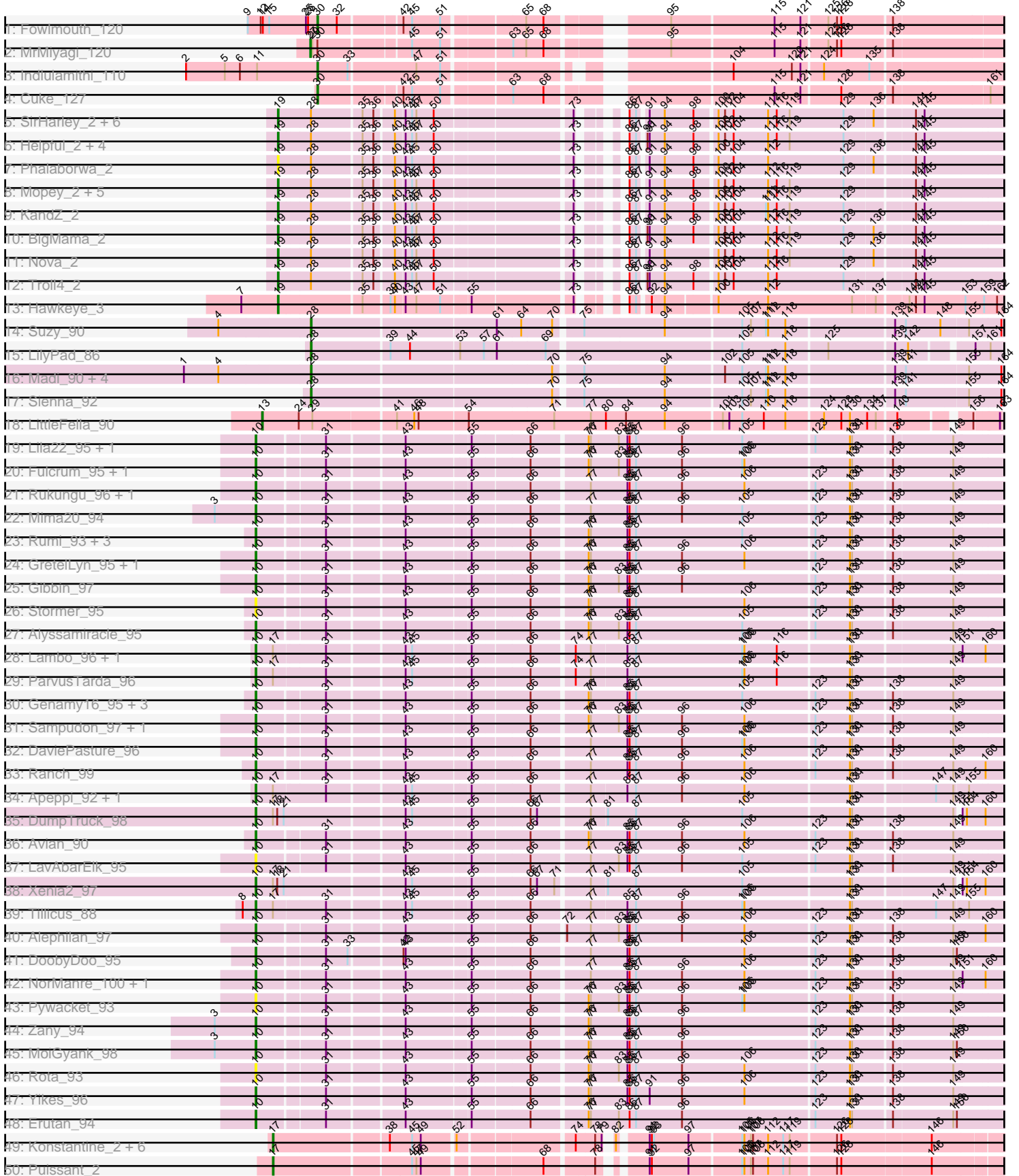


# Zoomed Pham 308382





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 308382 Report

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

Pham number 308382 has 100 members, 9 are drafts.

Phages represented in each track:

- Track 1 : Fowlmouth\_120
- Track 2 : MrMiyagi\_120
- Track 3 : Indlulamithi\_110
- Track 4 : Cuke\_127
- Track 5 : SirHarley\_2, Butterscotch\_2, Visconti\_2, Adjutor\_2, PBI1\_2, Gumball\_2, Giuseppe\_2
- Track 6 : Helpful\_2, Delton\_2, SuperheroCarly\_2, Penelope2018\_2, Prager\_2
- Track 7 : Phalaborwa\_2
- Track 8 : Mopey\_2, Thoth\_2, PLOT\_2, Erk16\_2, Chill\_2, WaldoWhy\_2
- Track 9 : KandZ\_2
- Track 10 : BigMama\_2
- Track 11 : Nova\_2
- Track 12 : Troll4\_2
- Track 13 : Hawkeye\_3
- Track 14 : Suzy\_90
- Track 15 : LilyPad\_86
- Track 16 : Madi\_90, Terapin\_92, Djokovic\_91, BiteSize\_91, Beyoncage\_91
- Track 17 : Sienna\_92
- Track 18 : LittleFella\_90
- Track 19 : Lila22\_95, BirthdayBoy\_97
- Track 20 : Fulcrum\_95, GOATification\_95
- Track 21 : Rukungu\_96, OtterstedtS21\_96
- Track 22 : Mima20\_94
- Track 23 : Rumi\_93, Charminar\_91, Riduram\_91, NovaSharks\_94
- Track 24 : GretelLyn\_95, Sadboi\_95
- Track 25 : Gibbin\_97
- Track 26 : Stormer\_95
- Track 27 : Alyssamiracle\_95
- Track 28 : Lambo\_96, Wojtek\_88
- Track 29 : ParvusTarda\_96
- Track 30 : Genamy16\_95, RazorC\_92, Jamemuya19\_90, Astralis\_92
- Track 31 : Sampudon\_97, Jalebi\_95
- Track 32 : DaviePasture\_96
- Track 33 : Ranch\_99
- Track 34 : Apeppi\_92, LuckyLeo\_94
- Track 35 : DumpTruck\_98
- Track 36 : Avian\_90

- Track 37 : LavAbarElk\_95
- Track 38 : Xenia2\_97
- Track 39 : Tillicus\_88
- Track 40 : Alephilan\_97
- Track 41 : DoobyDoo\_95
- Track 42 : NorManre\_100, Patos\_100
- Track 43 : Pywacket\_93
- Track 44 : Zany\_94
- Track 45 : MoiGyank\_98
- Track 46 : Rota\_93
- Track 47 : Yikes\_96
- Track 48 : Erutan\_94
- Track 49 : Konstantine\_2, BobtimousPrime\_2, Thumb\_2, Phreeze\_2, Oaker\_2, Beckerton\_2, Megatron06\_2
- Track 50 : Puissant\_2
- Track 51 : Predator\_3
- Track 52 : Damien\_2
- Track 53 : Nish23\_2, Cborch11\_2
- Track 54 : DrLupo\_2
- Track 55 : Barnyard\_2
- Track 56 : Patience\_3, Demikore\_3, Madrug\_3, SuperSonics\_3, Labelle\_3

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

The start number called the most often in the published annotations is 10, it was called in 39 of the 91 non-draft genes in the pham.

Genes that call this "Most Annotated" start:

- Alephilan\_97, Alyssamiracle\_95, Apeppi\_92, Astralis\_92, Avian\_90, BirthdayBoy\_97, Charminar\_91, DaviePasture\_96, DoobyDoo\_95, DumpTruck\_98, Erutan\_94, Fulcrum\_95, GOATification\_95, Genamy16\_95, Gibbin\_97, GretellLyn\_95, Jalebi\_95, Jamemuya19\_90, Lambo\_96, LavAbarElk\_95, Lila22\_95, LuckyLeo\_94, Mima20\_94, MoiGyank\_98, NorManre\_100, NovaSharks\_94, OtterstedtS21\_96, ParvusTarda\_96, Patos\_100, Pywacket\_93, Ranch\_99, RazorC\_92, Riduram\_91, Rota\_93, Rukungu\_96, Rumi\_93, Sadboi\_95, Sampudon\_97, Stormer\_95, Tillicus\_88, Wojtek\_88, Xenia2\_97, Yikes\_96, Zany\_94,

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

- 

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

- Adjutor\_2, Barnyard\_2, Beckerton\_2, Beyoncage\_91, BigMama\_2, BiteSize\_91, BobtimousPrime\_2, Butterscotch\_2, Cborch11\_2, Chill\_2, Cuke\_127, Damien\_2, Delton\_2, Demikore\_3, Djokovic\_91, DrLupo\_2, Erk16\_2, Fowlmouth\_120, Giuseppe\_2, Gumball\_2, Hawkeye\_3, Helpful\_2, Indlulamithi\_110, KandZ\_2, Konstantine\_2, Labelle\_3, LilyPad\_86, LittleFella\_90, Madi\_90, Madrug\_3, Megatron06\_2, Mopey\_2, MrMiyagi\_120, Nish23\_2, Nova\_2, Oaker\_2, PBI1\_2, PLOT\_2, Patience\_3, Penelope2018\_2, Phalaborwa\_2, Phreeze\_2, Prager\_2, Predator\_3, Puissant\_2, Sienna\_92, SirHarley\_2, SuperSonics\_3, SuperheroCarly\_2, Suzy\_90, Terapin\_92, Thoth\_2, Thumb\_2, Troll4\_2, Visconti\_2, WaldoWhy\_2,

## Summary by start number:

### Start 10:

- Found in 44 of 100 ( 44.0% ) of genes in pham
- Manual Annotations of this start: 39 of 91
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Alephilan\_97 (DV), Alyssamiracle\_95 (DV), Apeppi\_92 (DV), Astralis\_92 (DV), Avian\_90 (DV), BirthdayBoy\_97 (DV), Charminar\_91 (DV), DaviePasture\_96 (DV), DoobyDoo\_95 (DV), DumpTruck\_98 (DV), Erutan\_94 (DV), Fulcrum\_95 (DV), GOATification\_95 (DV), Genamy16\_95 (DV), Gibbin\_97 (DV), GretelLyn\_95 (DV), Jalebi\_95 (DV), Jamemuya19\_90 (DV), Lambo\_96 (DV), LavAbarElk\_95 (DV), Lila22\_95 (DV), LuckyLeo\_94 (DV), Mima20\_94 (DV), MoiGyank\_98 (DV), NorManre\_100 (DV), NovaSharks\_94 (DV), OtterstedtS21\_96 (DV), ParvusTarda\_96 (DV), Patos\_100 (DV), Pywacket\_93 (DV), Ranch\_99 (DV), RazorC\_92 (DV), Riduram\_91 (DV), Rota\_93 (DV), Rukungu\_96 (DV), Rumi\_93 (DV), Sadboi\_95 (DV), Sampudon\_97 (DV), Stormer\_95 (DV), Tillicus\_88 (DV), Wojtek\_88 (DV), Xenia2\_97 (DV), Yikes\_96 (DV), Zany\_94 (DV),

### Start 13:

- Found in 1 of 100 ( 1.0% ) of genes in pham
- Manual Annotations of this start: 1 of 91
- Called 100.0% of time when present
- Phage (with cluster) where this start called: LittleFella\_90 (DG2),

### Start 17:

- Found in 20 of 100 ( 20.0% ) of genes in pham
- Manual Annotations of this start: 11 of 91
- Called 60.0% of time when present
- Phage (with cluster) where this start called: Beckerton\_2 (H1), BobtimousPrime\_2 (H1), Cborch11\_2 (H1), Damien\_2 (H1), Konstantine\_2 (H1), Megatron06\_2 (H1), Nish23\_2 (H1), Oaker\_2 (H1), Phreeze\_2 (H1), Predator\_3 (H1), Puissant\_2 (H1), Thumb\_2 (H1),

### Start 19:

- Found in 24 of 100 ( 24.0% ) of genes in pham
- Manual Annotations of this start: 23 of 91
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Adjutor\_2 (D1), BigMama\_2 (D1), Butterscotch\_2 (D1), Chill\_2 (D1), Delton\_2 (D1), Erk16\_2 (D1), Giuseppe\_2 (D1), Gumball\_2 (D1), Hawkeye\_3 (D2), Helpful\_2 (D1), KandZ\_2 (D1), Mopey\_2 (D1), Nova\_2 (D1), PBI1\_2 (D1), PLOT\_2 (D1), Penelope2018\_2 (D1), Phalaborwa\_2 (D1), Prager\_2 (D1), SirHarley\_2 (D1), SuperheroCarly\_2 (D1), Thoth\_2 (D1), Troll4\_2 (D1), Visconti\_2 (D1), WaldoWhy\_2 (D1),

### Start 20:

- Found in 2 of 100 ( 2.0% ) of genes in pham
- Manual Annotations of this start: 2 of 91
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Barnyard\_2 (H2), DrLupo\_2 (H2),

### Start 22:

- Found in 5 of 100 ( 5.0% ) of genes in pham

- Manual Annotations of this start: 3 of 91
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Demikore\_3 (U), Labelle\_3 (U), Madruga\_3 (U), Patience\_3 (U), SuperSonics\_3 (U),

Start 27:

- Found in 1 of 100 ( 1.0% ) of genes in pham
- Manual Annotations of this start: 1 of 91
- Called 100.0% of time when present
- Phage (with cluster) where this start called: MrMiyagi\_120 (AC),

Start 28:

- Found in 33 of 100 ( 33.0% ) of genes in pham
- Manual Annotations of this start: 8 of 91
- Called 24.2% of time when present
- Phage (with cluster) where this start called: Beyoncage\_91 (DG1), BiteSize\_91 (DG1), Djokovic\_91 (DG1), LilyPad\_86 (DG1), Madi\_90 (DG1), Sienna\_92 (DG1), Suzy\_90 (DG1), Terapin\_92 (DG1),

Start 30:

- Found in 4 of 100 ( 4.0% ) of genes in pham
- Manual Annotations of this start: 3 of 91
- Called 75.0% of time when present
- Phage (with cluster) where this start called: Cuke\_127 (AC), Fowlmouth\_120 (AC), Indlulamithi\_110 (AC),

### **Summary by clusters:**

There are 9 clusters represented in this pham: AC, H2, H1, DG2, DG1, U, DV, D2, D1,

Info for manual annotations of cluster AC:

- Start number 27 was manually annotated 1 time for cluster AC.
- Start number 30 was manually annotated 3 times for cluster AC.

Info for manual annotations of cluster D1:

- Start number 19 was manually annotated 22 times for cluster D1.

Info for manual annotations of cluster D2:

- Start number 19 was manually annotated 1 time for cluster D2.

Info for manual annotations of cluster DG1:

- Start number 28 was manually annotated 8 times for cluster DG1.

Info for manual annotations of cluster DG2:

- Start number 13 was manually annotated 1 time for cluster DG2.

Info for manual annotations of cluster DV:

- Start number 10 was manually annotated 39 times for cluster DV.

Info for manual annotations of cluster H1:

- Start number 17 was manually annotated 11 times for cluster H1.

Info for manual annotations of cluster H2:

- Start number 20 was manually annotated 2 times for cluster H2.

Info for manual annotations of cluster U:

- Start number 22 was manually annotated 3 times for cluster U.

### **Gene Information:**

Gene: Adjutor\_2 Start: 421, Stop: 1524, Start Num: 19

Candidate Starts for Adjutor\_2:

(Start: 19 @421 has 23 MA's), (Start: 28 @463 has 8 MA's), (35, 529), (36, 544), (40, 568), (43, 580), (45, 589), (47, 595), (50, 619), (73, 793), (86, 823), (87, 832), (91, 841), (94, 862), (98, 901), (100, 928), (102, 937), (104, 949), (112, 997), (116, 1009), (119, 1027), (129, 1102), (136, 1141), (144, 1189), (145, 1201), (166, 1312), (201, 1489),

Gene: Alephilan\_97 Start: 65669, Stop: 66970, Start Num: 10

Candidate Starts for Alephilan\_97:

(Start: 10 @65669 has 39 MA's), (31, 65756), (43, 65855), (55, 65939), (66, 66014), (72, 66056), (77, 66089), (83, 66128), (85, 66140), (86, 66143), (87, 66152), (96, 66215), (106, 66302), (123, 66395), (130, 66443), (131, 66446), (138, 66497), (149, 66578), (160, 66617), (179, 66692), (203, 66866),

Gene: Alyssamiracle\_95 Start: 63627, Stop: 64913, Start Num: 10

Candidate Starts for Alyssamiracle\_95:

(Start: 10 @63627 has 39 MA's), (31, 63714), (43, 63813), (55, 63897), (66, 63972), (76, 64044), (77, 64047), (83, 64086), (85, 64098), (86, 64101), (87, 64110), (105, 64257), (123, 64353), (130, 64401), (131, 64404), (138, 64455), (149, 64536), (180, 64647), (203, 64809),

Gene: Apeppi\_92 Start: 65297, Stop: 66625, Start Num: 10

Candidate Starts for Apeppi\_92:

(Start: 10 @65297 has 39 MA's), (Start: 17 @65321 has 11 MA's), (31, 65390), (43, 65489), (45, 65498), (55, 65573), (66, 65648), (77, 65723), (85, 65771), (87, 65783), (96, 65846), (106, 65933), (130, 66074), (131, 66077), (147, 66185), (149, 66209), (155, 66227), (171, 66320), (183, 66389), (203, 66521), (211, 66566),

Gene: Astralis\_92 Start: 63154, Stop: 64440, Start Num: 10

Candidate Starts for Astralis\_92:

(Start: 10 @63154 has 39 MA's), (31, 63241), (43, 63340), (55, 63424), (66, 63499), (76, 63571), (77, 63574), (85, 63625), (86, 63628), (87, 63637), (105, 63784), (123, 63880), (130, 63928), (131, 63931), (138, 63982), (149, 64063), (180, 64174), (203, 64336),

Gene: Avian\_90 Start: 63389, Stop: 64675, Start Num: 10

Candidate Starts for Avian\_90:

(Start: 10 @63389 has 39 MA's), (31, 63476), (43, 63575), (55, 63659), (66, 63734), (76, 63806), (77, 63809), (85, 63860), (86, 63863), (87, 63872), (96, 63935), (106, 64022), (123, 64115), (130, 64163), (131, 64166), (138, 64217), (149, 64298), (180, 64409), (203, 64571),

Gene: Barnyard\_2 Start: 356, Stop: 1642, Start Num: 20

Candidate Starts for Barnyard\_2:

(Start: 20 @356 has 2 MA's), (Start: 28 @389 has 8 MA's), (36, 470), (49, 527), (52, 575), (58, 614), (59, 617), (65, 665), (74, 725), (88, 779), (89, 788), (92, 800), (105, 920), (108, 935), (109, 944), (112, 956), (114, 962), (117, 977), (119, 986), (120, 989), (130, 1064), (132, 1076), (139, 1124), (158, 1226), (169, 1280), (202, 1493), (207, 1514), (211, 1532),

Gene: Beckerton\_2 Start: 355, Stop: 1668, Start Num: 17

Candidate Starts for Beckerton\_2:

(Start: 17 @355 has 11 MA's), (38, 505), (45, 535), (49, 547), (52, 589), (74, 733), (78, 757), (79, 766), (82, 769), (91, 802), (92, 805), (93, 808), (97, 856), (105, 925), (106, 928), (107, 937), (108, 940), (112, 961), (117, 982), (119, 991), (126, 1051), (128, 1057), (146, 1177), (192, 1459), (202, 1531), (220, 1657),

Gene: Beyoncage\_91 Start: 63181, Stop: 64578, Start Num: 28

Candidate Starts for Beyoncage\_91:

(1, 63010), (4, 63058), (Start: 28 @63181 has 8 MA's), (70, 63505), (75, 63538), (94, 63649), (102, 63727), (105, 63751), (111, 63784), (112, 63787), (118, 63811), (139, 63952), (141, 63967), (155, 64048), (164, 64090), (184, 64237), (209, 64402), (213, 64435), (216, 64468), (218, 64501), (219, 64513), (221, 64534),

Gene: BigMama\_2 Start: 421, Stop: 1542, Start Num: 19

Candidate Starts for BigMama\_2:

(Start: 19 @421 has 23 MA's), (Start: 28 @463 has 8 MA's), (35, 529), (36, 544), (40, 568), (43, 580), (45, 589), (47, 595), (50, 619), (73, 793), (86, 823), (87, 832), (90, 838), (91, 841), (94, 862), (98, 901), (100, 928), (102, 937), (104, 949), (112, 997), (116, 1009), (119, 1027), (129, 1102), (136, 1141), (144, 1189), (145, 1201), (166, 1312), (201, 1507),

Gene: BirthdayBoy\_97 Start: 65681, Stop: 67027, Start Num: 10

Candidate Starts for BirthdayBoy\_97:

(Start: 10 @65681 has 39 MA's), (31, 65768), (43, 65867), (55, 65951), (66, 66026), (76, 66098), (77, 66101), (83, 66140), (85, 66152), (86, 66155), (87, 66164), (96, 66227), (105, 66311), (123, 66407), (130, 66455), (131, 66458), (138, 66509), (149, 66590), (173, 66710), (203, 66923),

Gene: BiteSize\_91 Start: 63267, Stop: 64664, Start Num: 28

Candidate Starts for BiteSize\_91:

(1, 63096), (4, 63144), (Start: 28 @63267 has 8 MA's), (70, 63591), (75, 63624), (94, 63735), (102, 63813), (105, 63837), (111, 63870), (112, 63873), (118, 63897), (139, 64038), (141, 64053), (155, 64134), (164, 64176), (184, 64323), (209, 64488), (213, 64521), (216, 64554), (218, 64587), (219, 64599), (221, 64620),

Gene: BobtimousPrime\_2 Start: 355, Stop: 1668, Start Num: 17

Candidate Starts for BobtimousPrime\_2:

(Start: 17 @355 has 11 MA's), (38, 505), (45, 535), (49, 547), (52, 589), (74, 733), (78, 757), (79, 766), (82, 769), (91, 802), (92, 805), (93, 808), (97, 856), (105, 925), (106, 928), (107, 937), (108, 940), (112, 961), (117, 982), (119, 991), (126, 1051), (128, 1057), (146, 1177), (192, 1459), (202, 1531), (220, 1657),

Gene: Butterscotch\_2 Start: 421, Stop: 1524, Start Num: 19

Candidate Starts for Butterscotch\_2:

(Start: 19 @421 has 23 MA's), (Start: 28 @463 has 8 MA's), (35, 529), (36, 544), (40, 568), (43, 580), (45, 589), (47, 595), (50, 619), (73, 793), (86, 823), (87, 832), (91, 841), (94, 862), (98, 901), (100, 928), (102, 937), (104, 949), (112, 997), (116, 1009), (119, 1027), (129, 1102), (136, 1141), (144, 1189), (145, 1201), (166, 1312), (201, 1489),

Gene: Cborch11\_2 Start: 355, Stop: 1668, Start Num: 17

Candidate Starts for Cborch11\_2:

(Start: 17 @355 has 11 MA's), (38, 505), (45, 535), (49, 547), (52, 589), (74, 733), (78, 757), (79, 766), (82, 769), (91, 802), (92, 805), (93, 808), (105, 925), (106, 928), (107, 937), (108, 940), (112, 961),

(117, 982), (119, 991), (126, 1051), (128, 1057), (146, 1177), (192, 1459), (202, 1531), (220, 1657),

Gene: Charminar\_91 Start: 62946, Stop: 64232, Start Num: 10

Candidate Starts for Charminar\_91:

(Start: 10 @62946 has 39 MA's), (31, 63033), (43, 63132), (55, 63216), (66, 63291), (76, 63363), (77, 63366), (85, 63417), (86, 63420), (87, 63429), (105, 63576), (123, 63672), (130, 63720), (131, 63723), (138, 63774), (149, 63855), (203, 64128),

Gene: Chill\_2 Start: 421, Stop: 1533, Start Num: 19

Candidate Starts for Chill\_2:

(Start: 19 @421 has 23 MA's), (Start: 28 @463 has 8 MA's), (35, 529), (36, 544), (40, 568), (43, 580), (45, 589), (47, 595), (50, 619), (73, 793), (86, 823), (87, 832), (91, 841), (94, 862), (98, 901), (100, 928), (102, 937), (104, 949), (112, 997), (116, 1009), (119, 1027), (129, 1102), (144, 1189), (145, 1201), (166, 1312), (201, 1498),

Gene: Cuke\_127 Start: 67055, Stop: 68323, Start Num: 30

Candidate Starts for Cuke\_127:

(Start: 30 @67055 has 3 MA's), (42, 67160), (45, 67172), (51, 67211), (63, 67295), (68, 67337), (115, 67604), (121, 67640), (128, 67691), (138, 67757), (161, 67886), (167, 67919), (195, 68153), (199, 68180), (200, 68186), (212, 68264),

Gene: Damien\_2 Start: 355, Stop: 1668, Start Num: 17

Candidate Starts for Damien\_2:

(Start: 17 @355 has 11 MA's), (38, 505), (45, 535), (49, 547), (52, 589), (74, 733), (78, 757), (79, 766), (82, 769), (91, 802), (92, 805), (93, 808), (97, 856), (105, 925), (106, 928), (107, 937), (108, 940), (112, 961), (117, 982), (126, 1051), (128, 1057), (146, 1177), (192, 1459), (202, 1531), (220, 1657),

Gene: DaviePasture\_96 Start: 65655, Stop: 67001, Start Num: 10

Candidate Starts for DaviePasture\_96:

(Start: 10 @65655 has 39 MA's), (31, 65742), (43, 65841), (55, 65925), (66, 66000), (77, 66075), (85, 66126), (86, 66129), (87, 66138), (96, 66201), (105, 66285), (106, 66288), (123, 66381), (130, 66429), (131, 66432), (138, 66483), (149, 66564), (173, 66684), (203, 66897),

Gene: Delton\_2 Start: 421, Stop: 1533, Start Num: 19

Candidate Starts for Delton\_2:

(Start: 19 @421 has 23 MA's), (Start: 28 @463 has 8 MA's), (35, 529), (36, 544), (40, 568), (43, 580), (45, 589), (47, 595), (50, 619), (73, 793), (86, 823), (87, 832), (90, 838), (91, 841), (94, 862), (98, 901), (100, 928), (102, 937), (104, 949), (112, 997), (116, 1009), (119, 1027), (129, 1102), (144, 1189), (145, 1201), (166, 1312), (201, 1498),

Gene: Demikore\_3 Start: 668, Stop: 2029, Start Num: 22

Candidate Starts for Demikore\_3:

(16, 650), (Start: 22 @668 has 3 MA's), (23, 677), (37, 800), (42, 827), (49, 851), (55, 920), (58, 938), (65, 992), (74, 1052), (78, 1076), (89, 1109), (92, 1121), (99, 1196), (109, 1265), (112, 1277), (113, 1280), (118, 1301), (120, 1310), (122, 1334), (123, 1337), (125, 1355), (127, 1370), (131, 1388), (133, 1406), (165, 1592), (167, 1604), (170, 1616), (175, 1673), (202, 1853), (211, 1904), (214, 1943), (215, 1952), (217, 1997),

Gene: Djokovic\_91 Start: 63180, Stop: 64577, Start Num: 28

Candidate Starts for Djokovic\_91:

(1, 63009), (4, 63057), (Start: 28 @63180 has 8 MA's), (70, 63504), (75, 63537), (94, 63648), (102, 63726), (105, 63750), (111, 63783), (112, 63786), (118, 63810), (139, 63951), (141, 63966), (155, 64047), (164, 64089), (184, 64236), (209, 64401), (213, 64434), (216, 64467), (218, 64500), (219,

64512), (221, 64533),

Gene: DoobyDoo\_95 Start: 64434, Stop: 65735, Start Num: 10

Candidate Starts for DoobyDoo\_95:

(Start: 10 @64434 has 39 MA's), (31, 64521), (33, 64551), (42, 64617), (43, 64620), (55, 64704), (66, 64779), (77, 64854), (85, 64905), (86, 64908), (87, 64917), (106, 65067), (123, 65160), (130, 65208), (131, 65211), (138, 65262), (149, 65343), (150, 65346), (179, 65457), (203, 65631),

Gene: DrLupo\_2 Start: 334, Stop: 1617, Start Num: 20

Candidate Starts for DrLupo\_2:

(Start: 20 @334 has 2 MA's), (Start: 28 @367 has 8 MA's), (36, 448), (49, 505), (51, 532), (52, 553), (58, 592), (60, 601), (65, 643), (71, 682), (74, 703), (88, 757), (89, 766), (96, 820), (105, 898), (108, 913), (109, 922), (112, 934), (114, 940), (117, 955), (119, 964), (120, 967), (128, 1030), (131, 1045), (132, 1054), (152, 1183), (158, 1198), (170, 1258), (190, 1402), (206, 1513), (212, 1534),

Gene: DumpTruck\_98 Start: 65883, Stop: 67190, Start Num: 10

Candidate Starts for DumpTruck\_98:

(Start: 10 @65883 has 39 MA's), (Start: 17 @65907 has 11 MA's), (18, 65913), (21, 65922), (43, 66078), (45, 66087), (55, 66162), (66, 66237), (67, 66246), (77, 66312), (81, 66333), (87, 66372), (105, 66519), (130, 66663), (131, 66666), (149, 66798), (151, 66801), (154, 66807), (160, 66831), (178, 66918), (196, 67053), (199, 67077), (205, 67098), (210, 67125),

Gene: Erk16\_2 Start: 421, Stop: 1524, Start Num: 19

Candidate Starts for Erk16\_2:

(Start: 19 @421 has 23 MA's), (Start: 28 @463 has 8 MA's), (35, 529), (36, 544), (40, 568), (43, 580), (45, 589), (47, 595), (50, 619), (73, 793), (86, 823), (87, 832), (91, 841), (94, 862), (98, 901), (100, 928), (102, 937), (104, 949), (112, 997), (116, 1009), (119, 1027), (129, 1102), (144, 1189), (145, 1201), (166, 1312), (201, 1489),

Gene: Erutan\_94 Start: 65045, Stop: 66346, Start Num: 10

Candidate Starts for Erutan\_94:

(Start: 10 @65045 has 39 MA's), (31, 65132), (43, 65231), (55, 65315), (66, 65390), (76, 65462), (77, 65465), (83, 65504), (86, 65519), (87, 65528), (96, 65591), (123, 65771), (130, 65819), (131, 65822), (138, 65873), (149, 65954), (150, 65957), (179, 66068), (203, 66242),

Gene: Fowlmouth\_120 Start: 67859, Stop: 69115, Start Num: 30

Candidate Starts for Fowlmouth\_120:

(9, 67763), (12, 67781), (14, 67784), (15, 67793), (25, 67844), (26, 67847), (Start: 30 @67859 has 3 MA's), (32, 67886), (42, 67964), (45, 67976), (51, 68015), (65, 68117), (68, 68141), (95, 68270), (115, 68408), (121, 68444), (125, 68477), (126, 68489), (128, 68495), (138, 68561), (195, 68945), (199, 68972), (205, 68996),

Gene: Fulcrum\_95 Start: 65648, Stop: 66994, Start Num: 10

Candidate Starts for Fulcrum\_95:

(Start: 10 @65648 has 39 MA's), (31, 65735), (43, 65834), (55, 65918), (66, 65993), (76, 66065), (77, 66068), (83, 66107), (85, 66119), (86, 66122), (87, 66131), (96, 66194), (105, 66278), (106, 66281), (130, 66422), (131, 66425), (138, 66476), (149, 66557), (173, 66677), (203, 66890),

Gene: GOATification\_95 Start: 65648, Stop: 66994, Start Num: 10

Candidate Starts for GOATification\_95:

(Start: 10 @65648 has 39 MA's), (31, 65735), (43, 65834), (55, 65918), (66, 65993), (76, 66065), (77, 66068), (83, 66107), (85, 66119), (86, 66122), (87, 66131), (96, 66194), (105, 66278), (106, 66281), (130, 66422), (131, 66425), (138, 66476), (149, 66557), (173, 66677), (203, 66890),

Gene: Genamy16\_95 Start: 63676, Stop: 64962, Start Num: 10

Candidate Starts for Genamy16\_95:

(Start: 10 @63676 has 39 MA's), (31, 63763), (43, 63862), (55, 63946), (66, 64021), (76, 64093), (77, 64096), (85, 64147), (86, 64150), (87, 64159), (105, 64306), (123, 64402), (130, 64450), (131, 64453), (138, 64504), (149, 64585), (180, 64696), (203, 64858),

Gene: Gibbin\_97 Start: 65825, Stop: 67171, Start Num: 10

Candidate Starts for Gibbin\_97:

(Start: 10 @65825 has 39 MA's), (31, 65912), (43, 66011), (55, 66095), (66, 66170), (76, 66242), (77, 66245), (83, 66284), (85, 66296), (86, 66299), (87, 66308), (96, 66371), (123, 66551), (130, 66599), (131, 66602), (138, 66653), (149, 66734), (173, 66854), (203, 67067),

Gene: Giuseppe\_2 Start: 421, Stop: 1515, Start Num: 19

Candidate Starts for Giuseppe\_2:

(Start: 19 @421 has 23 MA's), (Start: 28 @463 has 8 MA's), (35, 529), (36, 544), (40, 568), (43, 580), (45, 589), (47, 595), (50, 619), (73, 793), (86, 823), (87, 832), (91, 841), (94, 862), (98, 901), (100, 928), (102, 937), (104, 949), (112, 997), (116, 1009), (119, 1027), (129, 1102), (136, 1141), (144, 1189), (145, 1201), (166, 1312), (201, 1480),

Gene: Gretellyn\_95 Start: 65652, Stop: 66998, Start Num: 10

Candidate Starts for Gretellyn\_95:

(Start: 10 @65652 has 39 MA's), (31, 65739), (43, 65838), (55, 65922), (66, 65997), (76, 66069), (77, 66072), (85, 66123), (86, 66126), (87, 66135), (96, 66198), (106, 66285), (123, 66378), (130, 66426), (131, 66429), (138, 66480), (149, 66561), (173, 66681), (203, 66894),

Gene: Gumball\_2 Start: 421, Stop: 1533, Start Num: 19

Candidate Starts for Gumball\_2:

(Start: 19 @421 has 23 MA's), (Start: 28 @463 has 8 MA's), (35, 529), (36, 544), (40, 568), (43, 580), (45, 589), (47, 595), (50, 619), (73, 793), (86, 823), (87, 832), (91, 841), (94, 862), (98, 901), (100, 928), (102, 937), (104, 949), (112, 997), (116, 1009), (119, 1027), (129, 1102), (136, 1141), (144, 1189), (145, 1201), (166, 1312), (201, 1498),

Gene: Hawkeye\_3 Start: 790, Stop: 1944, Start Num: 19

Candidate Starts for Hawkeye\_3:

(7, 739), (Start: 19 @790 has 23 MA's), (35, 898), (39, 931), (40, 937), (43, 949), (47, 964), (51, 997), (55, 1033), (73, 1162), (86, 1192), (87, 1201), (92, 1213), (94, 1231), (100, 1294), (112, 1363), (131, 1480), (137, 1510), (143, 1546), (144, 1555), (145, 1567), (153, 1624), (159, 1648), (162, 1666), (170, 1702), (177, 1729), (189, 1801), (208, 1924),

Gene: Helpful\_2 Start: 421, Stop: 1524, Start Num: 19

Candidate Starts for Helpful\_2:

(Start: 19 @421 has 23 MA's), (Start: 28 @463 has 8 MA's), (35, 529), (36, 544), (40, 568), (43, 580), (45, 589), (47, 595), (50, 619), (73, 793), (86, 823), (87, 832), (90, 838), (91, 841), (94, 862), (98, 901), (100, 928), (102, 937), (104, 949), (112, 997), (116, 1009), (119, 1027), (129, 1102), (144, 1189), (145, 1201), (166, 1312), (201, 1489),

Gene: Indlulamithi\_110 Start: 69658, Stop: 70902, Start Num: 30

Candidate Starts for Indlulamithi\_110:

(2, 69475), (5, 69529), (6, 69550), (11, 69574), (Start: 30 @69658 has 3 MA's), (33, 69700), (47, 69790), (51, 69823), (104, 70141), (120, 70222), (121, 70234), (124, 70261), (135, 70324), (181, 70612), (185, 70645), (186, 70648), (191, 70675), (195, 70735),

Gene: Jalebi\_95 Start: 66593, Stop: 67894, Start Num: 10

Candidate Starts for Jalebi\_95:

(Start: 10 @66593 has 39 MA's), (31, 66680), (43, 66779), (55, 66863), (66, 66938), (76, 67010), (77, 67013), (83, 67052), (85, 67064), (86, 67067), (87, 67076), (96, 67139), (106, 67226), (123, 67319), (130, 67367), (131, 67370), (138, 67421), (149, 67502), (179, 67616), (203, 67790),

Gene: Jamemuya19\_90 Start: 63301, Stop: 64587, Start Num: 10

Candidate Starts for Jamemuya19\_90:

(Start: 10 @63301 has 39 MA's), (31, 63388), (43, 63487), (55, 63571), (66, 63646), (76, 63718), (77, 63721), (85, 63772), (86, 63775), (87, 63784), (105, 63931), (123, 64027), (130, 64075), (131, 64078), (138, 64129), (149, 64210), (180, 64321), (203, 64483),

Gene: KandZ\_2 Start: 421, Stop: 1524, Start Num: 19

Candidate Starts for KandZ\_2:

(Start: 19 @421 has 23 MA's), (Start: 28 @463 has 8 MA's), (35, 529), (36, 544), (40, 568), (43, 580), (45, 589), (47, 595), (50, 619), (73, 793), (86, 823), (87, 832), (91, 841), (94, 862), (98, 901), (100, 928), (102, 937), (104, 949), (111, 994), (112, 997), (116, 1009), (119, 1027), (129, 1102), (144, 1189), (145, 1201), (166, 1312), (201, 1489),

Gene: Konstantine\_2 Start: 355, Stop: 1668, Start Num: 17

Candidate Starts for Konstantine\_2:

(Start: 17 @355 has 11 MA's), (38, 505), (45, 535), (49, 547), (52, 589), (74, 733), (78, 757), (79, 766), (82, 769), (91, 802), (92, 805), (93, 808), (97, 856), (105, 925), (106, 928), (107, 937), (108, 940), (112, 961), (117, 982), (119, 991), (126, 1051), (128, 1057), (146, 1177), (192, 1459), (202, 1531), (220, 1657),

Gene: Labelle\_3 Start: 668, Stop: 2029, Start Num: 22

Candidate Starts for Labelle\_3:

(16, 650), (Start: 22 @668 has 3 MA's), (23, 677), (37, 800), (42, 827), (49, 851), (55, 920), (58, 938), (65, 992), (74, 1052), (78, 1076), (89, 1109), (92, 1121), (99, 1196), (109, 1265), (112, 1277), (113, 1280), (118, 1301), (120, 1310), (122, 1334), (123, 1337), (125, 1355), (127, 1370), (131, 1388), (133, 1406), (165, 1592), (167, 1604), (170, 1616), (175, 1673), (202, 1853), (211, 1904), (214, 1943), (215, 1952), (217, 1997),

Gene: Lambo\_96 Start: 65885, Stop: 67201, Start Num: 10

Candidate Starts for Lambo\_96:

(Start: 10 @65885 has 39 MA's), (Start: 17 @65909 has 11 MA's), (31, 65978), (43, 66077), (45, 66086), (55, 66161), (66, 66236), (74, 66290), (77, 66311), (85, 66359), (87, 66371), (105, 66518), (106, 66521), (116, 66566), (130, 66662), (131, 66665), (149, 66797), (151, 66809), (160, 66839), (174, 66926), (203, 67097),

Gene: LavAbarElk\_95 Start: 64771, Stop: 66117, Start Num: 10

Candidate Starts for LavAbarElk\_95:

(Start: 10 @64771 has 39 MA's), (31, 64858), (43, 64957), (55, 65041), (66, 65116), (77, 65191), (83, 65230), (85, 65242), (86, 65245), (87, 65254), (96, 65317), (105, 65401), (123, 65497), (130, 65545), (131, 65548), (138, 65599), (149, 65680), (173, 65800), (203, 66013),

Gene: Lila22\_95 Start: 65625, Stop: 66971, Start Num: 10

Candidate Starts for Lila22\_95:

(Start: 10 @65625 has 39 MA's), (31, 65712), (43, 65811), (55, 65895), (66, 65970), (76, 66042), (77, 66045), (83, 66084), (85, 66096), (86, 66099), (87, 66108), (96, 66171), (105, 66255), (123, 66351), (130, 66399), (131, 66402), (138, 66453), (149, 66534), (173, 66654), (203, 66867),

Gene: LilyPad\_86 Start: 61089, Stop: 62477, Start Num: 28

Candidate Starts for LilyPad\_86:

(Start: 28 @61089 has 8 MA's), (39, 61194), (44, 61221), (53, 61287), (57, 61320), (61, 61338), (69, 61404), (105, 61659), (118, 61719), (125, 61773), (139, 61860), (142, 61878), (157, 61950), (161, 61968), (173, 62046), (176, 62070), (182, 62112), (186, 62139), (209, 62295), (213, 62328), (218, 62394), (219, 62406),

Gene: LittleFella\_90 Start: 61799, Stop: 63223, Start Num: 13

Candidate Starts for LittleFella\_90:

(Start: 13 @61799 has 1 MA's), (24, 61850), (29, 61868), (41, 61976), (46, 62000), (48, 62006), (54, 62072), (71, 62189), (77, 62240), (80, 62261), (84, 62288), (94, 62342), (101, 62417), (103, 62426), (105, 62444), (110, 62474), (118, 62504), (124, 62552), (128, 62576), (130, 62588), (134, 62612), (137, 62624), (140, 62648), (156, 62729), (163, 62759), (168, 62777), (186, 62879), (193, 62960), (222, 63215),

Gene: LuckyLeo\_94 Start: 65297, Stop: 66625, Start Num: 10

Candidate Starts for LuckyLeo\_94:

(Start: 10 @65297 has 39 MA's), (Start: 17 @65321 has 11 MA's), (31, 65390), (43, 65489), (45, 65498), (55, 65573), (66, 65648), (77, 65723), (85, 65771), (87, 65783), (96, 65846), (106, 65933), (130, 66074), (131, 66077), (147, 66185), (149, 66209), (155, 66227), (171, 66320), (183, 66389), (203, 66521), (211, 66566),

Gene: Madi\_90 Start: 63011, Stop: 64408, Start Num: 28

Candidate Starts for Madi\_90:

(1, 62840), (4, 62888), (Start: 28 @63011 has 8 MA's), (70, 63335), (75, 63368), (94, 63479), (102, 63557), (105, 63581), (111, 63614), (112, 63617), (118, 63641), (139, 63782), (141, 63797), (155, 63878), (164, 63920), (184, 64067), (209, 64232), (213, 64265), (216, 64298), (218, 64331), (219, 64343), (221, 64364),

Gene: Madrug\_3 Start: 668, Stop: 2029, Start Num: 22

Candidate Starts for Madrug\_3:

(16, 650), (Start: 22 @668 has 3 MA's), (23, 677), (37, 800), (42, 827), (49, 851), (55, 920), (58, 938), (65, 992), (74, 1052), (78, 1076), (89, 1109), (92, 1121), (99, 1196), (109, 1265), (112, 1277), (113, 1280), (118, 1301), (120, 1310), (122, 1334), (123, 1337), (125, 1355), (127, 1370), (131, 1388), (133, 1406), (165, 1592), (167, 1604), (170, 1616), (175, 1673), (202, 1853), (211, 1904), (214, 1943), (215, 1952), (217, 1997),

Gene: Megatron06\_2 Start: 355, Stop: 1668, Start Num: 17

Candidate Starts for Megatron06\_2:

(Start: 17 @355 has 11 MA's), (38, 505), (45, 535), (49, 547), (52, 589), (74, 733), (78, 757), (79, 766), (82, 769), (91, 802), (92, 805), (93, 808), (97, 856), (105, 925), (106, 928), (107, 937), (108, 940), (112, 961), (117, 982), (119, 991), (126, 1051), (128, 1057), (146, 1177), (192, 1459), (202, 1531), (220, 1657),

Gene: Mima20\_94 Start: 65382, Stop: 66728, Start Num: 10

Candidate Starts for Mima20\_94:

(3, 65325), (Start: 10 @65382 has 39 MA's), (31, 65469), (43, 65568), (55, 65652), (66, 65727), (77, 65802), (85, 65853), (86, 65856), (87, 65865), (96, 65928), (105, 66012), (123, 66108), (130, 66156), (131, 66159), (138, 66210), (149, 66291), (173, 66411), (203, 66624),

Gene: MoiGyank\_98 Start: 65906, Stop: 67207, Start Num: 10

Candidate Starts for MoiGyank\_98:

(3, 65849), (Start: 10 @65906 has 39 MA's), (31, 65993), (43, 66092), (55, 66176), (66, 66251), (76, 66323), (77, 66326), (85, 66377), (86, 66380), (87, 66389), (96, 66452), (123, 66632), (130, 66680), (131, 66683), (138, 66734), (149, 66815), (150, 66818), (179, 66929), (203, 67103),

Gene: Mopey\_2 Start: 421, Stop: 1524, Start Num: 19

Candidate Starts for Mopey\_2:

(Start: 19 @421 has 23 MA's), (Start: 28 @463 has 8 MA's), (35, 529), (36, 544), (40, 568), (43, 580), (45, 589), (47, 595), (50, 619), (73, 793), (86, 823), (87, 832), (91, 841), (94, 862), (98, 901), (100, 928), (102, 937), (104, 949), (112, 997), (116, 1009), (119, 1027), (129, 1102), (144, 1189), (145, 1201), (166, 1312), (201, 1489),

Gene: MrMiyagi\_120 Start: 68238, Stop: 69503, Start Num: 27

Candidate Starts for MrMiyagi\_120:

(Start: 27 @68238 has 1 MA's), (29, 68241), (Start: 30 @68247 has 3 MA's), (45, 68364), (51, 68403), (63, 68487), (65, 68505), (68, 68529), (95, 68658), (115, 68796), (121, 68832), (125, 68865), (126, 68877), (128, 68883), (138, 68949), (195, 69333), (199, 69360), (205, 69384),

Gene: Nish23\_2 Start: 355, Stop: 1668, Start Num: 17

Candidate Starts for Nish23\_2:

(Start: 17 @355 has 11 MA's), (38, 505), (45, 535), (49, 547), (52, 589), (74, 733), (78, 757), (79, 766), (82, 769), (91, 802), (92, 805), (93, 808), (105, 925), (106, 928), (107, 937), (108, 940), (112, 961), (117, 982), (119, 991), (126, 1051), (128, 1057), (146, 1177), (192, 1459), (202, 1531), (220, 1657),

Gene: NorManre\_100 Start: 66924, Stop: 68237, Start Num: 10

Candidate Starts for NorManre\_100:

(Start: 10 @66924 has 39 MA's), (31, 67011), (43, 67110), (55, 67194), (66, 67269), (77, 67344), (85, 67395), (86, 67398), (87, 67407), (96, 67470), (106, 67557), (123, 67650), (130, 67698), (131, 67701), (138, 67752), (149, 67833), (151, 67845), (160, 67875), (178, 67962), (183, 68001), (203, 68133),

Gene: Nova\_2 Start: 421, Stop: 1533, Start Num: 19

Candidate Starts for Nova\_2:

(Start: 19 @421 has 23 MA's), (Start: 28 @463 has 8 MA's), (35, 529), (36, 544), (40, 568), (43, 580), (45, 589), (47, 595), (50, 619), (73, 793), (86, 823), (87, 832), (91, 841), (94, 862), (100, 928), (102, 937), (104, 949), (112, 997), (116, 1009), (119, 1027), (129, 1102), (136, 1141), (144, 1189), (145, 1201), (166, 1312), (201, 1498),

Gene: NovaSharks\_94 Start: 63376, Stop: 64662, Start Num: 10

Candidate Starts for NovaSharks\_94:

(Start: 10 @63376 has 39 MA's), (31, 63463), (43, 63562), (55, 63646), (66, 63721), (76, 63793), (77, 63796), (85, 63847), (86, 63850), (87, 63859), (105, 64006), (123, 64102), (130, 64150), (131, 64153), (138, 64204), (149, 64285), (203, 64558),

Gene: Oaker\_2 Start: 355, Stop: 1668, Start Num: 17

Candidate Starts for Oaker\_2:

(Start: 17 @355 has 11 MA's), (38, 505), (45, 535), (49, 547), (52, 589), (74, 733), (78, 757), (79, 766), (82, 769), (91, 802), (92, 805), (93, 808), (97, 856), (105, 925), (106, 928), (107, 937), (108, 940), (112, 961), (117, 982), (119, 991), (126, 1051), (128, 1057), (146, 1177), (192, 1459), (202, 1531), (220, 1657),

Gene: OtterstedtS21\_96 Start: 65736, Stop: 67082, Start Num: 10

Candidate Starts for OtterstedtS21\_96:

(Start: 10 @65736 has 39 MA's), (31, 65823), (43, 65922), (55, 66006), (66, 66081), (77, 66156), (85, 66207), (86, 66210), (87, 66219), (96, 66282), (106, 66369), (123, 66462), (130, 66510), (131, 66513),

(138, 66564), (149, 66645), (173, 66765), (203, 66978),

Gene: PBI1\_2 Start: 421, Stop: 1524, Start Num: 19

Candidate Starts for PBI1\_2:

(Start: 19 @421 has 23 MA's), (Start: 28 @463 has 8 MA's), (35, 529), (36, 544), (40, 568), (43, 580), (45, 589), (47, 595), (50, 619), (73, 793), (86, 823), (87, 832), (91, 841), (94, 862), (98, 901), (100, 928), (102, 937), (104, 949), (112, 997), (116, 1009), (119, 1027), (129, 1102), (136, 1141), (144, 1189), (145, 1201), (166, 1312), (201, 1489),

Gene: PLOT\_2 Start: 421, Stop: 1524, Start Num: 19

Candidate Starts for PLOT\_2:

(Start: 19 @421 has 23 MA's), (Start: 28 @463 has 8 MA's), (35, 529), (36, 544), (40, 568), (43, 580), (45, 589), (47, 595), (50, 619), (73, 793), (86, 823), (87, 832), (91, 841), (94, 862), (98, 901), (100, 928), (102, 937), (104, 949), (112, 997), (116, 1009), (119, 1027), (129, 1102), (144, 1189), (145, 1201), (166, 1312), (201, 1489),

Gene: ParvusTarda\_96 Start: 65318, Stop: 66667, Start Num: 10

Candidate Starts for ParvusTarda\_96:

(Start: 10 @65318 has 39 MA's), (Start: 17 @65342 has 11 MA's), (31, 65411), (43, 65510), (45, 65519), (55, 65594), (66, 65669), (74, 65723), (77, 65744), (85, 65792), (87, 65804), (105, 65951), (106, 65954), (116, 65999), (130, 66095), (131, 66098), (149, 66230), (172, 66350), (203, 66563),

Gene: Patience\_3 Start: 668, Stop: 2029, Start Num: 22

Candidate Starts for Patience\_3:

(16, 650), (Start: 22 @668 has 3 MA's), (23, 677), (37, 800), (42, 827), (49, 851), (55, 920), (58, 938), (65, 992), (74, 1052), (78, 1076), (89, 1109), (92, 1121), (99, 1196), (109, 1265), (112, 1277), (113, 1280), (118, 1301), (120, 1310), (122, 1334), (123, 1337), (125, 1355), (127, 1370), (131, 1388), (133, 1406), (165, 1592), (167, 1604), (170, 1616), (175, 1673), (202, 1853), (211, 1904), (214, 1943), (215, 1952), (217, 1997),

Gene: Patos\_100 Start: 66923, Stop: 68236, Start Num: 10

Candidate Starts for Patos\_100:

(Start: 10 @66923 has 39 MA's), (31, 67010), (43, 67109), (55, 67193), (66, 67268), (77, 67343), (85, 67394), (86, 67397), (87, 67406), (96, 67469), (106, 67556), (123, 67649), (130, 67697), (131, 67700), (138, 67751), (149, 67832), (151, 67844), (160, 67874), (178, 67961), (183, 68000), (203, 68132),

Gene: Penelope2018\_2 Start: 421, Stop: 1524, Start Num: 19

Candidate Starts for Penelope2018\_2:

(Start: 19 @421 has 23 MA's), (Start: 28 @463 has 8 MA's), (35, 529), (36, 544), (40, 568), (43, 580), (45, 589), (47, 595), (50, 619), (73, 793), (86, 823), (87, 832), (90, 838), (91, 841), (94, 862), (98, 901), (100, 928), (102, 937), (104, 949), (112, 997), (116, 1009), (119, 1027), (129, 1102), (144, 1189), (145, 1201), (166, 1312), (201, 1489),

Gene: Phalaborwa\_2 Start: 421, Stop: 1542, Start Num: 19

Candidate Starts for Phalaborwa\_2:

(Start: 19 @421 has 23 MA's), (Start: 28 @463 has 8 MA's), (35, 529), (36, 544), (40, 568), (43, 580), (45, 589), (50, 619), (73, 793), (86, 823), (87, 832), (91, 841), (94, 862), (98, 901), (100, 928), (104, 949), (112, 997), (129, 1102), (136, 1141), (144, 1189), (145, 1201), (166, 1312), (190, 1432), (201, 1507), (204, 1513),

Gene: Phreeze\_2 Start: 355, Stop: 1668, Start Num: 17

Candidate Starts for Phreeze\_2:

(Start: 17 @355 has 11 MA's), (38, 505), (45, 535), (49, 547), (52, 589), (74, 733), (78, 757), (79, 766), (82, 769), (91, 802), (92, 805), (93, 808), (97, 856), (105, 925), (106, 928), (107, 937), (108, 940), (112, 961), (117, 982), (119, 991), (126, 1051), (128, 1057), (146, 1177), (192, 1459), (202, 1531), (220, 1657),

Gene: Prager\_2 Start: 421, Stop: 1533, Start Num: 19

Candidate Starts for Prager\_2:

(Start: 19 @421 has 23 MA's), (Start: 28 @463 has 8 MA's), (35, 529), (36, 544), (40, 568), (43, 580), (45, 589), (47, 595), (50, 619), (73, 793), (86, 823), (87, 832), (90, 838), (91, 841), (94, 862), (98, 901), (100, 928), (102, 937), (104, 949), (112, 997), (116, 1009), (119, 1027), (129, 1102), (144, 1189), (145, 1201), (166, 1312), (201, 1498),

Gene: Predator\_3 Start: 690, Stop: 2009, Start Num: 17

Candidate Starts for Predator\_3:

(Start: 17 @690 has 11 MA's), (34, 804), (36, 822), (42, 858), (56, 954), (62, 987), (68, 1032), (74, 1068), (92, 1140), (93, 1143), (94, 1158), (97, 1191), (105, 1260), (107, 1272), (108, 1275), (112, 1296), (117, 1317), (118, 1320), (122, 1353), (128, 1392), (188, 1764), (192, 1800), (194, 1836), (197, 1845), (199, 1863), (202, 1872), (220, 1998),

Gene: Puissant\_2 Start: 356, Stop: 1669, Start Num: 17

Candidate Starts for Puissant\_2:

(Start: 17 @356 has 11 MA's), (45, 536), (47, 542), (49, 548), (68, 698), (78, 758), (91, 803), (92, 806), (97, 857), (105, 926), (106, 929), (107, 938), (108, 941), (112, 962), (117, 983), (119, 992), (126, 1052), (128, 1058), (146, 1178), (192, 1460), (199, 1523), (220, 1658),

Gene: Pywacket\_93 Start: 65738, Stop: 67084, Start Num: 10

Candidate Starts for Pywacket\_93:

(Start: 10 @65738 has 39 MA's), (31, 65825), (43, 65924), (55, 66008), (66, 66083), (76, 66155), (77, 66158), (83, 66197), (85, 66209), (86, 66212), (87, 66221), (96, 66284), (105, 66368), (106, 66371), (123, 66464), (130, 66512), (131, 66515), (138, 66566), (149, 66647), (173, 66767), (203, 66980),

Gene: Ranch\_99 Start: 64973, Stop: 66283, Start Num: 10

Candidate Starts for Ranch\_99:

(Start: 10 @64973 has 39 MA's), (31, 65060), (43, 65159), (55, 65243), (66, 65318), (77, 65393), (85, 65444), (86, 65447), (87, 65456), (96, 65519), (106, 65606), (123, 65699), (130, 65747), (131, 65750), (138, 65801), (149, 65882), (160, 65921), (178, 66008), (183, 66047), (203, 66179),

Gene: RazorC\_92 Start: 63309, Stop: 64595, Start Num: 10

Candidate Starts for RazorC\_92:

(Start: 10 @63309 has 39 MA's), (31, 63396), (43, 63495), (55, 63579), (66, 63654), (76, 63726), (77, 63729), (85, 63780), (86, 63783), (87, 63792), (105, 63939), (123, 64035), (130, 64083), (131, 64086), (138, 64137), (149, 64218), (180, 64329), (203, 64491),

Gene: Riduram\_91 Start: 63016, Stop: 64302, Start Num: 10

Candidate Starts for Riduram\_91:

(Start: 10 @63016 has 39 MA's), (31, 63103), (43, 63202), (55, 63286), (66, 63361), (76, 63433), (77, 63436), (85, 63487), (86, 63490), (87, 63499), (105, 63646), (123, 63742), (130, 63790), (131, 63793), (138, 63844), (149, 63925), (203, 64198),

Gene: Rota\_93 Start: 65378, Stop: 66724, Start Num: 10

Candidate Starts for Rota\_93:

(Start: 10 @65378 has 39 MA's), (31, 65465), (43, 65564), (55, 65648), (66, 65723), (76, 65795), (77, 65798), (83, 65837), (85, 65849), (86, 65852), (87, 65861), (96, 65924), (106, 66011), (123, 66104),

(130, 66152), (131, 66155), (138, 66206), (149, 66287), (173, 66407), (203, 66620),

Gene: Rukungu\_96 Start: 66314, Stop: 67660, Start Num: 10

Candidate Starts for Rukungu\_96:

(Start: 10 @66314 has 39 MA's), (31, 66401), (43, 66500), (55, 66584), (66, 66659), (77, 66734), (85, 66785), (86, 66788), (87, 66797), (96, 66860), (106, 66947), (123, 67040), (130, 67088), (131, 67091), (138, 67142), (149, 67223), (173, 67343), (203, 67556),

Gene: Rumi\_93 Start: 62971, Stop: 64257, Start Num: 10

Candidate Starts for Rumi\_93:

(Start: 10 @62971 has 39 MA's), (31, 63058), (43, 63157), (55, 63241), (66, 63316), (76, 63388), (77, 63391), (85, 63442), (86, 63445), (87, 63454), (105, 63601), (123, 63697), (130, 63745), (131, 63748), (138, 63799), (149, 63880), (203, 64153),

Gene: Sadboi\_95 Start: 65532, Stop: 66878, Start Num: 10

Candidate Starts for Sadboi\_95:

(Start: 10 @65532 has 39 MA's), (31, 65619), (43, 65718), (55, 65802), (66, 65877), (76, 65949), (77, 65952), (85, 66003), (86, 66006), (87, 66015), (96, 66078), (106, 66165), (123, 66258), (130, 66306), (131, 66309), (138, 66360), (149, 66441), (173, 66561), (203, 66774),

Gene: Sampudon\_97 Start: 66592, Stop: 67893, Start Num: 10

Candidate Starts for Sampudon\_97:

(Start: 10 @66592 has 39 MA's), (31, 66679), (43, 66778), (55, 66862), (66, 66937), (76, 67009), (77, 67012), (83, 67051), (85, 67063), (86, 67066), (87, 67075), (96, 67138), (106, 67225), (123, 67318), (130, 67366), (131, 67369), (138, 67420), (149, 67501), (179, 67615), (203, 67789),

Gene: Sienna\_92 Start: 63410, Stop: 64807, Start Num: 28

Candidate Starts for Sienna\_92:

(Start: 28 @63410 has 8 MA's), (70, 63734), (75, 63767), (94, 63878), (105, 63980), (107, 63992), (111, 64013), (112, 64016), (118, 64040), (139, 64181), (141, 64196), (155, 64277), (164, 64319), (184, 64466), (209, 64631), (213, 64664), (218, 64730),

Gene: SirHarley\_2 Start: 421, Stop: 1515, Start Num: 19

Candidate Starts for SirHarley\_2:

(Start: 19 @421 has 23 MA's), (Start: 28 @463 has 8 MA's), (35, 529), (36, 544), (40, 568), (43, 580), (45, 589), (47, 595), (50, 619), (73, 793), (86, 823), (87, 832), (91, 841), (94, 862), (98, 901), (100, 928), (102, 937), (104, 949), (112, 997), (116, 1009), (119, 1027), (129, 1102), (136, 1141), (144, 1189), (145, 1201), (166, 1312), (201, 1480),

Gene: Stormer\_95 Start: 63083, Stop: 64369, Start Num: 10

Candidate Starts for Stormer\_95:

(Start: 10 @63083 has 39 MA's), (31, 63170), (43, 63269), (55, 63353), (66, 63428), (76, 63500), (77, 63503), (85, 63554), (86, 63557), (87, 63566), (106, 63716), (123, 63809), (130, 63857), (131, 63860), (138, 63911), (149, 63992), (203, 64265),

Gene: SuperSonics\_3 Start: 668, Stop: 2029, Start Num: 22

Candidate Starts for SuperSonics\_3:

(16, 650), (Start: 22 @668 has 3 MA's), (23, 677), (37, 800), (42, 827), (49, 851), (55, 920), (58, 938), (65, 992), (74, 1052), (78, 1076), (89, 1109), (92, 1121), (99, 1196), (109, 1265), (112, 1277), (113, 1280), (118, 1301), (120, 1310), (122, 1334), (123, 1337), (125, 1355), (127, 1370), (131, 1388), (133, 1406), (165, 1592), (167, 1604), (170, 1616), (175, 1673), (202, 1853), (211, 1904), (214, 1943), (215, 1952), (217, 1997),

Gene: SuperheroCarly\_2 Start: 421, Stop: 1533, Start Num: 19

Candidate Starts for SuperheroCarly\_2:

(Start: 19 @421 has 23 MA's), (Start: 28 @463 has 8 MA's), (35, 529), (36, 544), (40, 568), (43, 580), (45, 589), (47, 595), (50, 619), (73, 793), (86, 823), (87, 832), (90, 838), (91, 841), (94, 862), (98, 901), (100, 928), (102, 937), (104, 949), (112, 997), (116, 1009), (119, 1027), (129, 1102), (144, 1189), (145, 1201), (166, 1312), (201, 1498),

Gene: Suzy\_90 Start: 63680, Stop: 65074, Start Num: 28

Candidate Starts for Suzy\_90:

(4, 63557), (Start: 28 @63680 has 8 MA's), (61, 63929), (64, 63962), (70, 64004), (75, 64037), (94, 64148), (105, 64250), (107, 64262), (111, 64283), (112, 64286), (118, 64310), (139, 64451), (141, 64466), (148, 64514), (155, 64547), (164, 64589), (184, 64733), (187, 64748), (209, 64898), (213, 64931), (218, 64997), (219, 65009), (221, 65030),

Gene: Terapin\_92 Start: 63182, Stop: 64579, Start Num: 28

Candidate Starts for Terapin\_92:

(1, 63011), (4, 63059), (Start: 28 @63182 has 8 MA's), (70, 63506), (75, 63539), (94, 63650), (102, 63728), (105, 63752), (111, 63785), (112, 63788), (118, 63812), (139, 63953), (141, 63968), (155, 64049), (164, 64091), (184, 64238), (209, 64403), (213, 64436), (216, 64469), (218, 64502), (219, 64514), (221, 64535),

Gene: Thoth\_2 Start: 421, Stop: 1524, Start Num: 19

Candidate Starts for Thoth\_2:

(Start: 19 @421 has 23 MA's), (Start: 28 @463 has 8 MA's), (35, 529), (36, 544), (40, 568), (43, 580), (45, 589), (47, 595), (50, 619), (73, 793), (86, 823), (87, 832), (91, 841), (94, 862), (98, 901), (100, 928), (102, 937), (104, 949), (112, 997), (116, 1009), (119, 1027), (129, 1102), (144, 1189), (145, 1201), (166, 1312), (201, 1489),

Gene: Thumb\_2 Start: 355, Stop: 1668, Start Num: 17

Candidate Starts for Thumb\_2:

(Start: 17 @355 has 11 MA's), (38, 505), (45, 535), (49, 547), (52, 589), (74, 733), (78, 757), (79, 766), (82, 769), (91, 802), (92, 805), (93, 808), (97, 856), (105, 925), (106, 928), (107, 937), (108, 940), (112, 961), (117, 982), (119, 991), (126, 1051), (128, 1057), (146, 1177), (192, 1459), (202, 1531), (220, 1657),

Gene: Tillicus\_88 Start: 64659, Stop: 65981, Start Num: 10

Candidate Starts for Tillicus\_88:

(8, 64641), (Start: 10 @64659 has 39 MA's), (Start: 17 @64683 has 11 MA's), (31, 64752), (43, 64851), (45, 64860), (55, 64935), (66, 65010), (77, 65085), (85, 65133), (87, 65145), (96, 65208), (105, 65292), (106, 65295), (130, 65436), (131, 65439), (147, 65547), (149, 65571), (155, 65589), (171, 65682), (198, 65856), (203, 65877),

Gene: Troll4\_2 Start: 421, Stop: 1524, Start Num: 19

Candidate Starts for Troll4\_2:

(Start: 19 @421 has 23 MA's), (Start: 28 @463 has 8 MA's), (35, 529), (36, 544), (40, 568), (43, 580), (45, 589), (47, 595), (50, 619), (73, 793), (86, 823), (87, 832), (90, 838), (91, 841), (94, 862), (98, 901), (100, 928), (102, 937), (104, 949), (112, 997), (116, 1009), (129, 1102), (144, 1189), (145, 1201), (166, 1312), (201, 1489),

Gene: Visconti\_2 Start: 421, Stop: 1533, Start Num: 19

Candidate Starts for Visconti\_2:

(Start: 19 @421 has 23 MA's), (Start: 28 @463 has 8 MA's), (35, 529), (36, 544), (40, 568), (43, 580), (45, 589), (47, 595), (50, 619), (73, 793), (86, 823), (87, 832), (91, 841), (94, 862), (98, 901), (100,

928), (102, 937), (104, 949), (112, 997), (116, 1009), (119, 1027), (129, 1102), (136, 1141), (144, 1189), (145, 1201), (166, 1312), (201, 1498),

Gene: WaldoWhy\_2 Start: 421, Stop: 1533, Start Num: 19

Candidate Starts for WaldoWhy\_2:

(Start: 19 @421 has 23 MA's), (Start: 28 @463 has 8 MA's), (35, 529), (36, 544), (40, 568), (43, 580), (45, 589), (47, 595), (50, 619), (73, 793), (86, 823), (87, 832), (91, 841), (94, 862), (98, 901), (100, 928), (102, 937), (104, 949), (112, 997), (116, 1009), (119, 1027), (129, 1102), (144, 1189), (145, 1201), (166, 1312), (201, 1498),

Gene: Wojtek\_88 Start: 65823, Stop: 67139, Start Num: 10

Candidate Starts for Wojtek\_88:

(Start: 10 @65823 has 39 MA's), (Start: 17 @65847 has 11 MA's), (31, 65916), (43, 66015), (45, 66024), (55, 66099), (66, 66174), (74, 66228), (77, 66249), (85, 66297), (87, 66309), (105, 66456), (106, 66459), (116, 66504), (130, 66600), (131, 66603), (149, 66735), (151, 66747), (160, 66777), (174, 66864), (203, 67035),

Gene: Xenia2\_97 Start: 66264, Stop: 67571, Start Num: 10

Candidate Starts for Xenia2\_97:

(Start: 10 @66264 has 39 MA's), (Start: 17 @66288 has 11 MA's), (18, 66294), (21, 66303), (43, 66459), (45, 66468), (55, 66543), (66, 66618), (67, 66627), (71, 66651), (77, 66693), (81, 66714), (87, 66753), (105, 66900), (130, 67044), (131, 67047), (149, 67179), (151, 67182), (154, 67188), (160, 67212), (178, 67299), (196, 67434), (199, 67458), (205, 67479), (210, 67506),

Gene: Yikes\_96 Start: 66196, Stop: 67542, Start Num: 10

Candidate Starts for Yikes\_96:

(Start: 10 @66196 has 39 MA's), (31, 66283), (43, 66382), (55, 66466), (66, 66541), (76, 66613), (77, 66616), (85, 66667), (86, 66670), (87, 66679), (91, 66697), (96, 66742), (106, 66829), (123, 66922), (130, 66970), (131, 66973), (138, 67024), (149, 67105), (173, 67225), (203, 67438),

Gene: Zany\_94 Start: 66336, Stop: 67637, Start Num: 10

Candidate Starts for Zany\_94:

(3, 66279), (Start: 10 @66336 has 39 MA's), (31, 66423), (43, 66522), (55, 66606), (66, 66681), (76, 66753), (77, 66756), (85, 66807), (86, 66810), (87, 66819), (96, 66882), (123, 67062), (130, 67110), (131, 67113), (138, 67164), (149, 67245), (179, 67359), (203, 67533),