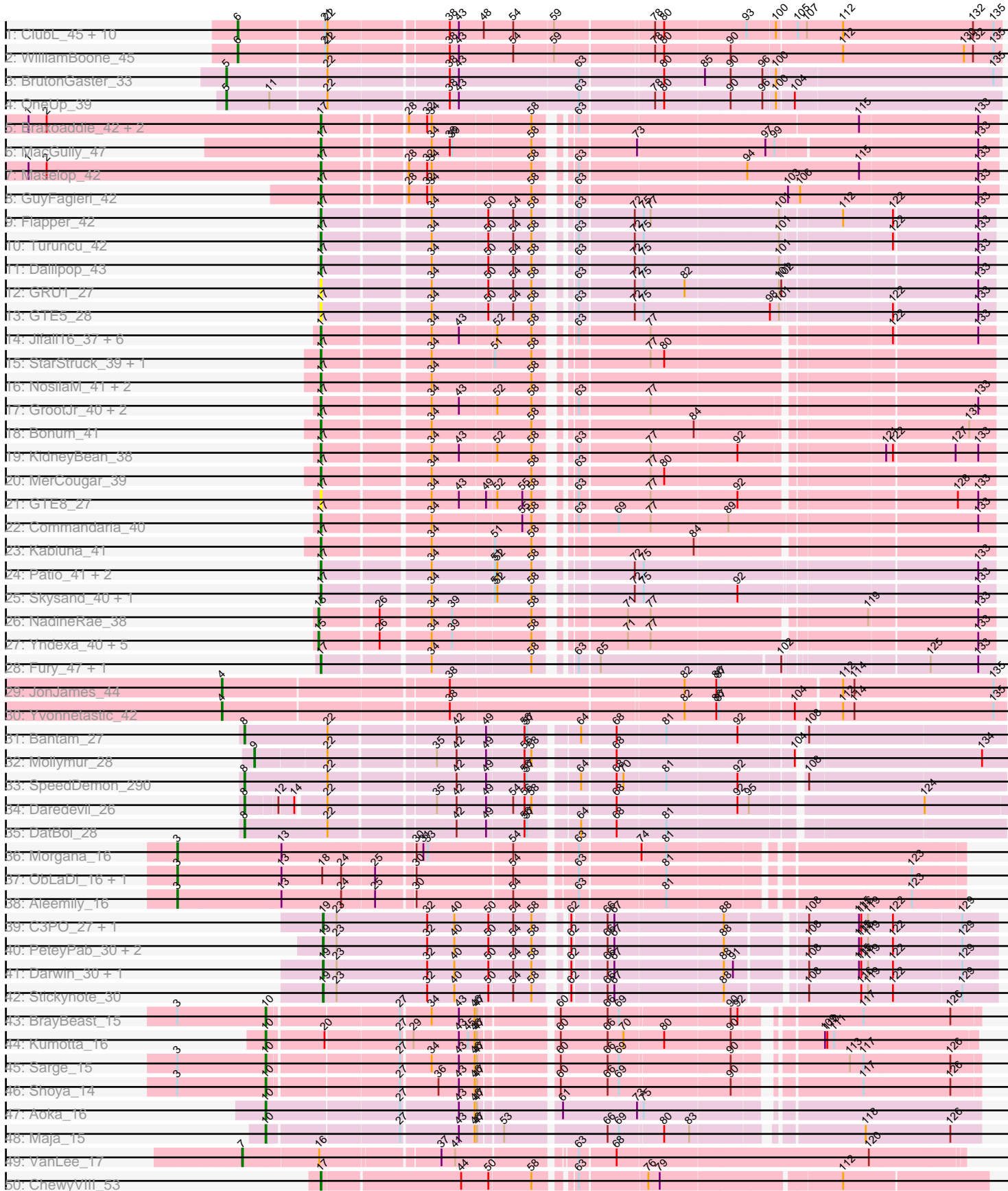


Pham 157785



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 157785 Report

This analysis was run 04/13/24 on database version 558.

Pham number 157785 has 87 members, 3 are drafts.

Phages represented in each track:

- Track 1 : ClubL\_45, Bachita\_47, Lozinak\_45, Engineer\_45, Toniann\_45, Norvs\_46, Smoothie\_46, Cucurbita\_47, Aphelion\_45, Culver\_45, PhinkBoden\_45
- Track 2 : WilliamBoone\_45
- Track 3 : BrutonGaster\_33
- Track 4 : OneUp\_39
- Track 5 : Braxoaddie\_42, Polyyuki\_42, Apiary\_42
- Track 6 : MacGully\_47
- Track 7 : Maselop\_42
- Track 8 : GuyFagieri\_42
- Track 9 : Flapper\_42
- Track 10 : Turuncu\_42
- Track 11 : Dalilpop\_43
- Track 12 : GRU1\_27
- Track 13 : GTE5\_28
- Track 14 : Jifall16\_37, Foxboro\_39, NatB6\_37, Tracker\_38, Kurt\_38, Emianna\_38, Wheezy\_38
- Track 15 : StarStruck\_39, Outis\_39
- Track 16 : NosilaM\_41, Buggaboo\_39, SuperSulley\_39
- Track 17 : GrootJr\_40, NovumRegina\_38, Arti\_38
- Track 18 : Bonum\_41
- Track 19 : KidneyBean\_38
- Track 20 : MerCougar\_39
- Track 21 : GTE8\_27
- Track 22 : Commandaria\_40
- Track 23 : Kabluna\_41
- Track 24 : Patio\_41, Ennea\_44, Lollipop1437\_43
- Track 25 : Skysand\_40, Float294\_40
- Track 26 : NadineRae\_38
- Track 27 : Yndexa\_40, BiPauneto\_41, Sukkupi\_40, IDyn\_39, WhoseManz\_40, Marietta\_40
- Track 28 : Fury\_47, Pleakley\_47
- Track 29 : JonJames\_44
- Track 30 : Yvonnetastic\_42
- Track 31 : Bantam\_27
- Track 32 : Mollymur\_28
- Track 33 : SpeedDemon\_290
- Track 34 : Daredevil\_26

- Track 35 : DatBoi\_28
- Track 36 : Morgana\_16
- Track 37 : ObLaDi\_16, Cafasso\_16
- Track 38 : Aleemily\_16
- Track 39 : C3PO\_27, Cruella\_28
- Track 40 : PeteyPab\_30, PotatoChip\_30, Zion\_30
- Track 41 : Darwin\_30, Kimchi1738\_28
- Track 42 : Stickynote\_30
- Track 43 : BrayBeast\_15
- Track 44 : Kumotta\_16
- Track 45 : Sarge\_15
- Track 46 : Shoya\_14
- Track 47 : Aoka\_16
- Track 48 : Maja\_15
- Track 49 : VanLee\_17
- Track 50 : ChewyVIII\_53

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

The start number called the most often in the published annotations is 17, it was called in 37 of the 84 non-draft genes in the pham.

Genes that call this "Most Annotated" start:

- Apiary\_42, Arti\_38, Bonum\_41, Braxoaddie\_42, Buggaboo\_39, ChewyVIII\_53, Commandaria\_40, Dalilpop\_43, Emianna\_38, Ennea\_44, Flapper\_42, Float294\_40, Foxboro\_39, Fury\_47, GRU1\_27, GTE5\_28, GTE8\_27, GrootJr\_40, GuyFagieri\_42, Jifall16\_37, Kabluna\_41, KidneyBean\_38, Kurt\_38, Lollipop1437\_43, MacGully\_47, Maselop\_42, MerCougar\_39, NatB6\_37, NosilaM\_41, NovumRegina\_38, Outis\_39, Patio\_41, Pleakley\_47, Polyyuki\_42, Skysand\_40, StarStruck\_39, SuperSulley\_39, Tracker\_38, Turuncu\_42, Wheezy\_38,

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

- 

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

- Aleemily\_16, Aoka\_16, Aphelion\_45, Bachita\_47, Bantam\_27, BiPauneto\_41, BrayBeast\_15, BrutonGaster\_33, C3PO\_27, Cafasso\_16, ClubL\_45, Cruella\_28, Cucurbita\_47, Culver\_45, Daredevil\_26, Darwin\_30, DatBoi\_28, Engineer\_45, IDyn\_39, JonJames\_44, Kimchi1738\_28, Kumotta\_16, Lozinak\_45, Maja\_15, Marietta\_40, Mollymur\_28, Morgana\_16, NadineRae\_38, Norvs\_46, ObLaDi\_16, OneUp\_39, PeteyPab\_30, PhinkBoden\_45, PotatoChip\_30, Sarge\_15, Shoya\_14, Smoothie\_46, SpeedDemon\_290, Stickynote\_30, Sukkupi\_40, Toniann\_45, VanLee\_17, WhoseManz\_40, WilliamBoone\_45, Yndexa\_40, Yvonnetastic\_42, Zion\_30,

**Summary by start number:**

Start 3:

- Found in 7 of 87 ( 8.0% ) of genes in pham
- Manual Annotations of this start: 4 of 84

- Called 57.1% of time when present
- Phage (with cluster) where this start called: Aleemily\_16 (DZ), Cafasso\_16 (DZ), Morgana\_16 (DZ), ObLaDi\_16 (DZ),

#### Start 4:

- Found in 2 of 87 ( 2.3% ) of genes in pham
- Manual Annotations of this start: 2 of 84
- Called 100.0% of time when present
- Phage (with cluster) where this start called: JonJames\_44 (DD), Yvonnetastic\_42 (DD),

#### Start 5:

- Found in 2 of 87 ( 2.3% ) of genes in pham
- Manual Annotations of this start: 2 of 84
- Called 100.0% of time when present
- Phage (with cluster) where this start called: BrutonGaster\_33 (CQ2), OneUp\_39 (CQ2),

#### Start 6:

- Found in 12 of 87 ( 13.8% ) of genes in pham
- Manual Annotations of this start: 12 of 84
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Aphelion\_45 (CQ1), Bachita\_47 (CQ1), ClubL\_45 (CQ1), Cucurbita\_47 (CQ1), Culver\_45 (CQ1), Engineer\_45 (CQ1), Lozinak\_45 (CQ1), Norvs\_46 (CQ), PhinkBoden\_45 (CQ1), Smoothie\_46 (CQ1), Toniann\_45 (CQ1), WilliamBoone\_45 (CQ1),

#### Start 7:

- Found in 1 of 87 ( 1.1% ) of genes in pham
- Manual Annotations of this start: 1 of 84
- Called 100.0% of time when present
- Phage (with cluster) where this start called: VanLee\_17 (singleton),

#### Start 8:

- Found in 4 of 87 ( 4.6% ) of genes in pham
- Manual Annotations of this start: 4 of 84
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Bantam\_27 (DL), Daredevil\_26 (DL), DatBoi\_28 (DL), SpeedDemon\_290 (DL),

#### Start 9:

- Found in 1 of 87 ( 1.1% ) of genes in pham
- Manual Annotations of this start: 1 of 84
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Mollymur\_28 (DL),

#### Start 10:

- Found in 6 of 87 ( 6.9% ) of genes in pham
- Manual Annotations of this start: 6 of 84
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Aoka\_16 (FO), BrayBeast\_15 (FB), Kumotta\_16 (FB), Maja\_15 (FO), Sarge\_15 (FB), Shoya\_14 (FB),

#### Start 15:

- Found in 7 of 87 ( 8.0% ) of genes in pham
- Manual Annotations of this start: 7 of 84
- Called 100.0% of time when present
- Phage (with cluster) where this start called: BiPauneto\_41 (CR4), IDyn\_39 (CR4), Marietta\_40 (CR4), NadineRae\_38 (CR4), Sukkupi\_40 (CR4), WhoseManz\_40 (CR4), Yndexa\_40 (CR4),

#### Start 17:

- Found in 40 of 87 ( 46.0% ) of genes in pham
- Manual Annotations of this start: 37 of 84
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Apiary\_42 (CR), Arti\_38 (CR2), Bonum\_41 (CR2), Braxoaddie\_42 (CR), Buggaboo\_39 (CR2), ChewyVIII\_53 (singleton), Commandaria\_40 (CR2), Dalilpop\_43 (CR1), Emianna\_38 (CR2), Ennea\_44 (CR3), Flapper\_42 (CR1), Float294\_40 (CR3), Foxboro\_39 (CR2), Fury\_47 (CR5), GRU1\_27 (CR1), GTE5\_28 (CR1), GTE8\_27 (CR2), GrootJr\_40 (CR2), GuyFagieri\_42 (CR), Jifall16\_37 (CR2), Kabluna\_41 (CR2), KidneyBean\_38 (CR2), Kurt\_38 (CR2), Lollipop1437\_43 (CR3), MacGully\_47 (CR), Maselop\_42 (CR), MerCougar\_39 (CR2), NatB6\_37 (CR2), NosilaM\_41 (CR2), NovumRegina\_38 (CR2), Outis\_39 (CR2), Patio\_41 (CR3), Pleakley\_47 (CR5), Polyyuki\_42 (CR), Skysand\_40 (CR3), StarStruck\_39 (CR2), SuperSulley\_39 (CR2), Tracker\_38 (CR2), Turuncu\_42 (CR1), Wheezy\_38 (CR2),

#### Start 19:

- Found in 8 of 87 ( 9.2% ) of genes in pham
- Manual Annotations of this start: 8 of 84
- Called 100.0% of time when present
- Phage (with cluster) where this start called: C3PO\_27 (EN), Cruella\_28 (EN), Darwin\_30 (EN), Kimchi1738\_28 (EN), PeteyPab\_30 (EN), PotatoChip\_30 (EN), Stickynote\_30 (EN), Zion\_30 (EN),

### Summary by clusters:

There are 16 clusters represented in this pham: CR2, CR3, singleton, EN, CR4, CR5, DD, DL, FB, CR1, DZ, CR, CQ2, CQ1, CQ, FO,

Info for manual annotations of cluster CQ:

- Start number 6 was manually annotated 1 time for cluster CQ.

Info for manual annotations of cluster CQ1:

- Start number 6 was manually annotated 11 times for cluster CQ1.

Info for manual annotations of cluster CQ2:

- Start number 5 was manually annotated 2 times for cluster CQ2.

Info for manual annotations of cluster CR:

- Start number 17 was manually annotated 6 times for cluster CR.

Info for manual annotations of cluster CR1:

- Start number 17 was manually annotated 3 times for cluster CR1.

Info for manual annotations of cluster CR2:

- Start number 17 was manually annotated 20 times for cluster CR2.

Info for manual annotations of cluster CR3:

- Start number 17 was manually annotated 5 times for cluster CR3.

Info for manual annotations of cluster CR4:

- Start number 15 was manually annotated 7 times for cluster CR4.

Info for manual annotations of cluster CR5:

- Start number 17 was manually annotated 2 times for cluster CR5.

Info for manual annotations of cluster DD:

- Start number 4 was manually annotated 2 times for cluster DD.

Info for manual annotations of cluster DL:

- Start number 8 was manually annotated 4 times for cluster DL.
- Start number 9 was manually annotated 1 time for cluster DL.

Info for manual annotations of cluster DZ:

- Start number 3 was manually annotated 4 times for cluster DZ.

Info for manual annotations of cluster EN:

- Start number 19 was manually annotated 8 times for cluster EN.

Info for manual annotations of cluster FB:

- Start number 10 was manually annotated 4 times for cluster FB.

Info for manual annotations of cluster FO:

- Start number 10 was manually annotated 2 times for cluster FO.

### ***Gene Information:***

Gene: Aleemily\_16 Start: 9981, Stop: 10933, Start Num: 3

Candidate Starts for Aleemily\_16:

(Start: 3 @9981 has 4 MA's), (13, 10113), (24, 10191), (25, 10233), (30, 10278), (54, 10401), (63, 10470), (81, 10575), (123, 10866),

Gene: Aoka\_16 Start: 10072, Stop: 10934, Start Num: 10

Candidate Starts for Aoka\_16:

(Start: 10 @10072 has 6 MA's), (27, 10243), (43, 10315), (46, 10336), (47, 10339), (61, 10432), (73, 10528), (75, 10534),

Gene: Aphelion\_45 Start: 18927, Stop: 19888, Start Num: 6

Candidate Starts for Aphelion\_45:

(Start: 6 @18927 has 12 MA's), (21, 19038), (22, 19041), (38, 19188), (43, 19200), (48, 19233), (54, 19272), (59, 19323), (78, 19443), (80, 19455), (93, 19560), (100, 19596), (105, 19620), (107, 19632), (112, 19680), (132, 19851), (135, 19878),

Gene: Apiary\_42 Start: 24321, Stop: 25141, Start Num: 17

Candidate Starts for Apiary\_42:

(1, 23934), (2, 23958), (Start: 17 @24321 has 37 MA's), (28, 24420), (32, 24444), (34, 24450), (58, 24576), (63, 24609), (115, 24963), (133, 25116),

Gene: Arti\_38 Start: 22581, Stop: 23383, Start Num: 17

Candidate Starts for Arti\_38:

(Start: 17 @22581 has 37 MA's), (34, 22713), (43, 22749), (52, 22794), (58, 22839), (63, 22872), (77, 22962), (133, 23361),

Gene: Bachita\_47 Start: 19360, Stop: 20321, Start Num: 6

Candidate Starts for Bachita\_47:

(Start: 6 @19360 has 12 MA's), (21, 19471), (22, 19474), (38, 19621), (43, 19633), (48, 19666), (54, 19705), (59, 19756), (78, 19876), (80, 19888), (93, 19993), (100, 20029), (105, 20053), (107, 20065), (112, 20113), (132, 20284), (135, 20311),

Gene: Bantam\_27 Start: 16393, Stop: 17321, Start Num: 8

Candidate Starts for Bantam\_27:

(Start: 8 @16393 has 4 MA's), (22, 16501), (42, 16654), (49, 16693), (56, 16741), (57, 16744), (64, 16798), (68, 16840), (81, 16903), (92, 16993), (108, 17068),

Gene: BiPauneto\_41 Start: 22337, Stop: 23145, Start Num: 15

Candidate Starts for BiPauneto\_41:

(Start: 15 @22337 has 7 MA's), (26, 22412), (34, 22472), (39, 22499), (58, 22598), (71, 22691), (77, 22721), (133, 23123),

Gene: Bonum\_41 Start: 22920, Stop: 23722, Start Num: 17

Candidate Starts for Bonum\_41:

(Start: 17 @22920 has 37 MA's), (34, 23052), (58, 23178), (84, 23358), (131, 23688),

Gene: Braxoaddie\_42 Start: 24310, Stop: 25130, Start Num: 17

Candidate Starts for Braxoaddie\_42:

(1, 23923), (2, 23947), (Start: 17 @24310 has 37 MA's), (28, 24409), (32, 24433), (34, 24439), (58, 24565), (63, 24598), (115, 24952), (133, 25105),

Gene: BrayBeast\_15 Start: 8914, Stop: 9761, Start Num: 10

Candidate Starts for BrayBeast\_15:

(Start: 3 @8797 has 4 MA's), (Start: 10 @8914 has 6 MA's), (27, 9076), (34, 9112), (43, 9148), (46, 9169), (47, 9172), (60, 9262), (66, 9322), (69, 9337), (90, 9475), (92, 9484), (117, 9613), (126, 9724),

Gene: BrutonGaster\_33 Start: 15537, Stop: 16510, Start Num: 5

Candidate Starts for BrutonGaster\_33:

(Start: 5 @15537 has 2 MA's), (22, 15666), (38, 15813), (43, 15825), (63, 15978), (80, 16080), (85, 16131), (90, 16164), (96, 16206), (100, 16221), (135, 16500),

Gene: Buggaboo\_39 Start: 23405, Stop: 24210, Start Num: 17

Candidate Starts for Buggaboo\_39:

(Start: 17 @23405 has 37 MA's), (34, 23537), (58, 23663),

Gene: C3PO\_27 Start: 20302, Stop: 21122, Start Num: 19

Candidate Starts for C3PO\_27:

(Start: 19 @20302 has 8 MA's), (23, 20320), (32, 20440), (40, 20476), (50, 20521), (54, 20551), (58, 20575), (62, 20602), (66, 20641), (67, 20650), (88, 20788), (108, 20878), (115, 20944), (116, 20947), (119, 20956), (122, 20989), (129, 21076),

Gene: Cafasso\_16 Start: 9969, Stop: 10921, Start Num: 3

Candidate Starts for Cafasso\_16:

(Start: 3 @9969 has 4 MA's), (13, 10101), (18, 10155), (24, 10179), (25, 10221), (30, 10266), (54, 10389), (63, 10458), (81, 10563), (123, 10854),

Gene: ChewyVIII\_53 Start: 31497, Stop: 32314, Start Num: 17

Candidate Starts for ChewyVIII\_53:

(Start: 17 @31497 has 37 MA's), (44, 31674), (50, 31710), (58, 31764), (63, 31803), (76, 31887), (79, 31902), (112, 32127),

Gene: ClubL\_45 Start: 18849, Stop: 19810, Start Num: 6

Candidate Starts for ClubL\_45:

(Start: 6 @18849 has 12 MA's), (21, 18960), (22, 18963), (38, 19110), (43, 19122), (48, 19155), (54, 19194), (59, 19245), (78, 19365), (80, 19377), (93, 19482), (100, 19518), (105, 19542), (107, 19554), (112, 19602), (132, 19773), (135, 19800),

Gene: Commandaria\_40 Start: 23900, Stop: 24714, Start Num: 17

Candidate Starts for Commandaria\_40:

(Start: 17 @23900 has 37 MA's), (34, 24032), (55, 24146), (58, 24158), (63, 24191), (69, 24239), (77, 24281), (89, 24380), (133, 24692),

Gene: Cruella\_28 Start: 20302, Stop: 21122, Start Num: 19

Candidate Starts for Cruella\_28:

(Start: 19 @20302 has 8 MA's), (23, 20320), (32, 20440), (40, 20476), (50, 20521), (54, 20551), (58, 20575), (62, 20602), (66, 20641), (67, 20650), (88, 20788), (108, 20878), (115, 20944), (116, 20947), (119, 20956), (122, 20989), (129, 21076),

Gene: Cucurbita\_47 Start: 20219, Stop: 21180, Start Num: 6

Candidate Starts for Cucurbita\_47:

(Start: 6 @20219 has 12 MA's), (21, 20330), (22, 20333), (38, 20480), (43, 20492), (48, 20525), (54, 20564), (59, 20615), (78, 20735), (80, 20747), (93, 20852), (100, 20888), (105, 20912), (107, 20924), (112, 20972), (132, 21143), (135, 21170),

Gene: Culver\_45 Start: 18658, Stop: 19619, Start Num: 6

Candidate Starts for Culver\_45:

(Start: 6 @18658 has 12 MA's), (21, 18769), (22, 18772), (38, 18919), (43, 18931), (48, 18964), (54, 19003), (59, 19054), (78, 19174), (80, 19186), (93, 19291), (100, 19327), (105, 19351), (107, 19363), (112, 19411), (132, 19582), (135, 19609),

Gene: Dalilpop\_43 Start: 24905, Stop: 25716, Start Num: 17

Candidate Starts for Dalilpop\_43:

(Start: 17 @24905 has 37 MA's), (34, 25037), (50, 25109), (54, 25139), (58, 25163), (63, 25196), (72, 25265), (75, 25277), (101, 25451), (133, 25694),

Gene: Daredevil\_26 Start: 14796, Stop: 15721, Start Num: 8

Candidate Starts for Daredevil\_26:

(Start: 8 @14796 has 4 MA's), (12, 14835), (14, 14853), (22, 14889), (35, 15018), (42, 15042), (49, 15081), (54, 15114), (56, 15129), (58, 15138), (68, 15228), (92, 15381), (95, 15396), (124, 15609),

Gene: Darwin\_30 Start: 19987, Stop: 20807, Start Num: 19

Candidate Starts for Darwin\_30:

(Start: 19 @19987 has 8 MA's), (23, 20005), (32, 20125), (40, 20161), (50, 20206), (54, 20236), (58, 20260), (62, 20287), (66, 20326), (67, 20335), (88, 20473), (91, 20485), (108, 20563), (115, 20629),



(116, 20632), (119, 20641), (122, 20674), (129, 20761),

Gene: DatBoi\_28 Start: 17182, Stop: 18110, Start Num: 8

Candidate Starts for DatBoi\_28:

(Start: 8 @17182 has 4 MA's), (22, 17290), (42, 17443), (49, 17482), (56, 17530), (57, 17533), (64, 17587), (68, 17629), (81, 17692),

Gene: Emianna\_38 Start: 23597, Stop: 24402, Start Num: 17

Candidate Starts for Emianna\_38:

(Start: 17 @23597 has 37 MA's), (34, 23729), (43, 23765), (52, 23810), (58, 23855), (63, 23888), (77, 23978), (122, 24272), (133, 24380),

Gene: Engineer\_45 Start: 18875, Stop: 19836, Start Num: 6

Candidate Starts for Engineer\_45:

(Start: 6 @18875 has 12 MA's), (21, 18986), (22, 18989), (38, 19136), (43, 19148), (48, 19181), (54, 19220), (59, 19271), (78, 19391), (80, 19403), (93, 19508), (100, 19544), (105, 19568), (107, 19580), (112, 19628), (132, 19799), (135, 19826),

Gene: Ennea\_44 Start: 24223, Stop: 25034, Start Num: 17

Candidate Starts for Ennea\_44:

(Start: 17 @24223 has 37 MA's), (34, 24355), (51, 24433), (52, 24436), (58, 24481), (72, 24583), (75, 24595), (133, 25012),

Gene: Flapper\_42 Start: 23966, Stop: 24777, Start Num: 17

Candidate Starts for Flapper\_42:

(Start: 17 @23966 has 37 MA's), (34, 24098), (50, 24170), (54, 24200), (58, 24224), (63, 24257), (72, 24326), (75, 24338), (77, 24347), (101, 24512), (112, 24584), (122, 24647), (133, 24755),

Gene: Float294\_40 Start: 23662, Stop: 24473, Start Num: 17

Candidate Starts for Float294\_40:

(Start: 17 @23662 has 37 MA's), (34, 23794), (51, 23872), (52, 23875), (58, 23920), (72, 24022), (75, 24034), (92, 24154), (133, 24451),

Gene: Foxboro\_39 Start: 24103, Stop: 24908, Start Num: 17

Candidate Starts for Foxboro\_39:

(Start: 17 @24103 has 37 MA's), (34, 24235), (43, 24271), (52, 24316), (58, 24361), (63, 24394), (77, 24484), (122, 24778), (133, 24886),

Gene: Fury\_47 Start: 23325, Stop: 24127, Start Num: 17

Candidate Starts for Fury\_47:

(Start: 17 @23325 has 37 MA's), (34, 23457), (58, 23583), (63, 23616), (65, 23640), (102, 23868), (125, 24042), (133, 24105),

Gene: GRU1\_27 Start: 15854, Stop: 16665, Start Num: 17

Candidate Starts for GRU1\_27:

(Start: 17 @15854 has 37 MA's), (34, 15986), (50, 16058), (54, 16088), (58, 16112), (63, 16145), (72, 16214), (75, 16226), (82, 16280), (101, 16400), (102, 16403), (133, 16643),

Gene: GTE5\_28 Start: 16818, Stop: 17629, Start Num: 17

Candidate Starts for GTE5\_28:

(Start: 17 @16818 has 37 MA's), (34, 16950), (50, 17022), (54, 17052), (58, 17076), (63, 17109), (72, 17178), (75, 17190), (98, 17352), (101, 17364), (122, 17499), (133, 17607),

Gene: GTE8\_27 Start: 16862, Stop: 17667, Start Num: 17

Candidate Starts for GTE8\_27:

(Start: 17 @16862 has 37 MA's), (34, 16994), (43, 17030), (49, 17063), (52, 17075), (55, 17108), (58, 17120), (63, 17153), (77, 17243), (92, 17354), (128, 17618), (133, 17645),

Gene: GrootJr\_40 Start: 22976, Stop: 23778, Start Num: 17

Candidate Starts for GrootJr\_40:

(Start: 17 @22976 has 37 MA's), (34, 23108), (43, 23144), (52, 23189), (58, 23234), (63, 23267), (77, 23357), (133, 23756),

Gene: GuyFagieri\_42 Start: 24140, Stop: 24963, Start Num: 17

Candidate Starts for GuyFagieri\_42:

(Start: 17 @24140 has 37 MA's), (28, 24239), (32, 24263), (34, 24269), (58, 24395), (63, 24428), (103, 24692), (106, 24707), (133, 24938),

Gene: IDyn\_39 Start: 20751, Stop: 21559, Start Num: 15

Candidate Starts for IDyn\_39:

(Start: 15 @20751 has 7 MA's), (26, 20826), (34, 20886), (39, 20913), (58, 21012), (71, 21105), (77, 21135), (133, 21537),

Gene: Jifall16\_37 Start: 23251, Stop: 24056, Start Num: 17

Candidate Starts for Jifall16\_37:

(Start: 17 @23251 has 37 MA's), (34, 23383), (43, 23419), (52, 23464), (58, 23509), (63, 23542), (77, 23632), (122, 23926), (133, 24034),

Gene: JonJames\_44 Start: 22784, Stop: 23772, Start Num: 4

Candidate Starts for JonJames\_44:

(Start: 4 @22784 has 2 MA's), (38, 23066), (82, 23363), (86, 23405), (87, 23408), (112, 23558), (114, 23573), (135, 23756),

Gene: Kabluna\_41 Start: 22320, Stop: 23125, Start Num: 17

Candidate Starts for Kabluna\_41:

(Start: 17 @22320 has 37 MA's), (34, 22452), (51, 22530), (58, 22578), (84, 22758),

Gene: KidneyBean\_38 Start: 23375, Stop: 24177, Start Num: 17

Candidate Starts for KidneyBean\_38:

(Start: 17 @23375 has 37 MA's), (34, 23507), (43, 23543), (52, 23588), (58, 23633), (63, 23666), (77, 23756), (92, 23867), (121, 24038), (122, 24047), (127, 24125), (133, 24155),

Gene: Kimchi1738\_28 Start: 19390, Stop: 20210, Start Num: 19

Candidate Starts for Kimchi1738\_28:

(Start: 19 @19390 has 8 MA's), (23, 19408), (32, 19528), (40, 19564), (50, 19609), (54, 19639), (58, 19663), (62, 19690), (66, 19729), (67, 19738), (88, 19876), (91, 19888), (108, 19966), (115, 20032), (116, 20035), (119, 20044), (122, 20077), (129, 20164),

Gene: Kumotta\_16 Start: 9768, Stop: 10615, Start Num: 10

Candidate Starts for Kumotta\_16:

(Start: 10 @9768 has 6 MA's), (20, 9840), (27, 9933), (29, 9945), (43, 10005), (45, 10017), (46, 10026), (47, 10029), (60, 10119), (66, 10179), (70, 10200), (80, 10251), (90, 10335), (109, 10422), (110, 10425), (111, 10434),

Gene: Kurt\_38 Start: 23612, Stop: 24417, Start Num: 17

Candidate Starts for Kurt\_38:

(Start: 17 @23612 has 37 MA's), (34, 23744), (43, 23780), (52, 23825), (58, 23870), (63, 23903), (77, 23993), (122, 24287), (133, 24395),

Gene: Lollipop1437\_43 Start: 24211, Stop: 25022, Start Num: 17

Candidate Starts for Lollipop1437\_43:

(Start: 17 @24211 has 37 MA's), (34, 24343), (51, 24421), (52, 24424), (58, 24469), (72, 24571), (75, 24583), (133, 25000),

Gene: Lozinak\_45 Start: 18930, Stop: 19891, Start Num: 6

Candidate Starts for Lozinak\_45:

(Start: 6 @18930 has 12 MA's), (21, 19041), (22, 19044), (38, 19191), (43, 19203), (48, 19236), (54, 19275), (59, 19326), (78, 19446), (80, 19458), (93, 19563), (100, 19599), (105, 19623), (107, 19635), (112, 19683), (132, 19854), (135, 19881),

Gene: MacGully\_47 Start: 24813, Stop: 25627, Start Num: 17

Candidate Starts for MacGully\_47:

(Start: 17 @24813 has 37 MA's), (34, 24942), (38, 24966), (39, 24969), (58, 25068), (73, 25173), (97, 25335), (99, 25347), (133, 25602),

Gene: Maja\_15 Start: 9389, Stop: 10245, Start Num: 10

Candidate Starts for Maja\_15:

(Start: 10 @9389 has 6 MA's), (27, 9554), (43, 9626), (46, 9647), (47, 9650), (53, 9677), (66, 9800), (69, 9815), (80, 9869), (83, 9902), (118, 10097), (126, 10205),

Gene: Marietta\_40 Start: 20667, Stop: 21475, Start Num: 15

Candidate Starts for Marietta\_40:

(Start: 15 @20667 has 7 MA's), (26, 20742), (34, 20802), (39, 20829), (58, 20928), (71, 21021), (77, 21051), (133, 21453),

Gene: Maselop\_42 Start: 24341, Stop: 25164, Start Num: 17

Candidate Starts for Maselop\_42:

(1, 23954), (2, 23978), (Start: 17 @24341 has 37 MA's), (28, 24440), (32, 24464), (34, 24470), (58, 24596), (63, 24629), (94, 24839), (115, 24986), (133, 25139),

Gene: MerCougar\_39 Start: 23519, Stop: 24324, Start Num: 17

Candidate Starts for MerCougar\_39:

(Start: 17 @23519 has 37 MA's), (34, 23651), (58, 23777), (63, 23810), (77, 23900), (80, 23918),

Gene: Mollymur\_28 Start: 17282, Stop: 18201, Start Num: 9

Candidate Starts for Mollymur\_28:

(Start: 9 @17282 has 1 MA's), (22, 17369), (35, 17498), (42, 17522), (49, 17561), (56, 17609), (58, 17618), (68, 17708), (104, 17930), (134, 18161),

Gene: Morgana\_16 Start: 9973, Stop: 10925, Start Num: 3

Candidate Starts for Morgana\_16:

(Start: 3 @9973 has 4 MA's), (13, 10105), (30, 10270), (31, 10279), (33, 10285), (54, 10393), (63, 10462), (74, 10537), (81, 10567),

Gene: NadineRae\_38 Start: 19914, Stop: 20722, Start Num: 15

Candidate Starts for NadineRae\_38:

(Start: 15 @19914 has 7 MA's), (26, 19989), (34, 20049), (39, 20076), (58, 20175), (71, 20268), (77, 20298), (119, 20562), (133, 20700),

Gene: NatB6\_37 Start: 22648, Stop: 23453, Start Num: 17

Candidate Starts for NatB6\_37:

(Start: 17 @22648 has 37 MA's), (34, 22780), (43, 22816), (52, 22861), (58, 22906), (63, 22939), (77, 23029), (122, 23323), (133, 23431),

Gene: Norvs\_46 Start: 18932, Stop: 19893, Start Num: 6

Candidate Starts for Norvs\_46:

(Start: 6 @18932 has 12 MA's), (21, 19043), (22, 19046), (38, 19193), (43, 19205), (48, 19238), (54, 19277), (59, 19328), (78, 19448), (80, 19460), (93, 19565), (100, 19601), (105, 19625), (107, 19637), (112, 19685), (132, 19856), (135, 19883),

Gene: NosilaM\_41 Start: 23217, Stop: 24022, Start Num: 17

Candidate Starts for NosilaM\_41:

(Start: 17 @23217 has 37 MA's), (34, 23349), (58, 23475),

Gene: NovumRegina\_38 Start: 22975, Stop: 23777, Start Num: 17

Candidate Starts for NovumRegina\_38:

(Start: 17 @22975 has 37 MA's), (34, 23107), (43, 23143), (52, 23188), (58, 23233), (63, 23266), (77, 23356), (133, 23755),

Gene: ObLaDi\_16 Start: 9957, Stop: 10909, Start Num: 3

Candidate Starts for ObLaDi\_16:

(Start: 3 @9957 has 4 MA's), (13, 10089), (18, 10143), (24, 10167), (25, 10209), (30, 10254), (54, 10377), (63, 10446), (81, 10551), (123, 10842),

Gene: OneUp\_39 Start: 16642, Stop: 17615, Start Num: 5

Candidate Starts for OneUp\_39:

(Start: 5 @16642 has 2 MA's), (11, 16699), (22, 16771), (38, 16918), (43, 16930), (63, 17083), (78, 17173), (80, 17185), (90, 17269), (96, 17311), (100, 17326), (104, 17347),

Gene: Outis\_39 Start: 23207, Stop: 24012, Start Num: 17

Candidate Starts for Outis\_39:

(Start: 17 @23207 has 37 MA's), (34, 23339), (51, 23417), (58, 23465), (77, 23588), (80, 23606),

Gene: Patio\_41 Start: 23447, Stop: 24258, Start Num: 17

Candidate Starts for Patio\_41:

(Start: 17 @23447 has 37 MA's), (34, 23579), (51, 23657), (52, 23660), (58, 23705), (72, 23807), (75, 23819), (133, 24236),

Gene: PeteyPab\_30 Start: 21147, Stop: 21967, Start Num: 19

Candidate Starts for PeteyPab\_30:

(Start: 19 @21147 has 8 MA's), (23, 21165), (32, 21285), (40, 21321), (50, 21366), (54, 21396), (58, 21420), (62, 21447), (66, 21486), (67, 21495), (88, 21633), (108, 21723), (115, 21789), (116, 21792), (119, 21801), (122, 21834), (129, 21921),

Gene: PhinkBoden\_45 Start: 19313, Stop: 20274, Start Num: 6

Candidate Starts for PhinkBoden\_45:

(Start: 6 @19313 has 12 MA's), (21, 19424), (22, 19427), (38, 19574), (43, 19586), (48, 19619), (54, 19658), (59, 19709), (78, 19829), (80, 19841), (93, 19946), (100, 19982), (105, 20006), (107, 20018), (112, 20066), (132, 20237), (135, 20264),

Gene: Pleakley\_47 Start: 23326, Stop: 24128, Start Num: 17

Candidate Starts for Pleakley\_47:

(Start: 17 @23326 has 37 MA's), (34, 23458), (58, 23584), (63, 23617), (65, 23641), (102, 23869), (125, 24043), (133, 24106),

Gene: Polyuyki\_42 Start: 24333, Stop: 25153, Start Num: 17

Candidate Starts for Polyuyki\_42:

(1, 23946), (2, 23970), (Start: 17 @24333 has 37 MA's), (28, 24432), (32, 24456), (34, 24462), (58, 24588), (63, 24621), (115, 24975), (133, 25128),

Gene: PotatoChip\_30 Start: 21149, Stop: 21969, Start Num: 19

Candidate Starts for PotatoChip\_30:

(Start: 19 @21149 has 8 MA's), (23, 21167), (32, 21287), (40, 21323), (50, 21368), (54, 21398), (58, 21422), (62, 21449), (66, 21488), (67, 21497), (88, 21635), (108, 21725), (115, 21791), (116, 21794), (119, 21803), (122, 21836), (129, 21923),

Gene: Sarge\_15 Start: 8825, Stop: 9672, Start Num: 10

Candidate Starts for Sarge\_15:

(Start: 3 @8708 has 4 MA's), (Start: 10 @8825 has 6 MA's), (27, 8987), (34, 9023), (43, 9059), (46, 9080), (47, 9083), (60, 9173), (66, 9233), (69, 9248), (90, 9386), (113, 9506), (117, 9524), (126, 9635),

Gene: Shoya\_14 Start: 8461, Stop: 9308, Start Num: 10

Candidate Starts for Shoya\_14:

(Start: 3 @8344 has 4 MA's), (Start: 10 @8461 has 6 MA's), (27, 8623), (36, 8668), (43, 8695), (46, 8716), (47, 8719), (60, 8809), (66, 8869), (69, 8884), (90, 9022), (117, 9160), (126, 9271),

Gene: Skysand\_40 Start: 23664, Stop: 24475, Start Num: 17

Candidate Starts for Skysand\_40:

(Start: 17 @23664 has 37 MA's), (34, 23796), (51, 23874), (52, 23877), (58, 23922), (72, 24024), (75, 24036), (92, 24156), (133, 24453),

Gene: Smoothie\_46 Start: 18930, Stop: 19891, Start Num: 6

Candidate Starts for Smoothie\_46:

(Start: 6 @18930 has 12 MA's), (21, 19041), (22, 19044), (38, 19191), (43, 19203), (48, 19236), (54, 19275), (59, 19326), (78, 19446), (80, 19458), (93, 19563), (100, 19599), (105, 19623), (107, 19635), (112, 19683), (132, 19854), (135, 19881),

Gene: SpeedDemon\_290 Start: 18239, Stop: 19167, Start Num: 8

Candidate Starts for SpeedDemon\_290:

(Start: 8 @18239 has 4 MA's), (22, 18347), (42, 18500), (49, 18539), (56, 18587), (57, 18590), (64, 18644), (68, 18686), (70, 18695), (81, 18749), (92, 18839), (108, 18914),

Gene: StarStruck\_39 Start: 23207, Stop: 24012, Start Num: 17

Candidate Starts for StarStruck\_39:

(Start: 17 @23207 has 37 MA's), (34, 23339), (51, 23417), (58, 23465), (77, 23588), (80, 23606),

Gene: Stickynote\_30 Start: 20569, Stop: 21389, Start Num: 19

Candidate Starts for Stickynote\_30:

(Start: 19 @20569 has 8 MA's), (23, 20587), (32, 20707), (40, 20743), (50, 20788), (54, 20818), (58, 20842), (62, 20869), (66, 20908), (67, 20917), (88, 21055), (108, 21145), (116, 21214), (119, 21223), (122, 21256), (129, 21343),

Gene: Sukkupi\_40 Start: 22228, Stop: 23036, Start Num: 15

Candidate Starts for Sukkupi\_40:

(Start: 15 @22228 has 7 MA's), (26, 22303), (34, 22363), (39, 22390), (58, 22489), (71, 22582), (77, 22612), (133, 23014),

Gene: SuperSulley\_39 Start: 23405, Stop: 24210, Start Num: 17

Candidate Starts for SuperSulley\_39:

(Start: 17 @23405 has 37 MA's), (34, 23537), (58, 23663),

Gene: Toniann\_45 Start: 18875, Stop: 19836, Start Num: 6

Candidate Starts for Toniann\_45:

(Start: 6 @18875 has 12 MA's), (21, 18986), (22, 18989), (38, 19136), (43, 19148), (48, 19181), (54, 19220), (59, 19271), (78, 19391), (80, 19403), (93, 19508), (100, 19544), (105, 19568), (107, 19580), (112, 19628), (132, 19799), (135, 19826),

Gene: Tracker\_38 Start: 22375, Stop: 23180, Start Num: 17

Candidate Starts for Tracker\_38:

(Start: 17 @22375 has 37 MA's), (34, 22507), (43, 22543), (52, 22588), (58, 22633), (63, 22666), (77, 22756), (122, 23050), (133, 23158),

Gene: Turuncu\_42 Start: 23671, Stop: 24482, Start Num: 17

Candidate Starts for Turuncu\_42:

(Start: 17 @23671 has 37 MA's), (34, 23803), (50, 23875), (54, 23905), (58, 23929), (63, 23962), (72, 24031), (75, 24043), (101, 24217), (122, 24352), (133, 24460),

Gene: VanLee\_17 Start: 10020, Stop: 10897, Start Num: 7

Candidate Starts for VanLee\_17:

(Start: 7 @10020 has 1 MA's), (16, 10116), (37, 10260), (41, 10278), (63, 10410), (68, 10455), (120, 10779),

Gene: Wheezy\_38 Start: 22580, Stop: 23385, Start Num: 17

Candidate Starts for Wheezy\_38:

(Start: 17 @22580 has 37 MA's), (34, 22712), (43, 22748), (52, 22793), (58, 22838), (63, 22871), (77, 22961), (122, 23255), (133, 23363),

Gene: WhoseManz\_40 Start: 20280, Stop: 21088, Start Num: 15

Candidate Starts for WhoseManz\_40:

(Start: 15 @20280 has 7 MA's), (26, 20355), (34, 20415), (39, 20442), (58, 20541), (71, 20634), (77, 20664), (133, 21066),

Gene: WilliamBoone\_45 Start: 18239, Stop: 19200, Start Num: 6

Candidate Starts for WilliamBoone\_45:

(Start: 6 @18239 has 12 MA's), (21, 18350), (22, 18353), (38, 18500), (43, 18512), (54, 18584), (59, 18635), (78, 18755), (80, 18767), (90, 18851), (112, 18992), (130, 19151), (132, 19163), (135, 19190),

Gene: Yndexa\_40 Start: 22228, Stop: 23036, Start Num: 15

Candidate Starts for Yndexa\_40:

(Start: 15 @22228 has 7 MA's), (26, 22303), (34, 22363), (39, 22390), (58, 22489), (71, 22582), (77, 22612), (133, 23014),

Gene: Yvonnetastic\_42 Start: 20319, Stop: 21307, Start Num: 4

Candidate Starts for Yvonnetastic\_42:

(Start: 4 @20319 has 2 MA's), (38, 20601), (82, 20898), (86, 20940), (87, 20943), (104, 21036), (112, 21093), (114, 21108), (135, 21291),

Gene: Zion\_30 Start: 21147, Stop: 21967, Start Num: 19

Candidate Starts for Zion\_30:

(Start: 19 @21147 has 8 MA's), (23, 21165), (32, 21285), (40, 21321), (50, 21366), (54, 21396), (58, 21420), (62, 21447), (66, 21486), (67, 21495), (88, 21633), (108, 21723), (115, 21789), (116, 21792), (119, 21801), (122, 21834), (129, 21921),