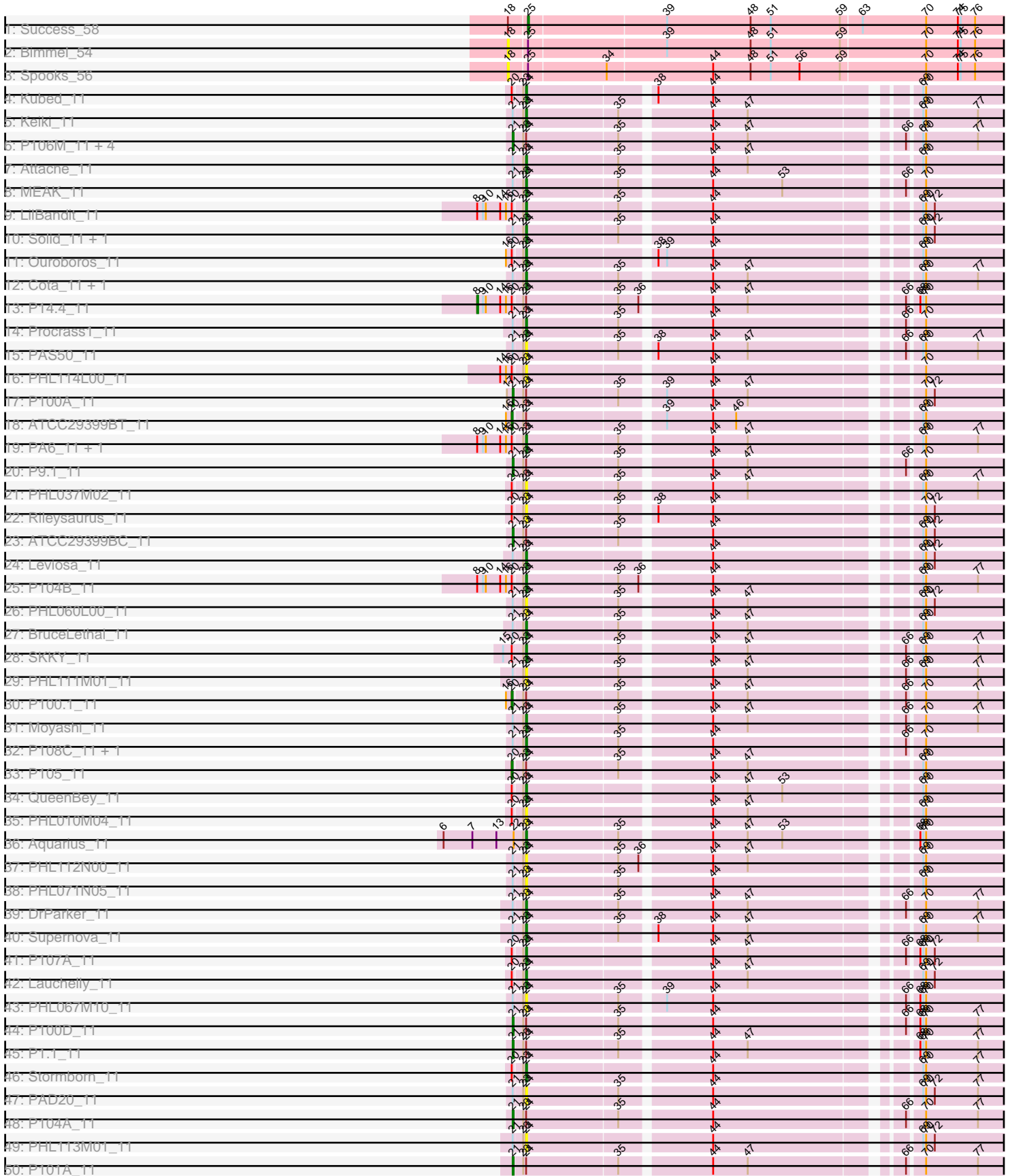
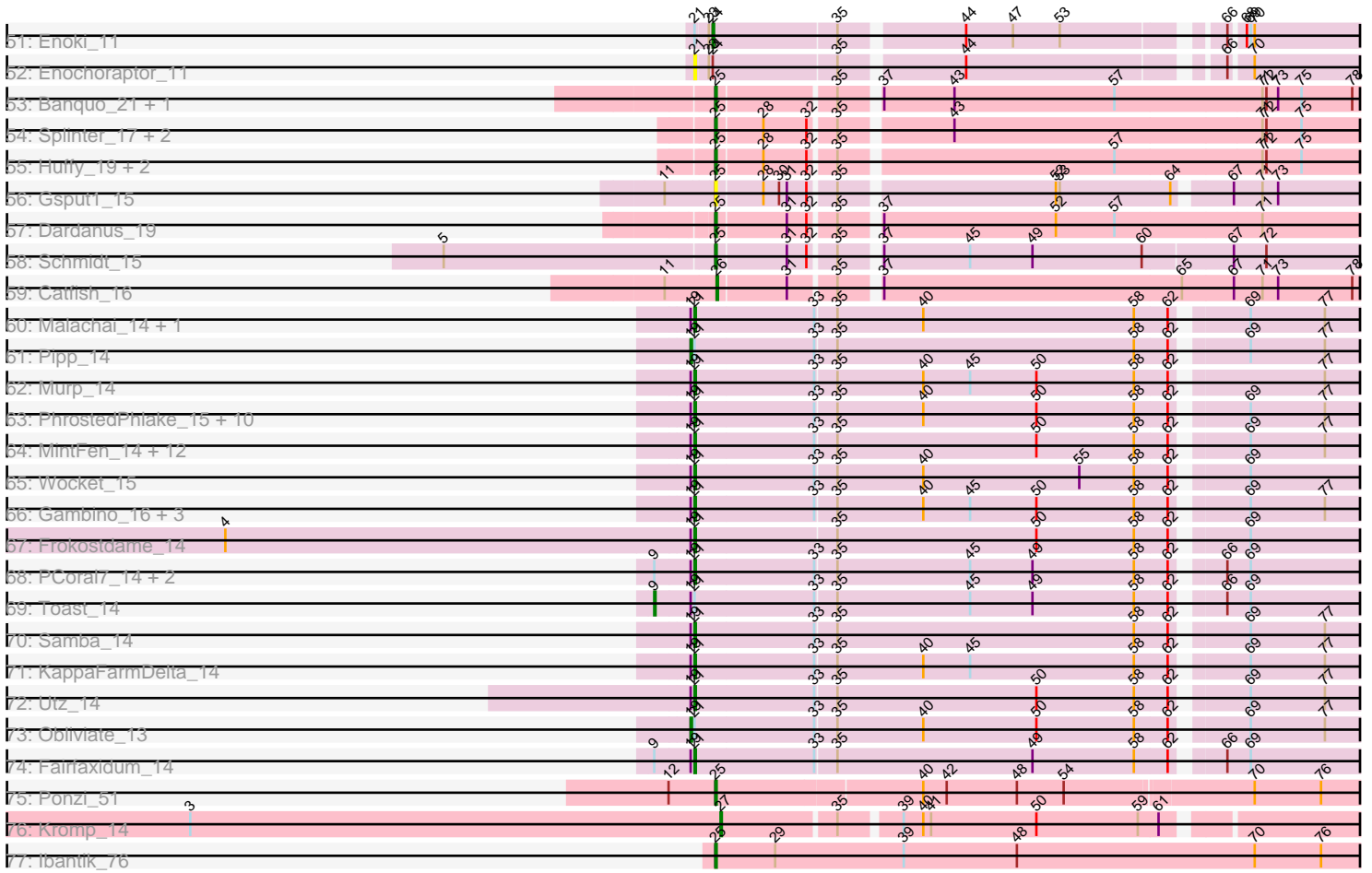


# Zoomed Pham 202792



# Zoomed Pham 202792



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 202792 Report

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

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 202792 has 118 members, 18 are drafts.

Phages represented in each track:

- Track 1 : Success\_58
- Track 2 : Bimmel\_54
- Track 3 : Spooks\_56
- Track 4 : Kubed\_11
- Track 5 : Keiki\_11
- Track 6 : P106M\_11, P106C\_11, P106L\_11, P106I\_11, P106A\_11
- Track 7 : Attacne\_11
- Track 8 : MEAK\_11
- Track 9 : LilBandit\_11
- Track 10 : Solid\_11, P107C\_11
- Track 11 : Ouroboros\_11
- Track 12 : Cota\_11, MrAK\_11
- Track 13 : P14.4\_11
- Track 14 : Procrass1\_11
- Track 15 : PAS50\_11
- Track 16 : PHL114L00\_11
- Track 17 : P100A\_11
- Track 18 : ATCC29399BT\_11
- Track 19 : PA6\_11, Wizzo\_11
- Track 20 : P9.1\_11
- Track 21 : PHL037M02\_11
- Track 22 : Rileysaurus\_11
- Track 23 : ATCC29399BC\_11
- Track 24 : Leviosa\_11
- Track 25 : P104B\_11
- Track 26 : PHL060L00\_11
- Track 27 : BruceLethal\_11
- Track 28 : SKKY\_11
- Track 29 : PHL111M01\_11
- Track 30 : P100.1\_11
- Track 31 : Moyashi\_11
- Track 32 : P108C\_11, Pirate\_11
- Track 33 : P105\_11

- Track 34 : QueenBey\_11
- Track 35 : PHL010M04\_11
- Track 36 : Aquarius\_11
- Track 37 : PHL112N00\_11
- Track 38 : PHL071N05\_11
- Track 39 : DrParker\_11
- Track 40 : Supernova\_11
- Track 41 : P107A\_11
- Track 42 : Lauchelly\_11
- Track 43 : PHL067M10\_11
- Track 44 : P100D\_11
- Track 45 : P1.1\_11
- Track 46 : Stormborn\_11
- Track 47 : PAD20\_11
- Track 48 : P104A\_11
- Track 49 : PHL113M01\_11
- Track 50 : P101A\_11
- Track 51 : Enoki\_11
- Track 52 : Enochoraptor\_11
- Track 53 : Banquo\_21, TinaLin\_20
- Track 54 : Splinter\_17, Goib\_18, Vendetta\_17
- Track 55 : Huffy\_19, TZGordon\_19, DinoDaryn\_19
- Track 56 : Gspu1\_15
- Track 57 : Dardanus\_19
- Track 58 : Schmidt\_15
- Track 59 : Catfish\_16
- Track 60 : Malachai\_14, Begonia\_14
- Track 61 : Pipp\_14
- Track 62 : Murp\_14
- Track 63 : PhrostedPhlake\_15, Wisp\_13, Mellie\_13, Petra\_16, CarolAnn\_14, ZiggyZoo\_13, Blino\_14, Jalammah\_15, Walrus\_15, Hitter\_14, Lysidious\_14
- Track 64 : MintFen\_14, CaptainKirk2\_14, Delian\_14, Melba\_14, Archis\_15, BlingBling\_14, Barco\_14, Guacamole\_14, JasperJr\_14, Fenry\_13, JuJu\_14, Zarbodnamra\_14, UmaThurman\_14
- Track 65 : Wocket\_15
- Track 66 : Gambino\_16, Azula\_16, Blueberry\_16, MissRona\_16
- Track 67 : Frokostdame\_14
- Track 68 : PCoral7\_14, PrincePatrick\_14, William\_14
- Track 69 : Toast\_14
- Track 70 : Samba\_14
- Track 71 : KappaFarmDelta\_14
- Track 72 : Utz\_14
- Track 73 : Obliviate\_13
- Track 74 : Fairfaxidum\_14
- Track 75 : Ponzi\_51
- Track 76 : Kromp\_14
- Track 77 : lbantik\_76

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

The start number called the most often in the published annotations is 21, it was called in 51 of the 100 non-draft genes in the pham.

Genes that call this "Most Annotated" start:

- ATCC29399BC\_11, Archis\_15, Azula\_16, Barco\_14, Begonia\_14, BlingBling\_14, Blino\_14, Blueberry\_16, CaptainKirk2\_14, CarolAnn\_14, Delian\_14, Enochoraptor\_11, Fairfaxidum\_14, Fenry\_13, Frokostdame\_14, Gambino\_16, Guacamole\_14, Hitter\_14, Jalammah\_15, JasperJr\_14, JuJu\_14, KappaFarmDelta\_14, Lysidious\_14, Malachai\_14, Melba\_14, Mellie\_13, MintFen\_14, MissRona\_16, Murp\_14, P1.1\_11, P100A\_11, P100D\_11, P101A\_11, P104A\_11, P106A\_11, P106C\_11, P106I\_11, P106L\_11, P106M\_11, P9.1\_11, PCoral7\_14, Petra\_16, PhrostedPhlake\_15, PrincePatrick\_14, Samba\_14, UmaThurman\_14, Utz\_14, Walrus\_15, William\_14, Wisp\_13, Wocket\_15, Zarbodnamra\_14, ZiggyZoo\_13,

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

- Attacne\_11, BruceLethal\_11, Cota\_11, DrParker\_11, Enoki\_11, Keiki\_11, Leviosa\_11, MEAK\_11, Moyashi\_11, MrAK\_11, Oblivate\_13, P107C\_11, P108C\_11, PAD20\_11, PAS50\_11, PHL060L00\_11, PHL067M10\_11, PHL071N05\_11, PHL111M01\_11, PHL112N00\_11, PHL113M01\_11, Pipp\_14, Pirate\_11, Procrass1\_11, Solid\_11, Supernova\_11, Toast\_14,

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

- ATCC29399BT\_11, Aquarius\_11, Banquo\_21, Bimmel\_54, Catfish\_16, Dardanus\_19, DinoDaryn\_19, Goib\_18, Gspu1\_15, Huffy\_19, Ibantik\_76, Kromp\_14, Kubed\_11, Lauchelly\_11, LilBandit\_11, Ouroboros\_11, P100.1\_11, P104B\_11, P105\_11, P107A\_11, P14.4\_11, PA6\_11, PHL010M04\_11, PHL037M02\_11, PHL114L00\_11, Ponzi\_51, QueenBey\_11, Rileysaurus\_11, SKKY\_11, Schmidt\_15, Splinter\_17, Spooks\_56, Stormborn\_11, Success\_58, TZGordon\_19, TinaLin\_20, Vendetta\_17, Wizzo\_11,

### Summary by start number:

Start 8:

- Found in 5 of 118 ( 4.2% ) of genes in pham
- Manual Annotations of this start: 1 of 100
- Called 20.0% of time when present
- Phage (with cluster) where this start called: P14.4\_11 (BU),

Start 9:

- Found in 10 of 118 ( 8.5% ) of genes in pham
- Manual Annotations of this start: 1 of 100
- Called 10.0% of time when present
- Phage (with cluster) where this start called: Toast\_14 (CV),

Start 18:

- Found in 3 of 118 ( 2.5% ) of genes in pham
- No Manual Annotations of this start.
- Called 66.7% of time when present
- Phage (with cluster) where this start called: Bimmel\_54 (BT), Spooks\_56 (BT),

Start 19:

- Found in 43 of 118 ( 36.4% ) of genes in pham

- Manual Annotations of this start: 2 of 100
- Called 4.7% of time when present
- Phage (with cluster) where this start called: Obliviate\_13 (CV), Pipp\_14 (CV),

#### Start 20:

- Found in 19 of 118 ( 16.1% ) of genes in pham
- Manual Annotations of this start: 3 of 100
- Called 15.8% of time when present
- Phage (with cluster) where this start called: ATCC29399BT\_11 (BU), P100.1\_11 (BU), P105\_11 (BU),

#### Start 21:

- Found in 80 of 118 ( 67.8% ) of genes in pham
- Manual Annotations of this start: 51 of 100
- Called 66.2% of time when present
- Phage (with cluster) where this start called: ATCC29399BC\_11 (BU), Archis\_15 (CV), Azula\_16 (CV), Barco\_14 (CV), Begonia\_14 (CV), BlingBling\_14 (CV), Blino\_14 (CV), Blueberry\_16 (CV), CaptainKirk2\_14 (CV), CarolAnn\_14 (CV), Delian\_14 (CV), Enochoraptor\_11 (BU), Fairfaxidum\_14 (CV), Fenry\_13 (CV), Frokostdame\_14 (CV), Gambino\_16 (CV), Guacamole\_14 (CV), Hitter\_14 (CV), Jalammah\_15 (CV), JasperJr\_14 (CV), JuJu\_14 (CV), KappaFarmDelta\_14 (CV), Lysidious\_14 (CV), Malachai\_14 (CV), Melba\_14 (CV), Mellie\_13 (CV), MintFen\_14 (CV), MissRona\_16 (CV), Murp\_14 (CV), P1.1\_11 (BU), P100A\_11 (BU), P100D\_11 (BU), P101A\_11 (BU), P104A\_11 (BU), P106A\_11 (BU), P106C\_11 (BU), P106I\_11 (BU), P106L\_11 (BU), P106M\_11 (BU), P9.1\_11 (BU), PCoral7\_14 (CV), Petra\_16 (CV), PhrostedPhlake\_15 (CV), PrincePatrick\_14 (CV), Samba\_14 (CV), UmaThurman\_14 (CV), Utz\_14 (CV), Walrus\_15 (CV), William\_14 (CV), Wisp\_13 (CV), Wocket\_15 (CV), Zarbodnamra\_14 (CV), ZiggyZoo\_13 (CV),

#### Start 24:

- Found in 57 of 118 ( 48.3% ) of genes in pham
- Manual Annotations of this start: 27 of 100
- Called 70.2% of time when present
- Phage (with cluster) where this start called: Aquarius\_11 (BU), Attacne\_11 (BU), BruceLethal\_11 (BU), Cota\_11 (BU), DrParker\_11 (BU), Enoki\_11 (BU), Keiki\_11 (BU), Kubed\_11 (BU), Lauchelly\_11 (BU), Leviosa\_11 (BU), LilBandit\_11 (BU), MEAK\_11 (BU), Moyashi\_11 (BU), MrAK\_11 (BU), Ouroboros\_11 (BU), P104B\_11 (BU), P107A\_11 (BU), P107C\_11 (BU), P108C\_11 (BU), PA6\_11 (BU), PAD20\_11 (BU), PAS50\_11 (BU), PHL010M04\_11 (BU), PHL037M02\_11 (BU), PHL060L00\_11 (BU), PHL067M10\_11 (BU), PHL071N05\_11 (BU), PHL111M01\_11 (BU), PHL112N00\_11 (BU), PHL113M01\_11 (BU), PHL114L00\_11 (BU), Pirate\_11 (BU), Procrass1\_11 (BU), QueenBey\_11 (BU), Rileysaurus\_11 (BU), SKKY\_11 (BU), Solid\_11 (BU), Stormborn\_11 (BU), Supernova\_11 (BU), Wizzo\_11 (BU),

#### Start 25:

- Found in 16 of 118 ( 13.6% ) of genes in pham
- Manual Annotations of this start: 13 of 100
- Called 87.5% of time when present
- Phage (with cluster) where this start called: Banquo\_21 (CU1), Dardanus\_19 (CU3), DinoDaryn\_19 (CU1), Goib\_18 (CU1), Gspu1\_15 (CU2), Huffy\_19 (CU1), Ibantik\_76 (singleton), Ponzi\_51 (singleton), Schmidt\_15 (CU4), Splinter\_17 (CU1), Success\_58 (BT), TZGordon\_19 (CU1), TinaLin\_20 (CU1), Vendetta\_17 (CU1),

Start 26:

- Found in 1 of 118 ( 0.8% ) of genes in pham
- Manual Annotations of this start: 1 of 100
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Catfish\_16 (CU5),

Start 27:

- Found in 1 of 118 ( 0.8% ) of genes in pham
- Manual Annotations of this start: 1 of 100
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Kromp\_14 (singleton),

**Summary by clusters:**

There are 9 clusters represented in this pham: CU5, CU4, CU3, CU2, CU1, singleton, BT, BU, CV,

Info for manual annotations of cluster BT:

- Start number 25 was manually annotated 1 time for cluster BT.

Info for manual annotations of cluster BU:

- Start number 8 was manually annotated 1 time for cluster BU.
- Start number 20 was manually annotated 3 times for cluster BU.
- Start number 21 was manually annotated 12 times for cluster BU.
- Start number 24 was manually annotated 27 times for cluster BU.

Info for manual annotations of cluster CU1:

- Start number 25 was manually annotated 8 times for cluster CU1.

Info for manual annotations of cluster CU3:

- Start number 25 was manually annotated 1 time for cluster CU3.

Info for manual annotations of cluster CU4:

- Start number 25 was manually annotated 1 time for cluster CU4.

Info for manual annotations of cluster CU5:

- Start number 26 was manually annotated 1 time for cluster CU5.

Info for manual annotations of cluster CV:

- Start number 9 was manually annotated 1 time for cluster CV.
- Start number 19 was manually annotated 2 times for cluster CV.
- Start number 21 was manually annotated 39 times for cluster CV.

**Gene Information:**

Gene: ATCC29399BC\_11 Start: 7150, Stop: 7785, Start Num: 21

Candidate Starts for ATCC29399BC\_11:

(Start: 21 @7150 has 51 MA's), (23, 7159), (Start: 24 @7162 has 27 MA's), (35, 7255), (44, 7342), (69, 7531), (70, 7534), (72, 7543), (79, 7627), (80, 7642), (81, 7648), (85, 7690), (87, 7708),

Gene: ATCC29399BT\_11 Start: 7147, Stop: 7782, Start Num: 20

Candidate Starts for ATCC29399BT\_11:

(16, 7141), (Start: 20 @7147 has 3 MA's), (23, 7156), (Start: 24 @7159 has 27 MA's), (39, 7291), (44, 7339), (46, 7363), (69, 7528), (70, 7531), (79, 7624), (80, 7639), (81, 7645), (85, 7687), (87, 7705),

Gene: Aquarius\_11 Start: 7160, Stop: 7801, Start Num: 24

Candidate Starts for Aquarius\_11:

(6, 7076), (7, 7106), (13, 7130), (22, 7148), (23, 7157), (Start: 24 @7160 has 27 MA's), (35, 7253), (44, 7340), (47, 7376), (53, 7412), (68, 7526), (69, 7529), (70, 7532), (79, 7625), (80, 7640), (81, 7646), (85, 7688), (87, 7706),

Gene: Archis\_15 Start: 8891, Stop: 9529, Start Num: 21

Candidate Starts for Archis\_15:

(Start: 19 @8888 has 2 MA's), (Start: 21 @8891 has 51 MA's), (33, 8981), (35, 8996), (50, 9149), (58, 9224), (62, 9248), (69, 9296), (77, 9353), (79, 9392), (88, 9476), (90, 9512),

Gene: Attacne\_11 Start: 7163, Stop: 7786, Start Num: 24

Candidate Starts for Attacne\_11:

(Start: 21 @7151 has 51 MA's), (23, 7160), (Start: 24 @7163 has 27 MA's), (35, 7256), (44, 7343), (47, 7379), (69, 7532), (70, 7535), (79, 7628), (80, 7643), (81, 7649), (85, 7691), (87, 7709),

Gene: Azula\_16 Start: 9023, Stop: 9661, Start Num: 21

Candidate Starts for Azula\_16:

(Start: 19 @9020 has 2 MA's), (Start: 21 @9023 has 51 MA's), (33, 9113), (35, 9128), (40, 9194), (45, 9230), (50, 9281), (58, 9356), (62, 9380), (69, 9428), (77, 9485), (79, 9524), (88, 9608), (90, 9644),

Gene: Banquo\_21 Start: 11777, Stop: 12373, Start Num: 25

Candidate Starts for Banquo\_21:

(Start: 25 @11777 has 13 MA's), (35, 11861), (37, 11885), (43, 11939), (57, 12062), (71, 12173), (72, 12176), (73, 12185), (75, 12203), (78, 12242), (83, 12293),

Gene: Barco\_14 Start: 8679, Stop: 9317, Start Num: 21

Candidate Starts for Barco\_14:

(Start: 19 @8676 has 2 MA's), (Start: 21 @8679 has 51 MA's), (33, 8769), (35, 8784), (50, 8937), (58, 9012), (62, 9036), (69, 9084), (77, 9141), (79, 9180), (88, 9264), (90, 9300),

Gene: Begonia\_14 Start: 8682, Stop: 9320, Start Num: 21

Candidate Starts for Begonia\_14:

(Start: 19 @8679 has 2 MA's), (Start: 21 @8682 has 51 MA's), (33, 8772), (35, 8787), (40, 8853), (58, 9015), (62, 9039), (69, 9087), (77, 9144), (79, 9183), (88, 9267), (90, 9303),

Gene: Bimmel\_54 Start: 31786, Stop: 32394, Start Num: 18

Candidate Starts for Bimmel\_54:

(18, 31786), (Start: 25 @31804 has 13 MA's), (39, 31942), (48, 32029), (51, 32050), (59, 32122), (70, 32209), (74, 32242), (75, 32245), (76, 32260),

Gene: BlingBling\_14 Start: 8679, Stop: 9317, Start Num: 21

Candidate Starts for BlingBling\_14:

(Start: 19 @8676 has 2 MA's), (Start: 21 @8679 has 51 MA's), (33, 8769), (35, 8784), (50, 8937), (58, 9012), (62, 9036), (69, 9084), (77, 9141), (79, 9180), (88, 9264), (90, 9300),

Gene: Blino\_14 Start: 8579, Stop: 9217, Start Num: 21

Candidate Starts for Blino\_14:



(Start: 19 @8576 has 2 MA's), (Start: 21 @8579 has 51 MA's), (33, 8669), (35, 8684), (40, 8750), (50, 8837), (58, 8912), (62, 8936), (69, 8984), (77, 9041), (79, 9080), (88, 9164), (90, 9200),

Gene: Blueberry\_16 Start: 9023, Stop: 9661, Start Num: 21

Candidate Starts for Blueberry\_16:

(Start: 19 @9020 has 2 MA's), (Start: 21 @9023 has 51 MA's), (33, 9113), (35, 9128), (40, 9194), (45, 9230), (50, 9281), (58, 9356), (62, 9380), (69, 9428), (77, 9485), (79, 9524), (88, 9608), (90, 9644),

Gene: BruceLethal\_11 Start: 7160, Stop: 7792, Start Num: 24

Candidate Starts for BruceLethal\_11:

(Start: 21 @7148 has 51 MA's), (23, 7157), (Start: 24 @7160 has 27 MA's), (35, 7253), (44, 7340), (47, 7376), (69, 7529), (70, 7532), (79, 7625), (80, 7640), (81, 7646), (85, 7688), (87, 7706),

Gene: CaptainKirk2\_14 Start: 8682, Stop: 9320, Start Num: 21

Candidate Starts for CaptainKirk2\_14:

(Start: 19 @8679 has 2 MA's), (Start: 21 @8682 has 51 MA's), (33, 8772), (35, 8787), (50, 8940), (58, 9015), (62, 9039), (69, 9087), (77, 9144), (79, 9183), (88, 9267), (90, 9303),

Gene: CarolAnn\_14 Start: 8578, Stop: 9216, Start Num: 21

Candidate Starts for CarolAnn\_14:

(Start: 19 @8575 has 2 MA's), (Start: 21 @8578 has 51 MA's), (33, 8668), (35, 8683), (40, 8749), (50, 8836), (58, 8911), (62, 8935), (69, 8983), (77, 9040), (79, 9079), (88, 9163), (90, 9199),

Gene: Catfish\_16 Start: 9760, Stop: 10344, Start Num: 26

Candidate Starts for Catfish\_16:

(11, 9721), (Start: 26 @9760 has 1 MA's), (31, 9811), (35, 9844), (37, 9868), (65, 10096), (67, 10135), (71, 10156), (73, 10168), (78, 10225), (84, 10291), (86, 10297),

Gene: Cota\_11 Start: 7170, Stop: 7796, Start Num: 24

Candidate Starts for Cota\_11:

(Start: 21 @7158 has 51 MA's), (23, 7167), (Start: 24 @7170 has 27 MA's), (35, 7263), (44, 7350), (47, 7386), (69, 7539), (70, 7542), (77, 7596), (79, 7635), (80, 7650), (81, 7656), (85, 7698), (87, 7716),

Gene: Dardanus\_19 Start: 10822, Stop: 11409, Start Num: 25

Candidate Starts for Dardanus\_19:

(Start: 25 @10822 has 13 MA's), (31, 10873), (32, 10888), (35, 10906), (37, 10930), (52, 11062), (57, 11107), (71, 11218), (84, 11353), (86, 11359),

Gene: Delian\_14 Start: 8682, Stop: 9320, Start Num: 21

Candidate Starts for Delian\_14:

(Start: 19 @8679 has 2 MA's), (Start: 21 @8682 has 51 MA's), (33, 8772), (35, 8787), (50, 8940), (58, 9015), (62, 9039), (69, 9087), (77, 9144), (79, 9183), (88, 9267), (90, 9303),

Gene: DinoDaryn\_19 Start: 10919, Stop: 11509, Start Num: 25

Candidate Starts for DinoDaryn\_19:

(Start: 25 @10919 has 13 MA's), (28, 10952), (32, 10985), (35, 11003), (57, 11204), (71, 11315), (72, 11318), (75, 11345), (80, 11417),

Gene: DrParker\_11 Start: 7185, Stop: 7826, Start Num: 24

Candidate Starts for DrParker\_11:

(Start: 21 @7173 has 51 MA's), (23, 7182), (Start: 24 @7185 has 27 MA's), (35, 7278), (44, 7365), (47, 7401), (66, 7542), (70, 7557), (77, 7611), (79, 7650), (80, 7665), (81, 7671), (85, 7713), (87, 7731),

Gene: Enochoraptor\_11 Start: 7162, Stop: 7800, Start Num: 21

Candidate Starts for Enochoraptor\_11:

(Start: 21 @7162 has 51 MA's), (23, 7171), (Start: 24 @7174 has 27 MA's), (35, 7267), (44, 7354), (66, 7531), (70, 7546), (79, 7639), (80, 7654), (81, 7660), (85, 7702), (87, 7720),

Gene: Enoki\_11 Start: 7161, Stop: 7781, Start Num: 24

Candidate Starts for Enoki\_11:

(Start: 21 @7149 has 51 MA's), (23, 7158), (Start: 24 @7161 has 27 MA's), (35, 7254), (44, 7341), (47, 7377), (53, 7413), (66, 7518), (68, 7527), (69, 7530), (70, 7533), (79, 7626), (80, 7641), (81, 7647), (85, 7689), (87, 7707),

Gene: Fairfaxidum\_14 Start: 8713, Stop: 9366, Start Num: 21

Candidate Starts for Fairfaxidum\_14:

(Start: 9 @8683 has 1 MA's), (Start: 19 @8710 has 2 MA's), (Start: 21 @8713 has 51 MA's), (33, 8803), (35, 8818), (49, 8968), (58, 9046), (62, 9070), (66, 9100), (69, 9118), (79, 9214), (88, 9298),

Gene: Fenry\_13 Start: 8428, Stop: 9066, Start Num: 21

Candidate Starts for Fenry\_13:

(Start: 19 @8425 has 2 MA's), (Start: 21 @8428 has 51 MA's), (33, 8518), (35, 8533), (50, 8686), (58, 8761), (62, 8785), (69, 8833), (77, 8890), (79, 8929), (88, 9013), (90, 9049),

Gene: Frokostdame\_14 Start: 8673, Stop: 9311, Start Num: 21

Candidate Starts for Frokostdame\_14:

(1, 8058), (4, 8316), (Start: 19 @8670 has 2 MA's), (Start: 21 @8673 has 51 MA's), (35, 8778), (50, 8931), (58, 9006), (62, 9030), (69, 9078), (79, 9174), (88, 9258), (90, 9294),

Gene: Gambino\_16 Start: 9023, Stop: 9661, Start Num: 21

Candidate Starts for Gambino\_16:

(Start: 19 @9020 has 2 MA's), (Start: 21 @9023 has 51 MA's), (33, 9113), (35, 9128), (40, 9194), (45, 9230), (50, 9281), (58, 9356), (62, 9380), (69, 9428), (77, 9485), (79, 9524), (88, 9608), (90, 9644),

Gene: Goib\_18 Start: 10694, Stop: 11284, Start Num: 25

Candidate Starts for Goib\_18:

(Start: 25 @10694 has 13 MA's), (28, 10727), (32, 10760), (35, 10778), (43, 10856), (71, 11090), (72, 11093), (75, 11120), (80, 11192),

Gene: Gspu1\_15 Start: 9141, Stop: 9716, Start Num: 25

Candidate Starts for Gspu1\_15:

(11, 9105), (Start: 25 @9141 has 13 MA's), (28, 9174), (30, 9186), (31, 9192), (32, 9207), (35, 9225), (52, 9381), (53, 9384), (64, 9468), (67, 9504), (71, 9525), (73, 9537),

Gene: Guacamole\_14 Start: 8683, Stop: 9321, Start Num: 21

Candidate Starts for Guacamole\_14:

(Start: 19 @8680 has 2 MA's), (Start: 21 @8683 has 51 MA's), (33, 8773), (35, 8788), (50, 8941), (58, 9016), (62, 9040), (69, 9088), (77, 9145), (79, 9184), (88, 9268), (90, 9304),

Gene: Hitter\_14 Start: 8679, Stop: 9317, Start Num: 21

Candidate Starts for Hitter\_14:

(Start: 19 @8676 has 2 MA's), (Start: 21 @8679 has 51 MA's), (33, 8769), (35, 8784), (40, 8850), (50, 8937), (58, 9012), (62, 9036), (69, 9084), (77, 9141), (79, 9180), (88, 9264), (90, 9300),

Gene: Huff\_19 Start: 10919, Stop: 11509, Start Num: 25

Candidate Starts for Huff\_19:

(Start: 25 @10919 has 13 MA's), (28, 10952), (32, 10985), (35, 11003), (57, 11204), (71, 11315), (72, 11318), (75, 11345), (80, 11417),

Gene: Ibantik\_76 Start: 35791, Stop: 36390, Start Num: 25

Candidate Starts for Ibantik\_76:

(Start: 25 @35791 has 13 MA's), (29, 35836), (39, 35935), (48, 36022), (70, 36205), (76, 36256), (82, 36328), (87, 36373),

Gene: Jalammah\_15 Start: 8950, Stop: 9588, Start Num: 21

Candidate Starts for Jalammah\_15:

(Start: 19 @8947 has 2 MA's), (Start: 21 @8950 has 51 MA's), (33, 9040), (35, 9055), (40, 9121), (50, 9208), (58, 9283), (62, 9307), (69, 9355), (77, 9412), (79, 9451), (88, 9535), (90, 9571),

Gene: JasperJr\_14 Start: 8683, Stop: 9321, Start Num: 21

Candidate Starts for JasperJr\_14:

(Start: 19 @8680 has 2 MA's), (Start: 21 @8683 has 51 MA's), (33, 8773), (35, 8788), (50, 8941), (58, 9016), (62, 9040), (69, 9088), (77, 9145), (79, 9184), (88, 9268), (90, 9304),

Gene: JuJu\_14 Start: 8607, Stop: 9245, Start Num: 21

Candidate Starts for JuJu\_14:

(Start: 19 @8604 has 2 MA's), (Start: 21 @8607 has 51 MA's), (33, 8697), (35, 8712), (50, 8865), (58, 8940), (62, 8964), (69, 9012), (77, 9069), (79, 9108), (88, 9192), (90, 9228),

Gene: KappaFarmDelta\_14 Start: 8832, Stop: 9470, Start Num: 21

Candidate Starts for KappaFarmDelta\_14:

(Start: 19 @8829 has 2 MA's), (Start: 21 @8832 has 51 MA's), (33, 8922), (35, 8937), (40, 9003), (45, 9039), (58, 9165), (62, 9189), (69, 9237), (77, 9294), (79, 9333), (88, 9417), (90, 9453),

Gene: Keiki\_11 Start: 7170, Stop: 7796, Start Num: 24

Candidate Starts for Keiki\_11:

(Start: 21 @7158 has 51 MA's), (23, 7167), (Start: 24 @7170 has 27 MA's), (35, 7263), (44, 7350), (47, 7386), (69, 7539), (70, 7542), (77, 7596), (79, 7635), (81, 7656), (85, 7698), (87, 7716),

Gene: Kromp\_14 Start: 9809, Stop: 10375, Start Num: 27

Candidate Starts for Kromp\_14:

(2, 9206), (3, 9401), (Start: 27 @9809 has 1 MA's), (35, 9893), (39, 9935), (40, 9950), (41, 9956), (50, 10037), (59, 10115), (61, 10130), (80, 10292),

Gene: Kubed\_11 Start: 7161, Stop: 7790, Start Num: 24

Candidate Starts for Kubed\_11:

(Start: 20 @7149 has 3 MA's), (23, 7158), (Start: 24 @7161 has 27 MA's), (38, 7284), (44, 7341), (69, 7530), (70, 7533), (79, 7626), (80, 7641), (81, 7647), (85, 7689), (87, 7707),

Gene: Lauchelly\_11 Start: 7156, Stop: 7794, Start Num: 24

Candidate Starts for Lauchelly\_11:

(Start: 20 @7144 has 3 MA's), (23, 7153), (Start: 24 @7156 has 27 MA's), (44, 7336), (47, 7372), (69, 7525), (70, 7528), (72, 7537), (80, 7636), (81, 7642), (85, 7684), (87, 7702),

Gene: Leviosa\_11 Start: 7181, Stop: 7813, Start Num: 24

Candidate Starts for Leviosa\_11:

(Start: 21 @7169 has 51 MA's), (23, 7178), (Start: 24 @7181 has 27 MA's), (44, 7361), (69, 7550), (70, 7553), (72, 7562), (79, 7646), (80, 7661), (81, 7667), (85, 7709), (87, 7727),

Gene: LilBandit\_11 Start: 7167, Stop: 7796, Start Num: 24

Candidate Starts for LilBandit\_11:

(Start: 8 @7119 has 1 MA's), (Start: 9 @7125 has 1 MA's), (10, 7128), (14, 7143), (16, 7149), (Start: 20 @7155 has 3 MA's), (23, 7164), (Start: 24 @7167 has 27 MA's), (35, 7260), (44, 7347), (69, 7536), (70, 7539), (72, 7548), (79, 7632), (80, 7647), (81, 7653), (85, 7695), (87, 7713),

Gene: Lysidious\_14 Start: 8679, Stop: 9317, Start Num: 21

Candidate Starts for Lysidious\_14:

(Start: 19 @8676 has 2 MA's), (Start: 21 @8679 has 51 MA's), (33, 8769), (35, 8784), (40, 8850), (50, 8937), (58, 9012), (62, 9036), (69, 9084), (77, 9141), (79, 9180), (88, 9264), (90, 9300),

Gene: MEAK\_11 Start: 7162, Stop: 7782, Start Num: 24

Candidate Starts for MEAK\_11:

(Start: 21 @7150 has 51 MA's), (23, 7159), (Start: 24 @7162 has 27 MA's), (35, 7255), (44, 7342), (53, 7414), (66, 7519), (70, 7534), (79, 7627), (80, 7642), (81, 7648), (85, 7690), (87, 7708),

Gene: Malachai\_14 Start: 8682, Stop: 9320, Start Num: 21

Candidate Starts for Malachai\_14:

(Start: 19 @8679 has 2 MA's), (Start: 21 @8682 has 51 MA's), (33, 8772), (35, 8787), (40, 8853), (58, 9015), (62, 9039), (69, 9087), (77, 9144), (79, 9183), (88, 9267), (90, 9303),

Gene: Melba\_14 Start: 8679, Stop: 9317, Start Num: 21

Candidate Starts for Melba\_14:

(Start: 19 @8676 has 2 MA's), (Start: 21 @8679 has 51 MA's), (33, 8769), (35, 8784), (50, 8937), (58, 9012), (62, 9036), (69, 9084), (77, 9141), (79, 9180), (88, 9264), (90, 9300),

Gene: Mellie\_13 Start: 8419, Stop: 9057, Start Num: 21

Candidate Starts for Mellie\_13:

(Start: 19 @8416 has 2 MA's), (Start: 21 @8419 has 51 MA's), (33, 8509), (35, 8524), (40, 8590), (50, 8677), (58, 8752), (62, 8776), (69, 8824), (77, 8881), (79, 8920), (88, 9004), (90, 9040),

Gene: MintFen\_14 Start: 8679, Stop: 9317, Start Num: 21

Candidate Starts for MintFen\_14:

(Start: 19 @8676 has 2 MA's), (Start: 21 @8679 has 51 MA's), (33, 8769), (35, 8784), (50, 8937), (58, 9012), (62, 9036), (69, 9084), (77, 9141), (79, 9180), (88, 9264), (90, 9300),

Gene: MissRona\_16 Start: 9023, Stop: 9661, Start Num: 21

Candidate Starts for MissRona\_16:

(Start: 19 @9020 has 2 MA's), (Start: 21 @9023 has 51 MA's), (33, 9113), (35, 9128), (40, 9194), (45, 9230), (50, 9281), (58, 9356), (62, 9380), (69, 9428), (77, 9485), (79, 9524), (88, 9608), (90, 9644),

Gene: Moyashi\_11 Start: 7180, Stop: 7824, Start Num: 24

Candidate Starts for Moyashi\_11:

(Start: 21 @7168 has 51 MA's), (23, 7177), (Start: 24 @7180 has 27 MA's), (35, 7273), (44, 7360), (47, 7396), (66, 7537), (70, 7552), (77, 7606), (79, 7645), (80, 7660), (81, 7666), (85, 7708), (87, 7726),

Gene: MrAK\_11 Start: 7192, Stop: 7836, Start Num: 24

Candidate Starts for MrAK\_11:

(Start: 21 @7180 has 51 MA's), (23, 7189), (Start: 24 @7192 has 27 MA's), (35, 7285), (44, 7372), (47, 7408), (69, 7561), (70, 7564), (77, 7618), (79, 7657), (80, 7672), (81, 7678), (85, 7720), (87, 7738),

Gene: Murp\_14 Start: 8672, Stop: 9310, Start Num: 21

Candidate Starts for Murp\_14:

(Start: 19 @8669 has 2 MA's), (Start: 21 @8672 has 51 MA's), (33, 8762), (35, 8777), (40, 8843), (45, 8879), (50, 8930), (58, 9005), (62, 9029), (77, 9134), (79, 9173), (88, 9257), (90, 9293),

Gene: Obliviate\_13 Start: 8445, Stop: 9086, Start Num: 19

Candidate Starts for Obliviate\_13:

(Start: 19 @8445 has 2 MA's), (Start: 21 @8448 has 51 MA's), (33, 8538), (35, 8553), (40, 8619), (50, 8706), (58, 8781), (62, 8805), (69, 8853), (77, 8910), (79, 8949), (88, 9033), (90, 9069),

Gene: Ouroboros\_11 Start: 7164, Stop: 7787, Start Num: 24

Candidate Starts for Ouroboros\_11:

(16, 7146), (Start: 20 @7152 has 3 MA's), (23, 7161), (Start: 24 @7164 has 27 MA's), (38, 7287), (39, 7296), (44, 7344), (69, 7533), (70, 7536), (80, 7644), (81, 7650), (85, 7692), (87, 7710),

Gene: P1.1\_11 Start: 7152, Stop: 7793, Start Num: 21

Candidate Starts for P1.1\_11:

(Start: 21 @7152 has 51 MA's), (23, 7161), (Start: 24 @7164 has 27 MA's), (35, 7257), (44, 7344), (47, 7380), (68, 7530), (69, 7533), (70, 7536), (77, 7590), (79, 7629), (80, 7644), (81, 7650), (85, 7692), (87, 7710),

Gene: P100.1\_11 Start: 7148, Stop: 7801, Start Num: 20

Candidate Starts for P100.1\_11:

(16, 7142), (Start: 20 @7148 has 3 MA's), (23, 7157), (Start: 24 @7160 has 27 MA's), (35, 7253), (44, 7340), (47, 7376), (66, 7517), (70, 7532), (77, 7586), (79, 7625), (80, 7640), (81, 7646), (85, 7688), (87, 7706),

Gene: P100A\_11 Start: 7160, Stop: 7795, Start Num: 21

Candidate Starts for P100A\_11:

(17, 7154), (Start: 21 @7160 has 51 MA's), (23, 7169), (Start: 24 @7172 has 27 MA's), (35, 7265), (39, 7304), (44, 7352), (47, 7388), (70, 7544), (72, 7553), (80, 7652), (81, 7658), (85, 7700), (87, 7718),

Gene: P100D\_11 Start: 7145, Stop: 7798, Start Num: 21

Candidate Starts for P100D\_11:

(Start: 21 @7145 has 51 MA's), (23, 7154), (Start: 24 @7157 has 27 MA's), (35, 7250), (44, 7337), (66, 7514), (68, 7523), (69, 7526), (70, 7529), (77, 7583), (79, 7622), (80, 7637), (81, 7643), (85, 7685), (87, 7703),

Gene: P101A\_11 Start: 7152, Stop: 7808, Start Num: 21

Candidate Starts for P101A\_11:

(Start: 21 @7152 has 51 MA's), (23, 7161), (Start: 24 @7164 has 27 MA's), (35, 7257), (44, 7344), (47, 7380), (66, 7521), (70, 7536), (77, 7590), (79, 7629), (80, 7644), (81, 7650), (85, 7692), (87, 7710),

Gene: P104A\_11 Start: 7149, Stop: 7781, Start Num: 21

Candidate Starts for P104A\_11:

(Start: 21 @7149 has 51 MA's), (23, 7158), (Start: 24 @7161 has 27 MA's), (35, 7254), (44, 7341), (66, 7518), (70, 7533), (77, 7587), (79, 7626), (80, 7641), (81, 7647), (85, 7689), (87, 7707),

Gene: P104B\_11 Start: 7169, Stop: 7798, Start Num: 24

Candidate Starts for P104B\_11:

(Start: 8 @7121 has 1 MA's), (Start: 9 @7127 has 1 MA's), (10, 7130), (14, 7145), (16, 7151), (Start: 20 @7157 has 3 MA's), (23, 7166), (Start: 24 @7169 has 27 MA's), (35, 7262), (36, 7283), (44, 7349), (69, 7538), (70, 7541), (77, 7595), (79, 7634), (80, 7649), (81, 7655), (85, 7697), (87, 7715),

Gene: P105\_11 Start: 7140, Stop: 7781, Start Num: 20

Candidate Starts for P105\_11:

(Start: 20 @7140 has 3 MA's), (23, 7149), (Start: 24 @7152 has 27 MA's), (35, 7245), (44, 7332), (47, 7368), (69, 7521), (70, 7524), (79, 7617), (80, 7632), (81, 7638), (85, 7680), (87, 7698),

Gene: P106A\_11 Start: 7168, Stop: 7824, Start Num: 21

Candidate Starts for P106A\_11:

(Start: 21 @7168 has 51 MA's), (23, 7177), (Start: 24 @7180 has 27 MA's), (35, 7273), (44, 7360), (47, 7396), (66, 7537), (69, 7549), (70, 7552), (77, 7606), (79, 7645), (80, 7660), (81, 7666), (85, 7708), (87, 7726),

Gene: P106C\_11 Start: 7168, Stop: 7824, Start Num: 21

Candidate Starts for P106C\_11:

(Start: 21 @7168 has 51 MA's), (23, 7177), (Start: 24 @7180 has 27 MA's), (35, 7273), (44, 7360), (47, 7396), (66, 7537), (69, 7549), (70, 7552), (77, 7606), (79, 7645), (80, 7660), (81, 7666), (85, 7708), (87, 7726),

Gene: P106I\_11 Start: 7168, Stop: 7824, Start Num: 21

Candidate Starts for P106I\_11:

(Start: 21 @7168 has 51 MA's), (23, 7177), (Start: 24 @7180 has 27 MA's), (35, 7273), (44, 7360), (47, 7396), (66, 7537), (69, 7549), (70, 7552), (77, 7606), (79, 7645), (80, 7660), (81, 7666), (85, 7708), (87, 7726),

Gene: P106L\_11 Start: 7168, Stop: 7824, Start Num: 21

Candidate Starts for P106L\_11:

(Start: 21 @7168 has 51 MA's), (23, 7177), (Start: 24 @7180 has 27 MA's), (35, 7273), (44, 7360), (47, 7396), (66, 7537), (69, 7549), (70, 7552), (77, 7606), (79, 7645), (80, 7660), (81, 7666), (85, 7708), (87, 7726),

Gene: P106M\_11 Start: 7168, Stop: 7824, Start Num: 21

Candidate Starts for P106M\_11:

(Start: 21 @7168 has 51 MA's), (23, 7177), (Start: 24 @7180 has 27 MA's), (35, 7273), (44, 7360), (47, 7396), (66, 7537), (69, 7549), (70, 7552), (77, 7606), (79, 7645), (80, 7660), (81, 7666), (85, 7708), (87, 7726),

Gene: P107A\_11 Start: 7168, Stop: 7800, Start Num: 24

Candidate Starts for P107A\_11:

(Start: 20 @7156 has 3 MA's), (23, 7165), (Start: 24 @7168 has 27 MA's), (44, 7348), (47, 7384), (66, 7525), (68, 7534), (69, 7537), (70, 7540), (72, 7549), (79, 7633), (80, 7648), (81, 7654), (85, 7696), (87, 7714),

Gene: P107C\_11 Start: 7162, Stop: 7785, Start Num: 24

Candidate Starts for P107C\_11:

(Start: 21 @7150 has 51 MA's), (23, 7159), (Start: 24 @7162 has 27 MA's), (35, 7255), (44, 7342), (69, 7531), (70, 7534), (72, 7543), (79, 7627), (80, 7642), (81, 7648), (85, 7690), (87, 7708),

Gene: P108C\_11 Start: 7167, Stop: 7793, Start Num: 24

Candidate Starts for P108C\_11:

(Start: 21 @7155 has 51 MA's), (23, 7164), (Start: 24 @7167 has 27 MA's), (35, 7260), (44, 7347), (66, 7524), (70, 7539), (79, 7632), (80, 7647), (81, 7653), (85, 7695), (87, 7713),

Gene: P14.4\_11 Start: 7116, Stop: 7793, Start Num: 8

Candidate Starts for P14.4\_11:

(Start: 8 @7116 has 1 MA's), (Start: 9 @7122 has 1 MA's), (10, 7125), (14, 7140), (16, 7146), (Start: 20 @7152 has 3 MA's), (23, 7161), (Start: 24 @7164 has 27 MA's), (35, 7257), (36, 7278), (44, 7344), (47, 7380), (66, 7521), (68, 7530), (69, 7533), (70, 7536), (79, 7629), (80, 7644), (81, 7650), (85, 7692), (87, 7710),

Gene: P9.1\_11 Start: 7144, Stop: 7788, Start Num: 21

Candidate Starts for P9.1\_11:

(Start: 21 @7144 has 51 MA's), (23, 7153), (Start: 24 @7156 has 27 MA's), (35, 7249), (44, 7336), (47, 7372), (66, 7513), (70, 7528), (79, 7621), (80, 7636), (81, 7642), (85, 7684), (87, 7702), (89, 7732),

Gene: PA6\_11 Start: 7172, Stop: 7813, Start Num: 24

Candidate Starts for PA6\_11:

(Start: 8 @7124 has 1 MA's), (Start: 9 @7130 has 1 MA's), (10, 7133), (14, 7148), (16, 7154), (Start: 20 @7160 has 3 MA's), (23, 7169), (Start: 24 @7172 has 27 MA's), (35, 7265), (44, 7352), (47, 7388), (69, 7541), (70, 7544), (77, 7598), (79, 7637), (80, 7652), (81, 7658), (85, 7700), (87, 7718),

Gene: PAD20\_11 Start: 7164, Stop: 7793, Start Num: 24

Candidate Starts for PAD20\_11:

(Start: 21 @7152 has 51 MA's), (23, 7161), (Start: 24 @7164 has 27 MA's), (35, 7257), (44, 7344), (69, 7533), (70, 7536), (72, 7545), (77, 7590), (79, 7629), (80, 7644), (81, 7650), (85, 7692), (87, 7710),

Gene: PAS50\_11 Start: 7161, Stop: 7799, Start Num: 24

Candidate Starts for PAS50\_11:

(Start: 21 @7149 has 51 MA's), (23, 7158), (Start: 24 @7161 has 27 MA's), (35, 7254), (38, 7284), (44, 7341), (47, 7377), (66, 7518), (69, 7530), (70, 7533), (77, 7587), (79, 7626), (80, 7641), (81, 7647), (85, 7689), (87, 7707),

Gene: PCoral7\_14 Start: 8656, Stop: 9306, Start Num: 21

Candidate Starts for PCoral7\_14:

(Start: 9 @8626 has 1 MA's), (Start: 19 @8653 has 2 MA's), (Start: 21 @8656 has 51 MA's), (33, 8746), (35, 8761), (45, 8863), (49, 8911), (58, 8989), (62, 9013), (66, 9043), (69, 9061), (79, 9157), (88, 9241),

Gene: PHL010M04\_11 Start: 7155, Stop: 7787, Start Num: 24

Candidate Starts for PHL010M04\_11:

(Start: 20 @7143 has 3 MA's), (23, 7152), (Start: 24 @7155 has 27 MA's), (44, 7335), (47, 7371), (69, 7524), (70, 7527), (79, 7620), (85, 7683), (87, 7701),

Gene: PHL037M02\_11 Start: 7161, Stop: 7802, Start Num: 24

Candidate Starts for PHL037M02\_11:

(Start: 20 @7149 has 3 MA's), (23, 7158), (Start: 24 @7161 has 27 MA's), (35, 7254), (44, 7341), (47, 7377), (69, 7530), (70, 7533), (77, 7587), (79, 7626), (80, 7641), (81, 7647), (85, 7689), (87, 7707),

Gene: PHL060L00\_11 Start: 7151, Stop: 7804, Start Num: 24

Candidate Starts for PHL060L00\_11:

(Start: 21 @7139 has 51 MA's), (23, 7148), (Start: 24 @7151 has 27 MA's), (35, 7244), (44, 7331), (47, 7367), (69, 7520), (70, 7523), (72, 7532), (79, 7616), (80, 7631), (81, 7637), (85, 7679), (87, 7697),

Gene: PHL067M10\_11 Start: 7157, Stop: 7771, Start Num: 24

Candidate Starts for PHL067M10\_11:

(Start: 21 @7145 has 51 MA's), (23, 7154), (Start: 24 @7157 has 27 MA's), (35, 7250), (39, 7289), (44, 7337), (66, 7514), (68, 7523), (69, 7526), (70, 7529), (79, 7622), (80, 7637), (81, 7643), (85, 7685), (87, 7703),

Gene: PHL071N05\_11 Start: 7159, Stop: 7797, Start Num: 24

Candidate Starts for PHL071N05\_11:

(Start: 21 @7147 has 51 MA's), (23, 7156), (Start: 24 @7159 has 27 MA's), (35, 7252), (44, 7339), (69, 7528), (70, 7531), (79, 7624), (80, 7639), (81, 7645), (85, 7687), (87, 7705),

Gene: PHL111M01\_11 Start: 7168, Stop: 7788, Start Num: 24

Candidate Starts for PHL111M01\_11:

(Start: 21 @7156 has 51 MA's), (23, 7165), (Start: 24 @7168 has 27 MA's), (35, 7261), (44, 7348), (47, 7384), (66, 7525), (69, 7537), (70, 7540), (77, 7594), (79, 7633), (80, 7648), (81, 7654), (85, 7696), (87, 7714),

Gene: PHL112N00\_11 Start: 7164, Stop: 7784, Start Num: 24

Candidate Starts for PHL112N00\_11:

(Start: 21 @7152 has 51 MA's), (23, 7161), (Start: 24 @7164 has 27 MA's), (35, 7257), (36, 7278), (44, 7344), (47, 7380), (69, 7533), (70, 7536), (79, 7629), (80, 7644), (81, 7650), (85, 7692), (87, 7710),

Gene: PHL113M01\_11 Start: 7172, Stop: 7813, Start Num: 24

Candidate Starts for PHL113M01\_11:

(Start: 21 @7160 has 51 MA's), (23, 7169), (Start: 24 @7172 has 27 MA's), (44, 7352), (69, 7541), (70, 7544), (72, 7553), (79, 7637), (80, 7652), (81, 7658), (85, 7700), (87, 7718),

Gene: PHL114L00\_11 Start: 7168, Stop: 7791, Start Num: 24

Candidate Starts for PHL114L00\_11:

(14, 7144), (16, 7150), (Start: 20 @7156 has 3 MA's), (23, 7165), (Start: 24 @7168 has 27 MA's), (44, 7348), (70, 7540), (80, 7648), (81, 7654), (85, 7696), (87, 7714),

Gene: Petra\_16 Start: 9059, Stop: 9697, Start Num: 21

Candidate Starts for Petra\_16:

(Start: 19 @9056 has 2 MA's), (Start: 21 @9059 has 51 MA's), (33, 9149), (35, 9164), (40, 9230), (50, 9317), (58, 9392), (62, 9416), (69, 9464), (77, 9521), (79, 9560), (88, 9644), (90, 9680),

Gene: PhrostedPhlake\_15 Start: 9037, Stop: 9675, Start Num: 21

Candidate Starts for PhrostedPhlake\_15:

(Start: 19 @9034 has 2 MA's), (Start: 21 @9037 has 51 MA's), (33, 9127), (35, 9142), (40, 9208), (50, 9295), (58, 9370), (62, 9394), (69, 9442), (77, 9499), (79, 9538), (88, 9622), (90, 9658),

Gene: Pipp\_14 Start: 8651, Stop: 9292, Start Num: 19

Candidate Starts for Pipp\_14:

(Start: 19 @8651 has 2 MA's), (Start: 21 @8654 has 51 MA's), (33, 8744), (35, 8759), (58, 8987), (62, 9011), (69, 9059), (77, 9116), (79, 9155), (88, 9239), (90, 9275),

Gene: Pirate\_11 Start: 7156, Stop: 7782, Start Num: 24

Candidate Starts for Pirate\_11:

(Start: 21 @7144 has 51 MA's), (23, 7153), (Start: 24 @7156 has 27 MA's), (35, 7249), (44, 7336), (66, 7513), (70, 7528), (79, 7621), (80, 7636), (81, 7642), (85, 7684), (87, 7702),

Gene: Ponzi\_51 Start: 29147, Stop: 29737, Start Num: 25

Candidate Starts for Ponzi\_51:

(12, 29111), (Start: 25 @29147 has 13 MA's), (40, 29300), (42, 29318), (48, 29372), (54, 29408), (70, 29546), (76, 29597), (87, 29714),

Gene: PrincePatrick\_14 Start: 8714, Stop: 9367, Start Num: 21



Candidate Starts for PrincePatrick\_14:

(Start: 9 @8684 has 1 MA's), (Start: 19 @8711 has 2 MA's), (Start: 21 @8714 has 51 MA's), (33, 8804), (35, 8819), (45, 8921), (49, 8969), (58, 9047), (62, 9071), (66, 9101), (69, 9119), (79, 9215), (88, 9299),

Gene: Procrass1\_11 Start: 7169, Stop: 7795, Start Num: 24

Candidate Starts for Procrass1\_11:

(Start: 21 @7157 has 51 MA's), (23, 7166), (Start: 24 @7169 has 27 MA's), (35, 7262), (44, 7349), (66, 7526), (70, 7541), (79, 7634), (80, 7649), (81, 7655), (85, 7697), (87, 7715),

Gene: QueenBey\_11 Start: 7157, Stop: 7789, Start Num: 24

Candidate Starts for QueenBey\_11:

(Start: 20 @7145 has 3 MA's), (23, 7154), (Start: 24 @7157 has 27 MA's), (44, 7337), (47, 7373), (53, 7409), (69, 7526), (70, 7529), (80, 7637), (81, 7643), (85, 7685), (87, 7703),

Gene: Rileysaurus\_11 Start: 7153, Stop: 7785, Start Num: 24

Candidate Starts for Rileysaurus\_11:

(Start: 20 @7141 has 3 MA's), (23, 7150), (Start: 24 @7153 has 27 MA's), (35, 7246), (38, 7276), (44, 7333), (70, 7525), (72, 7534), (79, 7618), (85, 7681), (87, 7699),

Gene: SKKY\_11 Start: 7186, Stop: 7830, Start Num: 24

Candidate Starts for SKKY\_11:

(15, 7165), (Start: 20 @7174 has 3 MA's), (23, 7183), (Start: 24 @7186 has 27 MA's), (35, 7279), (44, 7366), (47, 7402), (66, 7543), (69, 7555), (70, 7558), (77, 7612), (79, 7651), (80, 7666), (81, 7672), (85, 7714), (87, 7732),

Gene: Samba\_14 Start: 8787, Stop: 9425, Start Num: 21

Candidate Starts for Samba\_14:

(Start: 19 @8784 has 2 MA's), (Start: 21 @8787 has 51 MA's), (33, 8877), (35, 8892), (58, 9120), (62, 9144), (69, 9192), (77, 9249), (79, 9288), (88, 9372), (90, 9408),

Gene: Schmidt\_15 Start: 9115, Stop: 9729, Start Num: 25

Candidate Starts for Schmidt\_15:

(5, 8911), (Start: 25 @9115 has 13 MA's), (31, 9166), (32, 9181), (35, 9199), (37, 9223), (45, 9289), (49, 9337), (60, 9421), (67, 9487), (72, 9511),

Gene: Solid\_11 Start: 7163, Stop: 7783, Start Num: 24

Candidate Starts for Solid\_11:

(Start: 21 @7151 has 51 MA's), (23, 7160), (Start: 24 @7163 has 27 MA's), (35, 7256), (44, 7343), (69, 7532), (70, 7535), (72, 7544), (79, 7628), (80, 7643), (81, 7649), (85, 7691), (87, 7709),

Gene: Splinter\_17 Start: 10694, Stop: 11284, Start Num: 25

Candidate Starts for Splinter\_17:

(Start: 25 @10694 has 13 MA's), (28, 10727), (32, 10760), (35, 10778), (43, 10856), (71, 11090), (72, 11093), (75, 11120), (80, 11192),

Gene: Spooks\_56 Start: 33087, Stop: 33695, Start Num: 18

Candidate Starts for Spooks\_56:

(18, 33087), (Start: 25 @33105 has 13 MA's), (34, 33183), (44, 33291), (48, 33330), (51, 33351), (56, 33381), (59, 33423), (70, 33510), (74, 33543), (75, 33546), (76, 33561),

Gene: Stormborn\_11 Start: 7159, Stop: 7797, Start Num: 24

Candidate Starts for Stormborn\_11:

(Start: 20 @7147 has 3 MA's), (23, 7156), (Start: 24 @7159 has 27 MA's), (44, 7339), (69, 7528), (70, 7531), (77, 7585), (79, 7624), (80, 7639), (81, 7645), (85, 7687), (87, 7705),

Gene: Success\_58 Start: 32224, Stop: 32814, Start Num: 25

Candidate Starts for Success\_58:

(18, 32206), (Start: 25 @32224 has 13 MA's), (39, 32362), (48, 32449), (51, 32470), (59, 32542), (63, 32563), (70, 32629), (74, 32662), (75, 32665), (76, 32680),

Gene: Supernova\_11 Start: 7163, Stop: 7804, Start Num: 24

Candidate Starts for Supernova\_11:

(Start: 21 @7151 has 51 MA's), (23, 7160), (Start: 24 @7163 has 27 MA's), (35, 7256), (38, 7286), (44, 7343), (47, 7379), (69, 7532), (70, 7535), (77, 7589), (79, 7628), (80, 7643), (81, 7649), (85, 7691), (87, 7709),

Gene: TZGordon\_19 Start: 10836, Stop: 11426, Start Num: 25

Candidate Starts for TZGordon\_19:

(Start: 25 @10836 has 13 MA's), (28, 10869), (32, 10902), (35, 10920), (57, 11121), (71, 11232), (72, 11235), (75, 11262), (80, 11334),

Gene: TinaLin\_20 Start: 11401, Stop: 11997, Start Num: 25

Candidate Starts for TinaLin\_20:

(Start: 25 @11401 has 13 MA's), (35, 11485), (37, 11509), (43, 11563), (57, 11686), (71, 11797), (72, 11800), (73, 11809), (75, 11827), (78, 11866), (83, 11917),

Gene: Toast\_14 Start: 8626, Stop: 9306, Start Num: 9

Candidate Starts for Toast\_14:

(Start: 9 @8626 has 1 MA's), (Start: 19 @8653 has 2 MA's), (Start: 21 @8656 has 51 MA's), (33, 8746), (35, 8761), (45, 8863), (49, 8911), (58, 8989), (62, 9013), (66, 9043), (69, 9061), (79, 9157), (88, 9241),

Gene: UmaThurman\_14 Start: 8786, Stop: 9424, Start Num: 21

Candidate Starts for UmaThurman\_14:

(Start: 19 @8783 has 2 MA's), (Start: 21 @8786 has 51 MA's), (33, 8876), (35, 8891), (50, 9044), (58, 9119), (62, 9143), (69, 9191), (77, 9248), (79, 9287), (88, 9371), (90, 9407),

Gene: Utz\_14 Start: 8653, Stop: 9291, Start Num: 21

Candidate Starts for Utz\_14:

(Start: 19 @8650 has 2 MA's), (Start: 21 @8653 has 51 MA's), (33, 8743), (35, 8758), (50, 8911), (58, 8986), (62, 9010), (69, 9058), (77, 9115), (79, 9154), (88, 9238), (90, 9274),

Gene: Vendetta\_17 Start: 10694, Stop: 11284, Start Num: 25

Candidate Starts for Vendetta\_17:

(Start: 25 @10694 has 13 MA's), (28, 10727), (32, 10760), (35, 10778), (43, 10856), (71, 11090), (72, 11093), (75, 11120), (80, 11192),

Gene: Walrus\_15 Start: 8881, Stop: 9519, Start Num: 21

Candidate Starts for Walrus\_15:

(Start: 19 @8878 has 2 MA's), (Start: 21 @8881 has 51 MA's), (33, 8971), (35, 8986), (40, 9052), (50, 9139), (58, 9214), (62, 9238), (69, 9286), (77, 9343), (79, 9382), (88, 9466), (90, 9502),

Gene: William\_14 Start: 8602, Stop: 9252, Start Num: 21

Candidate Starts for William\_14:

(Start: 9 @8572 has 1 MA's), (Start: 19 @8599 has 2 MA's), (Start: 21 @8602 has 51 MA's), (33, 8692), (35, 8707), (45, 8809), (49, 8857), (58, 8935), (62, 8959), (66, 8989), (69, 9007), (79, 9103), (88, 9187),

Gene: Wisp\_13 Start: 8419, Stop: 9057, Start Num: 21

Candidate Starts for Wisp\_13:

(Start: 19 @8416 has 2 MA's), (Start: 21 @8419 has 51 MA's), (33, 8509), (35, 8524), (40, 8590), (50, 8677), (58, 8752), (62, 8776), (69, 8824), (77, 8881), (79, 8920), (88, 9004), (90, 9040),

Gene: Wizzo\_11 Start: 7174, Stop: 7815, Start Num: 24

Candidate Starts for Wizzo\_11:

(Start: 8 @7126 has 1 MA's), (Start: 9 @7132 has 1 MA's), (10, 7135), (14, 7150), (16, 7156), (Start: 20 @7162 has 3 MA's), (23, 7171), (Start: 24 @7174 has 27 MA's), (35, 7267), (44, 7354), (47, 7390), (69, 7543), (70, 7546), (77, 7600), (79, 7639), (80, 7654), (81, 7660), (85, 7702), (87, 7720),

Gene: Wocket\_15 Start: 8904, Stop: 9542, Start Num: 21

Candidate Starts for Wocket\_15:

(Start: 19 @8901 has 2 MA's), (Start: 21 @8904 has 51 MA's), (33, 8994), (35, 9009), (40, 9075), (55, 9195), (58, 9237), (62, 9261), (69, 9309), (79, 9405), (88, 9489), (90, 9525),

Gene: Zarbodnamra\_14 Start: 8678, Stop: 9316, Start Num: 21

Candidate Starts for Zarbodnamra\_14:

(Start: 19 @8675 has 2 MA's), (Start: 21 @8678 has 51 MA's), (33, 8768), (35, 8783), (50, 8936), (58, 9011), (62, 9035), (69, 9083), (77, 9140), (79, 9179), (88, 9263), (90, 9299),

Gene: ZiggyZoo\_13 Start: 8448, Stop: 9086, Start Num: 21

Candidate Starts for ZiggyZoo\_13:

(Start: 19 @8445 has 2 MA's), (Start: 21 @8448 has 51 MA's), (33, 8538), (35, 8553), (40, 8619), (50, 8706), (58, 8781), (62, 8805), (69, 8853), (77, 8910), (79, 8949), (88, 9033), (90, 9069),