's), (Start: 6 @40746 has 11 MA's), (7, 40770), (8, 40836), (10, 40842), (11, 40926), (13, 41049), (14, 41079), (19, 41184), (20, 41187), (21, 41223), (22, 41229), (23, 41271), (24, 41298), (25, 41352), (26, 41355),

Gene: Thompsone\_63 Start: 40975, Stop: 41616, Start Num: 4

Candidate Starts for Thompsone\_63:

(Start: 4 @40975 has 68 MA's), (Start: 5 @40987 has 1 MA's), (Start: 6 @40993 has 11 MA's), (7, 41017), (8, 41083), (10, 41089), (11, 41173), (13, 41296), (14, 41326), (19, 41431), (21, 41470), (22, 41476), (23, 41518), (24, 41545), (26, 41602),

Gene: Thorongil\_63 Start: 40492, Stop: 41133, Start Num: 4

Candidate Starts for Thorongil\_63:

(Start: 4 @40492 has 68 MA's), (Start: 5 @40504 has 1 MA's), (Start: 6 @40510 has 11 MA's), (7, 40534), (8, 40600), (10, 40606), (11, 40690), (13, 40813), (14, 40843), (19, 40948), (20, 40951), (21, 40987), (22, 40993), (23, 41035), (24, 41062), (26, 41119),

Gene: TinSulphur\_64 Start: 40982, Stop: 41623, Start Num: 4

Candidate Starts for TinSulphur\_64:

(Start: 4 @40982 has 68 MA's), (Start: 5 @40994 has 1 MA's), (Start: 6 @41000 has 11 MA's), (7, 41024), (8, 41090), (10, 41096), (11, 41180), (13, 41303), (14, 41333), (19, 41438), (20, 41441), (21, 41477), (22, 41483), (23, 41525), (24, 41552), (26, 41609),

Gene: Vispistious\_63 Start: 40978, Stop: 41619, Start Num: 4

Candidate Starts for Vispistious\_63:

(Start: 4 @40978 has 68 MA's), (Start: 6 @40996 has 11 MA's), (7, 41020), (8, 41086), (10, 41092), (11, 41176), (12, 41221), (13, 41299), (14, 41329), (20, 41437), (21, 41473), (22, 41479), (23, 41521), (24, 41548), (26, 41605),

Gene: WildNOut\_63 Start: 40971, Stop: 41612, Start Num: 4

Candidate Starts for WildNOut\_63:

(Start: 4 @40971 has 68 MA's), (Start: 6 @40989 has 11 MA's), (7, 41013), (8, 41079), (10, 41085), (11, 41169), (13, 41292), (14, 41322), (15, 41334), (19, 41427), (20, 41430), (21, 41466), (22, 41472), (23, 41514), (24, 41541), (25, 41595), (26, 41598),

Gene: Winzigespinne\_62 Start: 40736, Stop: 41359, Start Num: 6

Candidate Starts for Winzigespinne\_62:

(2, 40709), (3, 40712), (Start: 6 @40736 has 11 MA's), (7, 40760), (8, 40826), (10, 40832), (11, 40916), (13, 41039), (14, 41069), (19, 41174), (20, 41177), (21, 41213), (22, 41219), (23, 41261), (24, 41288), (25, 41342), (26, 41345),

Gene: Zada\_64 Start: 40989, Stop: 41630, Start Num: 4

Candidate Starts for Zada\_64:

(Start: 4 @40989 has 68 MA's), (Start: 6 @41007 has 11 MA's), (7, 41031), (8, 41097), (10, 41103), (11, 41187), (13, 41310), (14, 41340), (19, 41445), (20, 41448), (21, 41484), (22, 41490), (23, 41532), (24, 41559), (26, 41616),