

Pham 308582



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 308582 Report

This analysis was run 06/27/26 on database version 652.

Pham number 308582 has 66 members, 22 are drafts.

Phages represented in each track:

- Track 1 : Darby\_73, ScienceWizSam\_78, Gordon\_73, CastorTray\_79
- Track 2 : Teacup\_78, Brunswick\_78, Nightmare\_78
- Track 3 : Issa\_71, Dinallo\_71, CapnMurica\_73, Tenno\_76
- Track 4 : Acai\_75
- Track 5 : Hemma\_74
- Track 6 : Synopsis\_72
- Track 7 : Nivinsha\_78
- Track 8 : Breylor17\_73, Trustiboi\_75
- Track 9 : Westerlin\_83
- Track 10 : LucySwiss\_77
- Track 11 : MiniBagel\_77, Westerlin\_74
- Track 12 : Brunswick\_90, Issa\_80, LucySwiss\_90
- Track 13 : Niktson\_77, ElephantMan\_77
- Track 14 : Acai\_85
- Track 15 : Tatanka\_71
- Track 16 : AreFloNak\_81
- Track 17 : DevitoJr\_76
- Track 18 : Tipton\_83
- Track 19 : LilHuddy\_81
- Track 20 : Shepard\_82
- Track 21 : Giantsbane\_81
- Track 22 : Tokki\_87, Chlochlo\_82, Phaby\_83, Bouchard\_81
- Track 23 : Loretta\_79, Ingrid\_83
- Track 24 : GantcherGoblin\_87, Tenney120\_89
- Track 25 : Stardrop\_90
- Track 26 : TrixiePhattel\_82
- Track 27 : Inked\_83
- Track 28 : Zippen\_83
- Track 29 : Arzan\_78
- Track 30 : Jazzy4900\_76, Sunny4976\_75
- Track 31 : GermyBearimy\_87
- Track 32 : Elver\_208, Gandionco\_207, Qui\_209, Paella\_209, Marianna39\_207, JeNeSaisPas\_203
- Track 33 : Gandionco\_208, Kureo\_206, Marianna39\_208, Elver\_209, JeNeSaisPas\_204, Paella\_210, Qui\_210
- Track 34 : Kureo\_205
- Track 35 : JeNeSaisPas\_240

- Track 36 : Kureo\_244

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

The start number called the most often in the published annotations is 19, it was called in 30 of the 44 non-draft genes in the pham.

Genes that call this "Most Annotated" start:

- Acai\_75, AreFloNak\_81, Bouchard\_81, Breylor17\_73, Brunswick\_78, CapnMurica\_73, CastorTray\_79, Chlochlo\_82, Darby\_73, DevitoJr\_76, Dinallo\_71, ElephantMan\_77, Gordon\_73, Hemma\_74, Ingrid\_83, Inked\_83, Issa\_71, LilHuddy\_81, Loretta\_79, LucySwiss\_77, MiniBagel\_77, Nightmare\_78, Niktson\_77, Nivinsha\_78, Phaby\_83, ScienceWizSam\_78, Shepard\_82, Synepsis\_72, Tatanka\_71, Teacup\_78, Tenno\_76, Tipton\_83, Tokki\_87, Trustiboi\_75, Westerlin\_74, Zippen\_83,

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

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

- Acai\_85, Arzan\_78, Brunswick\_90, Elver\_208, Elver\_209, Gandionco\_207, Gandionco\_208, GantcherGoblin\_87, GermyBearimy\_87, Giantsbane\_81, Issa\_80, Jazzy4900\_76, JeNeSaisPas\_203, JeNeSaisPas\_204, JeNeSaisPas\_240, Kureo\_205, Kureo\_206, Kureo\_244, LucySwiss\_90, Marianna39\_207, Marianna39\_208, Paella\_209, Paella\_210, Qui\_209, Qui\_210, Stardrop\_90, Sunny4976\_75, Tenney120\_89, TrixiePhattel\_82, Westerlin\_83,

**Summary by start number:**

Start 6:

- Found in 4 of 66 ( 6.1% ) of genes in pham
- Manual Annotations of this start: 3 of 44
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Acai\_85 (AU1), Brunswick\_90 (AU1), Issa\_80 (AU1), LucySwiss\_90 (AU1),

Start 7:

- Found in 1 of 66 ( 1.5% ) of genes in pham
- No Manual Annotations of this start.
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Westerlin\_83 (AU1),

Start 11:

- Found in 7 of 66 ( 10.6% ) of genes in pham
- Manual Annotations of this start: 3 of 44
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Elver\_208 (FK), Gandionco\_207 (FK), JeNeSaisPas\_203 (FK), Kureo\_205 (FK), Marianna39\_207 (FK), Paella\_209 (FK), Qui\_209 (FK),

Start 12:

- Found in 7 of 66 ( 10.6% ) of genes in pham
- Manual Annotations of this start: 3 of 44
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Elver\_209 (FK), Gandionco\_208 (FK), JeNeSaisPas\_204 (FK), Kureo\_206 (FK), Marianna39\_208 (FK), Paella\_210 (FK), Qui\_210 (FK),

Start 13:

- Found in 1 of 66 ( 1.5% ) of genes in pham
- No Manual Annotations of this start.
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Kureo\_244 (FK),

Start 14:

- Found in 2 of 66 ( 3.0% ) of genes in pham
- No Manual Annotations of this start.
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Jazzy4900\_76 (FI), Sunny4976\_75 (FI),

Start 15:

- Found in 2 of 66 ( 3.0% ) of genes in pham
- No Manual Annotations of this start.
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Arzan\_78 (FI), GermyBearimy\_87 (FI),

Start 16:

- Found in 2 of 66 ( 3.0% ) of genes in pham
- No Manual Annotations of this start.
- Called 50.0% of time when present
- Phage (with cluster) where this start called: JeNeSaisPas\_240 (FK),

Start 17:

- Found in 1 of 66 ( 1.5% ) of genes in pham
- Manual Annotations of this start: 1 of 44
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Giantsbane\_81 (AU2),

Start 18:

- Found in 1 of 66 ( 1.5% ) of genes in pham
- Manual Annotations of this start: 1 of 44
- Called 100.0% of time when present
- Phage (with cluster) where this start called: TrixiePhattel\_82 (AU6),

Start 19:

- Found in 36 of 66 ( 54.5% ) of genes in pham
- Manual Annotations of this start: 30 of 44
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Acai\_75 (AU1), AreFloNak\_81 (AU1), Bouchard\_81 (AU2), Breylor17\_73 (AU1), Brunswick\_78 (AU1), CapnMurica\_73 (AU1), CastorTray\_79 (AU1), Chlochlo\_82 (AU2), Darby\_73 (AU1), DevitoJr\_76 (AU1), Dinallo\_71 (AU1), ElephantMan\_77 (AU1), Gordon\_73 (AU1), Hemma\_74 (AU1), Ingrid\_83 (AU3), Inked\_83 (AU7), Issa\_71 (AU1), LilHuddy\_81 (AU2),

Loretta\_79 (AU3), LucySwiss\_77 (AU1), MiniBagel\_77 (AU1), Nightmare\_78 (AU1), Niktson\_77 (AU1), Nivinsha\_78 (AU1), Phaby\_83 (AU2), ScienceWizSam\_78 (AU1), Shepard\_82 (AU2), Synepsis\_72 (AU1), Tatanka\_71 (AU1), Teacup\_78 (AU1), Tenno\_76 (AU1), Tipton\_83 (AU2), Tokki\_87 (AU2), Trustiboi\_75 (AU1), Westerlin\_74 (AU1), Zippen\_83 (AU7),

Start 20:

- Found in 3 of 66 ( 4.5% ) of genes in pham
- Manual Annotations of this start: 3 of 44
- Called 100.0% of time when present
- Phage (with cluster) where this start called: GantcherGoblin\_87 (AU6), Stardrop\_90 (AU6), Tenney120\_89 (AU6),

### **Summary by clusters:**

There are 7 clusters represented in this pham: AU1, AU3, AU2, AU7, AU6, FI, FK,

Info for manual annotations of cluster AU1:

- Start number 6 was manually annotated 3 times for cluster AU1.
- Start number 19 was manually annotated 19 times for cluster AU1.

Info for manual annotations of cluster AU2:

- Start number 17 was manually annotated 1 time for cluster AU2.
- Start number 19 was manually annotated 7 times for cluster AU2.

Info for manual annotations of cluster AU3:

- Start number 19 was manually annotated 2 times for cluster AU3.

Info for manual annotations of cluster AU6:

- Start number 18 was manually annotated 1 time for cluster AU6.
- Start number 20 was manually annotated 3 times for cluster AU6.

Info for manual annotations of cluster AU7:

- Start number 19 was manually annotated 2 times for cluster AU7.

Info for manual annotations of cluster FK:

- Start number 11 was manually annotated 3 times for cluster FK.
- Start number 12 was manually annotated 3 times for cluster FK.

### **Gene Information:**

Gene: Acai\_75 Start: 50664, Stop: 50876, Start Num: 19

Candidate Starts for Acai\_75:

(Start: 19 @50664 has 30 MA's), (26, 50739), (37, 50823), (42, 50841),

Gene: Acai\_85 Start: 53254, Stop: 53502, Start Num: 6

Candidate Starts for Acai\_85:

(Start: 6 @53254 has 3 MA's), (32, 53431), (40, 53464), (41, 53467),

Gene: AreFloNak\_81 Start: 50522, Stop: 50731, Start Num: 19

Candidate Starts for AreFloNak\_81:  
(Start: 19 @50522 has 30 MA's), (26, 50594), (42, 50696),

Gene: Arzan\_78 Start: 49144, Stop: 49362, Start Num: 15  
Candidate Starts for Arzan\_78:  
(1, 49048), (4, 49087), (8, 49114), (15, 49144), (28, 49246),

Gene: Bouchard\_81 Start: 51329, Stop: 51529, Start Num: 19  
Candidate Starts for Bouchard\_81:  
(Start: 19 @51329 has 30 MA's), (32, 51455),

Gene: Breylor17\_73 Start: 50912, Stop: 51121, Start Num: 19  
Candidate Starts for Breylor17\_73:  
(Start: 19 @50912 has 30 MA's), (26, 50984), (32, 51044), (37, 51068), (42, 51086),

Gene: Brunswick\_78 Start: 50656, Stop: 50868, Start Num: 19  
Candidate Starts for Brunswick\_78:  
(Start: 19 @50656 has 30 MA's), (26, 50731), (37, 50815), (42, 50833),

Gene: Brunswick\_90 Start: 53603, Stop: 53848, Start Num: 6  
Candidate Starts for Brunswick\_90:  
(Start: 6 @53603 has 3 MA's), (25, 53711),

Gene: CapnMurica\_73 Start: 50988, Stop: 51197, Start Num: 19  
Candidate Starts for CapnMurica\_73:  
(Start: 19 @50988 has 30 MA's), (32, 51120), (37, 51144), (42, 51162),

Gene: CastorTray\_79 Start: 51040, Stop: 51249, Start Num: 19  
Candidate Starts for CastorTray\_79:  
(Start: 19 @51040 has 30 MA's), (26, 51112), (32, 51172), (42, 51214),

Gene: Chlochlo\_82 Start: 50848, Stop: 51048, Start Num: 19  
Candidate Starts for Chlochlo\_82:  
(Start: 19 @50848 has 30 MA's), (32, 50974),

Gene: Darby\_73 Start: 50086, Stop: 50295, Start Num: 19  
Candidate Starts for Darby\_73:  
(Start: 19 @50086 has 30 MA's), (26, 50158), (32, 50218), (42, 50260),

Gene: DevitoJr\_76 Start: 50468, Stop: 50677, Start Num: 19  
Candidate Starts for DevitoJr\_76:  
(Start: 19 @50468 has 30 MA's), (32, 50600), (42, 50642),

Gene: Dinallo\_71 Start: 51234, Stop: 51443, Start Num: 19  
Candidate Starts for Dinallo\_71:  
(Start: 19 @51234 has 30 MA's), (32, 51366), (37, 51390), (42, 51408),

Gene: ElephantMan\_77 Start: 51249, Stop: 51461, Start Num: 19  
Candidate Starts for ElephantMan\_77:  
(Start: 19 @51249 has 30 MA's), (26, 51324), (37, 51408), (42, 51426),

Gene: Elver\_208 Start: 97047, Stop: 97292, Start Num: 11  
Candidate Starts for Elver\_208:

(Start: 11 @97047 has 3 MA's), (30, 97179), (32, 97203), (35, 97221), (43, 97248), (46, 97272),

Gene: Elver\_209 Start: 97289, Stop: 97528, Start Num: 12

Candidate Starts for Elver\_209:

(Start: 12 @97289 has 3 MA's), (31, 97433), (39, 97478), (46, 97517),

Gene: Gandionco\_207 Start: 96608, Stop: 96853, Start Num: 11

Candidate Starts for Gandionco\_207:

(Start: 11 @96608 has 3 MA's), (30, 96740), (32, 96764), (35, 96782), (43, 96809), (46, 96833),

Gene: Gandionco\_208 Start: 96850, Stop: 97089, Start Num: 12

Candidate Starts for Gandionco\_208:

(Start: 12 @96850 has 3 MA's), (31, 96994), (39, 97039), (46, 97078),

Gene: GantcherGoblin\_87 Start: 50825, Stop: 51037, Start Num: 20

Candidate Starts for GantcherGoblin\_87:

(Start: 20 @50825 has 3 MA's), (23, 50867),

Gene: GermyBearimy\_87 Start: 50764, Stop: 50982, Start Num: 15

Candidate Starts for GermyBearimy\_87:

(3, 50716), (5, 50737), (15, 50764), (27, 50857),

Gene: Giantsbane\_81 Start: 49891, Stop: 50094, Start Num: 17

Candidate Starts for Giantsbane\_81:

(Start: 17 @49891 has 1 MA's), (28, 49981), (32, 50020),

Gene: Gordon\_73 Start: 50882, Stop: 51091, Start Num: 19

Candidate Starts for Gordon\_73:

(Start: 19 @50882 has 30 MA's), (26, 50954), (32, 51014), (42, 51056),

Gene: Hemma\_74 Start: 48302, Stop: 48505, Start Num: 19

Candidate Starts for Hemma\_74:

(10, 48266), (Start: 19 @48302 has 30 MA's), (36, 48452), (39, 48461),

Gene: Ingrid\_83 Start: 50857, Stop: 51060, Start Num: 19

Candidate Starts for Ingrid\_83:

(10, 50821), (Start: 19 @50857 has 30 MA's), (36, 51007), (39, 51016), (42, 51028), (44, 51034),

Gene: Inked\_83 Start: 51558, Stop: 51761, Start Num: 19

Candidate Starts for Inked\_83:

(Start: 19 @51558 has 30 MA's), (26, 51630), (28, 51648), (32, 51687), (36, 51708), (39, 51717), (44, 51735),

Gene: Issa\_71 Start: 50059, Stop: 50268, Start Num: 19

Candidate Starts for Issa\_71:

(Start: 19 @50059 has 30 MA's), (32, 50191), (37, 50215), (42, 50233),

Gene: Issa\_80 Start: 52854, Stop: 53099, Start Num: 6

Candidate Starts for Issa\_80:

(Start: 6 @52854 has 3 MA's), (25, 52962),

Gene: Jazzy4900\_76 Start: 49976, Stop: 50197, Start Num: 14

Candidate Starts for Jazzy4900\_76:

(14, 49976), (28, 50078), (38, 50147), (41, 50156), (44, 50168),

Gene: JeNeSaisPas\_204 Start: 97410, Stop: 97649, Start Num: 12

Candidate Starts for JeNeSaisPas\_204:

(Start: 12 @97410 has 3 MA's), (31, 97554), (39, 97599), (46, 97638),

Gene: JeNeSaisPas\_203 Start: 97168, Stop: 97413, Start Num: 11

Candidate Starts for JeNeSaisPas\_203:

(Start: 11 @97168 has 3 MA's), (30, 97300), (32, 97324), (35, 97342), (43, 97369), (46, 97393),

Gene: JeNeSaisPas\_240 Start: 109405, Stop: 109605, Start Num: 16

Candidate Starts for JeNeSaisPas\_240:

(16, 109405), (33, 109558), (34, 109564),

Gene: Kureo\_205 Start: 95712, Stop: 95957, Start Num: 11

Candidate Starts for Kureo\_205:

(Start: 11 @95712 has 3 MA's), (30, 95844), (32, 95868), (35, 95886), (43, 95913),

Gene: Kureo\_206 Start: 95954, Stop: 96193, Start Num: 12

Candidate Starts for Kureo\_206:

(Start: 12 @95954 has 3 MA's), (31, 96098), (39, 96143), (46, 96182),

Gene: Kureo\_244 Start: 107619, Stop: 107828, Start Num: 13

Candidate Starts for Kureo\_244:

(13, 107619), (16, 107628), (33, 107781), (34, 107787),

Gene: LilHuddy\_81 Start: 51056, Stop: 51256, Start Num: 19

Candidate Starts for LilHuddy\_81:

(Start: 19 @51056 has 30 MA's), (23, 51098), (32, 51182),

Gene: Loretta\_79 Start: 50857, Stop: 51060, Start Num: 19

Candidate Starts for Loretta\_79:

(10, 50821), (Start: 19 @50857 has 30 MA's), (36, 51007), (39, 51016), (42, 51028), (44, 51034),

Gene: LucySwiss\_77 Start: 50317, Stop: 50529, Start Num: 19

Candidate Starts for LucySwiss\_77:

(Start: 19 @50317 has 30 MA's), (26, 50392), (42, 50494),

Gene: LucySwiss\_90 Start: 53700, Stop: 53945, Start Num: 6

Candidate Starts for LucySwiss\_90:

(Start: 6 @53700 has 3 MA's), (25, 53808),

Gene: Marianna39\_207 Start: 97211, Stop: 97456, Start Num: 11

Candidate Starts for Marianna39\_207:

(Start: 11 @97211 has 3 MA's), (30, 97343), (32, 97367), (35, 97385), (43, 97412), (46, 97436),

Gene: Marianna39\_208 Start: 97453, Stop: 97692, Start Num: 12

Candidate Starts for Marianna39\_208:

(Start: 12 @97453 has 3 MA's), (31, 97597), (39, 97642), (46, 97681),

Gene: MiniBagel\_77 Start: 50992, Stop: 51201, Start Num: 19

Candidate Starts for MiniBagel\_77:

(Start: 19 @50992 has 30 MA's), (26, 51064), (32, 51124), (37, 51148), (42, 51166),

Gene: Nightmare\_78 Start: 51419, Stop: 51631, Start Num: 19  
Candidate Starts for Nightmare\_78:  
(Start: 19 @51419 has 30 MA's), (26, 51494), (37, 51578), (42, 51596),

Gene: Niktson\_77 Start: 51249, Stop: 51461, Start Num: 19  
Candidate Starts for Niktson\_77:  
(Start: 19 @51249 has 30 MA's), (26, 51324), (37, 51408), (42, 51426),

Gene: Nivinsha\_78 Start: 50523, Stop: 50732, Start Num: 19  
Candidate Starts for Nivinsha\_78:  
(Start: 19 @50523 has 30 MA's), (26, 50595), (32, 50655), (37, 50679), (42, 50697),

Gene: Paella\_209 Start: 97932, Stop: 98177, Start Num: 11  
Candidate Starts for Paella\_209:  
(Start: 11 @97932 has 3 MA's), (30, 98064), (32, 98088), (35, 98106), (43, 98133), (46, 98157),

Gene: Paella\_210 Start: 98174, Stop: 98413, Start Num: 12  
Candidate Starts for Paella\_210:  
(Start: 12 @98174 has 3 MA's), (31, 98318), (39, 98363), (46, 98402),

Gene: Phaby\_83 Start: 51533, Stop: 51733, Start Num: 19  
Candidate Starts for Phaby\_83:  
(Start: 19 @51533 has 30 MA's), (32, 51659),

Gene: Qui\_209 Start: 97920, Stop: 98165, Start Num: 11  
Candidate Starts for Qui\_209:  
(Start: 11 @97920 has 3 MA's), (30, 98052), (32, 98076), (35, 98094), (43, 98121), (46, 98145),

Gene: Qui\_210 Start: 98162, Stop: 98401, Start Num: 12  
Candidate Starts for Qui\_210:  
(Start: 12 @98162 has 3 MA's), (31, 98306), (39, 98351), (46, 98390),

Gene: ScienceWizSam\_78 Start: 50641, Stop: 50850, Start Num: 19  
Candidate Starts for ScienceWizSam\_78:  
(Start: 19 @50641 has 30 MA's), (26, 50713), (32, 50773), (42, 50815),

Gene: Shepard\_82 Start: 50925, Stop: 51125, Start Num: 19  
Candidate Starts for Shepard\_82:  
(Start: 19 @50925 has 30 MA's), (23, 50967), (32, 51051),

Gene: Stardrop\_90 Start: 52087, Stop: 52284, Start Num: 20  
Candidate Starts for Stardrop\_90:  
(9, 52048), (Start: 20 @52087 has 3 MA's), (45, 52264),

Gene: Sunny4976\_75 Start: 49976, Stop: 50197, Start Num: 14  
Candidate Starts for Sunny4976\_75:  
(14, 49976), (28, 50078), (38, 50147), (41, 50156), (44, 50168),

Gene: Synopsis\_72 Start: 50449, Stop: 50658, Start Num: 19  
Candidate Starts for Synopsis\_72:  
(Start: 19 @50449 has 30 MA's), (26, 50521), (37, 50605), (42, 50623),

Gene: Tatanka\_71 Start: 50627, Stop: 50836, Start Num: 19  
Candidate Starts for Tatanka\_71:  
(Start: 19 @50627 has 30 MA's), (26, 50699), (32, 50759), (42, 50801),

Gene: Teacup\_78 Start: 51310, Stop: 51522, Start Num: 19  
Candidate Starts for Teacup\_78:  
(Start: 19 @51310 has 30 MA's), (26, 51385), (37, 51469), (42, 51487),

Gene: Tenney120\_89 Start: 51376, Stop: 51588, Start Num: 20  
Candidate Starts for Tenney120\_89:  
(Start: 20 @51376 has 3 MA's), (23, 51418),

Gene: Tenno\_76 Start: 51025, Stop: 51234, Start Num: 19  
Candidate Starts for Tenno\_76:  
(Start: 19 @51025 has 30 MA's), (32, 51157), (37, 51181), (42, 51199),

Gene: Tipton\_83 Start: 51409, Stop: 51609, Start Num: 19  
Candidate Starts for Tipton\_83:  
(Start: 19 @51409 has 30 MA's), (26, 51478), (28, 51496), (32, 51535),

Gene: Tokki\_87 Start: 51338, Stop: 51538, Start Num: 19  
Candidate Starts for Tokki\_87:  
(Start: 19 @51338 has 30 MA's), (32, 51464),

Gene: TrixiePhattel\_82 Start: 48318, Stop: 48527, Start Num: 18  
Candidate Starts for TrixiePhattel\_82:  
(Start: 18 @48318 has 1 MA's), (21, 48324), (24, 48378), (26, 48396), (29, 48423), (37, 48474), (39, 48480), (46, 48516),

Gene: Trustiboi\_75 Start: 50730, Stop: 50939, Start Num: 19  
Candidate Starts for Trustiboi\_75:  
(Start: 19 @50730 has 30 MA's), (26, 50802), (32, 50862), (37, 50886), (42, 50904),

Gene: Westerlin\_83 Start: 54487, Stop: 54735, Start Num: 7  
Candidate Starts for Westerlin\_83:  
(2, 54451), (7, 54487), (22, 54550), (41, 54700),

Gene: Westerlin\_74 Start: 51649, Stop: 51858, Start Num: 19  
Candidate Starts for Westerlin\_74:  
(Start: 19 @51649 has 30 MA's), (26, 51721), (32, 51781), (37, 51805), (42, 51823),

Gene: Zippen\_83 Start: 51432, Stop: 51635, Start Num: 19  
Candidate Starts for Zippen\_83:  
(Start: 19 @51432 has 30 MA's), (26, 51504), (28, 51522), (32, 51561), (39, 51591), (44, 51609),