



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 291181 Report

This analysis was run 03/28/26 on database version 641.

WARNING: Pham size does not match number of genes in report. Either unphamerated genes have been added (by you) or starterator has removed genes due to invalid start codon.

Pham number 291181 has 60 members, 6 are drafts.

Phages represented in each track:

- Track 1 : Katalie\_26, RedBear\_27, South40\_26
- Track 2 : Maneekul\_25
- Track 3 : Emaanora\_27, OzzyJ\_26, Hippo\_25, SarahRose\_25, Dwayne\_25
- Track 4 : Asten\_25, Triste\_25, BarryBee\_27, Snorlax\_25, TagePhighter\_26, Whatever\_25, Chucky\_25, Werner\_25
- Track 5 : Goby\_26, Toma\_26
- Track 6 : Lika\_26, Godpower\_27
- Track 7 : Nabi\_26, Rana\_26, Lorelei\_26
- Track 8 : Zemlya\_27, Danzina\_27, Celeste\_26, Dattran\_27
- Track 9 : TuanPN\_25, Yasdnii\_25, Ejemplo\_25
- Track 10 : Brataylor\_28
- Track 11 : Sujidade\_27
- Track 12 : Superstar\_29
- Track 13 : Celia\_28, Itza\_28, Urza\_28
- Track 14 : VieEnRose\_28
- Track 15 : phiSASD1\_40
- Track 16 : Hiyaa\_30
- Track 17 : Spocter\_30, Kokushibo\_32
- Track 18 : Keanu\_31
- Track 19 : Galactica\_29
- Track 20 : Zuko\_35
- Track 21 : KimJongPhill\_37
- Track 22 : Fudan\_187, LuckySocke\_185, Talos\_187
- Track 23 : Alone3\_187, Beleetus\_185
- Track 24 : Garnacho\_177
- Track 25 : GiJojo\_177
- Track 26 : BRock\_178
- Track 27 : Park1214\_197
- Track 28 : Bimmel\_65
- Track 29 : Success\_67
- Track 30 : Spooks\_66
- Track 31 : Attoomi\_20
- Track 32 : Samy\_26

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

The start number called the most often in the published annotations is 16, it was called in 37 of the 54 non-draft genes in the pham.

Genes that call this "Most Annotated" start:

- Asten\_25, BarryBee\_27, Brataylor\_28, Celeste\_26, Celia\_28, Chucky\_25, Danzina\_27, Dattran\_27, Dwayne\_25, Ejemplo\_25, Emaanora\_27, Goby\_26, Godpower\_27, Hippo\_25, Itza\_28, Katalie\_26, Lika\_26, Lorelei\_26, Maneekul\_25, Nabi\_26, OzzyJ\_26, Rana\_26, RedBear\_27, SarahRose\_25, Snorlax\_25, South40\_26, Sujidade\_27, TagePhighter\_26, Toma\_26, Triste\_25, TuanPN\_25, Urza\_28, VieEnRose\_28, Werner\_25, Whatever\_25, Yasdnil\_25, Zemlya\_27,

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:

- Alone3\_187, Attoomi\_20, BRock\_178, Beleetus\_185, Bimmel\_65, Fudan\_187, Galactica\_29, Garnacho\_177, GiJojo\_177, Hiyaa\_30, Keanu\_31, KimJongPhill\_37, Kokushibo\_32, LuckySocke\_185, Park1214\_197, Samy\_26, Spocter\_30, Spooks\_66, Success\_67, Superstar\_29, Talos\_187, Zuko\_35, phiSASD1\_40,

### **Summary by start number:**

Start 14:

- Found in 2 of 60 ( 3.3% ) of genes in pham
- Manual Annotations of this start: 2 of 54
- Called 100.0% of time when present
- Phage (with cluster) where this start called: KimJongPhill\_37 (BR), Zuko\_35 (BR),

Start 15:

- Found in 14 of 60 ( 23.3% ) of genes in pham
- Manual Annotations of this start: 10 of 54
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Alone3\_187 (BS), BRock\_178 (BS), Beleetus\_185 (BS), Fudan\_187 (BS), Galactica\_29 (BQ), Garnacho\_177 (BS), GiJojo\_177 (BS), Hiyaa\_30 (BQ), Keanu\_31 (BQ), Kokushibo\_32 (BQ), LuckySocke\_185 (BS), Park1214\_197 (BS), Spocter\_30 (BQ), Talos\_187 (BS),

Start 16:

- Found in 37 of 60 ( 61.7% ) of genes in pham
- Manual Annotations of this start: 37 of 54
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Asten\_25 (BD1), BarryBee\_27 (BD1), Brataylor\_28 (BD1), Celeste\_26 (BD1), Celia\_28 (BD6), Chucky\_25 (BD1), Danzina\_27 (BD1), Dattran\_27 (BD1), Dwayne\_25 (BD1), Ejemplo\_25 (BD1), Emaanora\_27 (BD1), Goby\_26 (BD1), Godpower\_27 (BD1), Hippo\_25 (BD1), Itza\_28 (BD6), Katalie\_26 (BD1), Lika\_26 (BD1), Lorelei\_26 (BD1), Maneekul\_25 (BD1), Nabi\_26 (BD1), OzzyJ\_26 (BD1), Rana\_26 (BD1), RedBear\_27 (BD1),

SarahRose\_25 (BD1), Snorlax\_25 (BD1), South40\_26 (BD1), Sujidade\_27 (BD1), TagePhighter\_26 (BD1), Toma\_26 (BD1), Triste\_25 (BD1), TuanPN\_25 (BD1), Urza\_28 (BD6), VieEnRose\_28 (BD6), Werner\_25 (BD1), Whatever\_25 (BD1), Yasdniil\_25 (BD1), Zemlya\_27 (BD1),

Start 17:

- Found in 1 of 60 ( 1.7% ) of genes in pham
- No Manual Annotations of this start.
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Superstar\_29 (BD2),

Start 20:

- Found in 3 of 60 ( 5.0% ) of genes in pham
- Manual Annotations of this start: 3 of 54
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Bimmel\_65 (BT), Spooks\_66 (BT), Success\_67 (BT),

Start 21:

- Found in 3 of 60 ( 5.0% ) of genes in pham
- Manual Annotations of this start: 2 of 54
- Called 66.7% of time when present
- Phage (with cluster) where this start called: Attoomi\_20 (singleton), Samy\_26 (singleton),

Start 29:

- Found in 6 of 60 ( 10.0% ) of genes in pham
- No Manual Annotations of this start.
- Called 16.7% of time when present
- Phage (with cluster) where this start called: phiSASD1\_40 (BJ),

### **Summary by clusters:**

There are 9 clusters represented in this pham: singleton, BD2, BJ, BT, BD6, BD1, BQ, BR, BS,

Info for manual annotations of cluster BD1:

- Start number 16 was manually annotated 33 times for cluster BD1.

Info for manual annotations of cluster BD6:

- Start number 16 was manually annotated 4 times for cluster BD6.

Info for manual annotations of cluster BQ:

- Start number 15 was manually annotated 4 times for cluster BQ.

Info for manual annotations of cluster BR:

- Start number 14 was manually annotated 2 times for cluster BR.

Info for manual annotations of cluster BS:

- Start number 15 was manually annotated 6 times for cluster BS.

Info for manual annotations of cluster BT:

•Start number 20 was manually annotated 3 times for cluster BT.

**Gene Information:**

Gene: Alone3\_187 Start: 95865, Stop: 96938, Start Num: 15

Candidate Starts for Alone3\_187:

(Start: 15 @95865 has 10 MA's), (40, 96081), (46, 96144), (55, 96273), (65, 96357), (95, 96648), (110, 96753), (119, 96903),

Gene: Asten\_25 Start: 21080, Stop: 22168, Start Num: 16

Candidate Starts for Asten\_25:

(Start: 16 @21080 has 37 MA's), (24, 21158), (25, 21164), (41, 21320), (54, 21485), (65, 21581), (73, 21680), (74, 21689), (81, 21761), (99, 21905), (103, 21941), (118, 22061),

Gene: Attoomi\_20 Start: 16925, Stop: 17971, Start Num: 21

Candidate Starts for Attoomi\_20:

(19, 16910), (Start: 21 @16925 has 2 MA's), (22, 16934), (29, 16985), (32, 17015), (38, 17066), (43, 17120), (50, 17213), (51, 17225), (52, 17234), (57, 17294), (58, 17297), (62, 17330), (66, 17387), (77, 17537), (78, 17543), (89, 17624), (90, 17639), (91, 17642), (106, 17774), (108, 17786), (117, 17882), (120, 17963),

Gene: BRock\_178 Start: 91256, Stop: 92188, Start Num: 15

Candidate Starts for BRock\_178:

(Start: 15 @91256 has 10 MA's), (40, 91472), (44, 91514), (46, 91535), (47, 91544), (55, 91661), (73, 91844), (74, 91853), (110, 91994), (112, 92009), (113, 92015),

Gene: BarryBee\_27 Start: 21090, Stop: 22178, Start Num: 16

Candidate Starts for BarryBee\_27:

(Start: 16 @21090 has 37 MA's), (24, 21168), (25, 21174), (41, 21330), (54, 21495), (65, 21591), (73, 21690), (74, 21699), (81, 21771), (99, 21915), (103, 21951), (118, 22071),

Gene: Beleetus\_185 Start: 94526, Stop: 95599, Start Num: 15

Candidate Starts for Beleetus\_185:

(Start: 15 @94526 has 10 MA's), (40, 94742), (46, 94805), (55, 94934), (65, 95018), (95, 95309), (110, 95414), (119, 95564),

Gene: Bimmel\_65 Start: 43801, Stop: 44664, Start Num: 20

Candidate Starts for Bimmel\_65:

(Start: 20 @43801 has 3 MA's), (29, 43861), (38, 43939), (58, 44170), (63, 44212), (66, 44266), (85, 44479), (86, 44485), (107, 44650),

Gene: Brataylor\_28 Start: 22093, Stop: 23187, Start Num: 16

Candidate Starts for Brataylor\_28:

(Start: 16 @22093 has 37 MA's), (24, 22171), (25, 22177), (41, 22333), (46, 22372), (54, 22498), (65, 22594), (73, 22693), (74, 22702), (81, 22777), (99, 22924), (102, 22948), (103, 22960), (114, 23044), (118, 23080),

Gene: Celeste\_26 Start: 21546, Stop: 22634, Start Num: 16

Candidate Starts for Celeste\_26:

(9, 21483), (10, 21495), (Start: 16 @21546 has 37 MA's), (24, 21624), (25, 21630), (41, 21786), (46, 21825), (54, 21951), (65, 22047), (73, 22146), (74, 22155), (81, 22227), (99, 22371), (114, 22491), (118, 22527),

Gene: Celia\_28 Start: 21987, Stop: 22973, Start Num: 16

Candidate Starts for Celia\_28:

(Start: 16 @21987 has 37 MA's), (24, 22065), (25, 22071), (34, 22146), (36, 22155), (44, 22245), (60, 22437), (64, 22479), (65, 22485),

Gene: Chucky\_25 Start: 21094, Stop: 22182, Start Num: 16

Candidate Starts for Chucky\_25:

(Start: 16 @21094 has 37 MA's), (24, 21172), (25, 21178), (41, 21334), (54, 21499), (65, 21595), (73, 21694), (74, 21703), (81, 21775), (99, 21919), (103, 21955), (118, 22075),

Gene: Danzina\_27 Start: 21847, Stop: 22935, Start Num: 16

Candidate Starts for Danzina\_27:

(9, 21784), (10, 21796), (Start: 16 @21847 has 37 MA's), (24, 21925), (25, 21931), (41, 22087), (46, 22126), (54, 22252), (65, 22348), (73, 22447), (74, 22456), (81, 22528), (99, 22672), (114, 22792), (118, 22828),

Gene: Dattran\_27 Start: 21656, Stop: 22744, Start Num: 16

Candidate Starts for Dattran\_27:

(9, 21593), (10, 21605), (Start: 16 @21656 has 37 MA's), (24, 21734), (25, 21740), (41, 21896), (46, 21935), (54, 22061), (65, 22157), (73, 22256), (74, 22265), (81, 22337), (99, 22481), (114, 22601), (118, 22637),

Gene: Dwayne\_25 Start: 21081, Stop: 22169, Start Num: 16

Candidate Starts for Dwayne\_25:

(Start: 16 @21081 has 37 MA's), (24, 21159), (25, 21165), (41, 21321), (46, 21360), (54, 21486), (65, 21582), (73, 21681), (74, 21690), (81, 21762), (99, 21906), (103, 21942), (118, 22062),

Gene: Ejemplo\_25 Start: 21116, Stop: 22204, Start Num: 16

Candidate Starts for Ejemplo\_25:

(Start: 16 @21116 has 37 MA's), (24, 21194), (25, 21200), (41, 21356), (46, 21395), (54, 21521), (65, 21617), (73, 21716), (74, 21725), (81, 21794), (99, 21941), (103, 21977), (118, 22097),

Gene: Emaanora\_27 Start: 21039, Stop: 22127, Start Num: 16

Candidate Starts for Emaanora\_27:

(Start: 16 @21039 has 37 MA's), (24, 21117), (25, 21123), (41, 21279), (46, 21318), (54, 21444), (65, 21540), (73, 21639), (74, 21648), (81, 21720), (99, 21864), (103, 21900), (118, 22020),

Gene: Fudan\_187 Start: 94435, Stop: 95508, Start Num: 15

Candidate Starts for Fudan\_187:

(Start: 15 @94435 has 10 MA's), (40, 94651), (46, 94714), (55, 94843), (65, 94927), (73, 95026), (110, 95323), (119, 95473),

Gene: Galactica\_29 Start: 23278, Stop: 24240, Start Num: 15

Candidate Starts for Galactica\_29:

(2, 22987), (4, 23056), (Start: 15 @23278 has 10 MA's), (24, 23356), (30, 23395), (31, 23401), (41, 23518), (62, 23755), (69, 23860), (110, 24055),

Gene: Garnacho\_177 Start: 94205, Stop: 95284, Start Num: 15

Candidate Starts for Garnacho\_177:

(Start: 15 @94205 has 10 MA's), (27, 94298), (28, 94301), (40, 94421), (44, 94463), (55, 94613), (65, 94697), (83, 94913), (98, 95030), (110, 95099), (112, 95114),

Gene: GiJojo\_177 Start: 95573, Stop: 96496, Start Num: 15

Candidate Starts for GiJojo\_177:

(5, 95438), (Start: 15 @95573 has 10 MA's), (25, 95657), (46, 95852), (48, 95870), (73, 96170), (97, 96242), (104, 96278), (110, 96311), (119, 96461), (122, 96482),

Gene: Goby\_26 Start: 21661, Stop: 22749, Start Num: 16

Candidate Starts for Goby\_26:

(Start: 16 @21661 has 37 MA's), (24, 21739), (25, 21745), (41, 21901), (54, 22066), (65, 22162), (73, 22261), (74, 22270), (81, 22342), (99, 22486), (103, 22522), (114, 22606), (118, 22642),

Gene: Godpower\_27 Start: 21654, Stop: 22748, Start Num: 16

Candidate Starts for Godpower\_27:

(Start: 16 @21654 has 37 MA's), (24, 21732), (25, 21738), (41, 21894), (54, 22059), (65, 22155), (73, 22254), (74, 22263), (81, 22341), (99, 22485), (103, 22521), (114, 22605), (118, 22641),

Gene: Hippo\_25 Start: 21090, Stop: 22178, Start Num: 16

Candidate Starts for Hippo\_25:

(Start: 16 @21090 has 37 MA's), (24, 21168), (25, 21174), (41, 21330), (46, 21369), (54, 21495), (65, 21591), (73, 21690), (74, 21699), (81, 21771), (99, 21915), (103, 21951), (118, 22071),

Gene: Hiyaa\_30 Start: 24308, Stop: 25282, Start Num: 15

Candidate Starts for Hiyaa\_30:

(7, 24230), (13, 24299), (Start: 15 @24308 has 10 MA's), (24, 24386), (35, 24473), (42, 24554), (46, 24587), (56, 24758), (62, 24797), (64, 24845), (71, 24935), (76, 24971), (113, 25118), (115, 25157),

Gene: Itza\_28 Start: 21901, Stop: 22887, Start Num: 16

Candidate Starts for Itza\_28:

(Start: 16 @21901 has 37 MA's), (24, 21979), (25, 21985), (34, 22060), (36, 22069), (44, 22159), (60, 22351), (64, 22393), (65, 22399),

Gene: Katalie\_26 Start: 21379, Stop: 22464, Start Num: 16

Candidate Starts for Katalie\_26:

(Start: 16 @21379 has 37 MA's), (24, 21457), (25, 21463), (44, 21637), (54, 21784), (65, 21880), (73, 21979), (74, 21988), (81, 22054), (99, 22201), (114, 22321), (118, 22357),

Gene: Keanu\_31 Start: 24375, Stop: 25334, Start Num: 15

Candidate Starts for Keanu\_31:

(1, 24078), (3, 24153), (4, 24156), (6, 24267), (Start: 15 @24375 has 10 MA's), (24, 24453), (30, 24492), (41, 24615), (46, 24654), (56, 24813), (69, 24957), (109, 25143), (110, 25149), (113, 25170),

Gene: KimJongPhill\_37 Start: 33176, Stop: 32256, Start Num: 14

Candidate Starts for KimJongPhill\_37:

(8, 33242), (12, 33209), (Start: 14 @33176 has 2 MA's), (24, 33089), (41, 32927), (44, 32909), (49, 32822), (53, 32774), (59, 32726), (65, 32666), (67, 32633), (68, 32621), (70, 32603), (73, 32567), (94, 32516), (108, 32441), (112, 32417), (117, 32345), (121, 32270),

Gene: Kokushibo\_32 Start: 24323, Stop: 25297, Start Num: 15

Candidate Starts for Kokushibo\_32:

(7, 24245), (13, 24314), (Start: 15 @24323 has 10 MA's), (24, 24401), (35, 24488), (42, 24569), (46, 24602), (56, 24773), (62, 24812), (64, 24860), (71, 24950), (76, 24986), (113, 25133), (115, 25172),

Gene: Lika\_26 Start: 21658, Stop: 22752, Start Num: 16

Candidate Starts for Lika\_26:

(Start: 16 @21658 has 37 MA's), (24, 21736), (25, 21742), (41, 21898), (54, 22063), (65, 22159), (73, 22258), (74, 22267), (81, 22345), (99, 22489), (103, 22525), (114, 22609), (118, 22645),

Gene: Lorelei\_26 Start: 21627, Stop: 22721, Start Num: 16

Candidate Starts for Lorelei\_26:

(10, 21576), (Start: 16 @21627 has 37 MA's), (24, 21705), (25, 21711), (41, 21867), (54, 22032), (65, 22128), (73, 22227), (74, 22236), (81, 22311), (99, 22458), (103, 22494), (114, 22578), (118, 22614),

Gene: LuckySocke\_185 Start: 94376, Stop: 95449, Start Num: 15

Candidate Starts for LuckySocke\_185:

(Start: 15 @94376 has 10 MA's), (40, 94592), (46, 94655), (55, 94784), (65, 94868), (73, 94967), (110, 95264), (119, 95414),

Gene: Maneekul\_25 Start: 21115, Stop: 22203, Start Num: 16

Candidate Starts for Maneekul\_25:

(Start: 16 @21115 has 37 MA's), (24, 21193), (25, 21199), (41, 21355), (46, 21394), (54, 21520), (65, 21616), (73, 21715), (74, 21724), (81, 21793), (93, 21895), (99, 21940), (103, 21976), (118, 22096),

Gene: Nabi\_26 Start: 21627, Stop: 22721, Start Num: 16

Candidate Starts for Nabi\_26:

(10, 21576), (Start: 16 @21627 has 37 MA's), (24, 21705), (25, 21711), (41, 21867), (54, 22032), (65, 22128), (73, 22227), (74, 22236), (81, 22311), (99, 22458), (103, 22494), (114, 22578), (118, 22614),

Gene: OzzyJ\_26 Start: 21081, Stop: 22169, Start Num: 16

Candidate Starts for OzzyJ\_26:

(Start: 16 @21081 has 37 MA's), (24, 21159), (25, 21165), (41, 21321), (46, 21360), (54, 21486), (65, 21582), (73, 21681), (74, 21690), (81, 21762), (99, 21906), (103, 21942), (118, 22062),

Gene: Park1214\_197 Start: 96200, Stop: 97279, Start Num: 15

Candidate Starts for Park1214\_197:

(Start: 15 @96200 has 10 MA's), (46, 96479), (55, 96608), (65, 96692), (69, 96743), (110, 97094),

Gene: Rana\_26 Start: 21627, Stop: 22721, Start Num: 16

Candidate Starts for Rana\_26:

(10, 21576), (Start: 16 @21627 has 37 MA's), (24, 21705), (25, 21711), (41, 21867), (54, 22032), (65, 22128), (73, 22227), (74, 22236), (81, 22311), (99, 22458), (103, 22494), (114, 22578), (118, 22614),

Gene: RedBear\_27 Start: 21379, Stop: 22464, Start Num: 16

Candidate Starts for RedBear\_27:

(Start: 16 @21379 has 37 MA's), (24, 21457), (25, 21463), (44, 21637), (54, 21784), (65, 21880), (73, 21979), (74, 21988), (81, 22054), (99, 22201), (114, 22321), (118, 22357),

Gene: Samy\_26 Start: 20532, Stop: 21713, Start Num: 21

Candidate Starts for Samy\_26:

(18, 20511), (Start: 21 @20532 has 2 MA's), (29, 20592), (58, 20901), (79, 21147), (85, 21195), (87, 21204), (116, 21444),

Gene: SarahRose\_25 Start: 21090, Stop: 22178, Start Num: 16

Candidate Starts for SarahRose\_25:

(Start: 16 @21090 has 37 MA's), (24, 21168), (25, 21174), (41, 21330), (46, 21369), (54, 21495), (65, 21591), (73, 21690), (74, 21699), (81, 21771), (99, 21915), (103, 21951), (118, 22071),

Gene: Snorlax\_25 Start: 21093, Stop: 22181, Start Num: 16

Candidate Starts for Snorlax\_25:

(Start: 16 @21093 has 37 MA's), (24, 21171), (25, 21177), (41, 21333), (54, 21498), (65, 21594), (73, 21693), (74, 21702), (81, 21774), (99, 21918), (103, 21954), (118, 22074),

Gene: South40\_26 Start: 21379, Stop: 22464, Start Num: 16

Candidate Starts for South40\_26:

(Start: 16 @21379 has 37 MA's), (24, 21457), (25, 21463), (44, 21637), (54, 21784), (65, 21880), (73, 21979), (74, 21988), (81, 22054), (99, 22201), (114, 22321), (118, 22357),

Gene: Spocter\_30 Start: 24296, Stop: 25270, Start Num: 15

Candidate Starts for Spocter\_30:

(7, 24218), (13, 24287), (Start: 15 @24296 has 10 MA's), (24, 24374), (35, 24461), (42, 24542), (46, 24575), (56, 24746), (62, 24785), (64, 24833), (71, 24923), (76, 24959), (113, 25106), (115, 25145),

Gene: Spooks\_66 Start: 45108, Stop: 45971, Start Num: 20

Candidate Starts for Spooks\_66:

(Start: 20 @45108 has 3 MA's), (29, 45168), (58, 45477), (62, 45510), (63, 45519), (72, 45651), (86, 45792), (89, 45810),

Gene: Success\_67 Start: 44240, Stop: 45103, Start Num: 20

Candidate Starts for Success\_67:

(Start: 20 @44240 has 3 MA's), (29, 44300), (32, 44330), (38, 44378), (58, 44609), (63, 44651), (66, 44705), (86, 44924), (107, 45089),

Gene: Sujidade\_27 Start: 21949, Stop: 23037, Start Num: 16

Candidate Starts for Sujidade\_27:

(Start: 16 @21949 has 37 MA's), (24, 22027), (25, 22033), (41, 22189), (54, 22354), (65, 22450), (73, 22549), (81, 22630), (99, 22774), (103, 22810), (114, 22894), (118, 22930),

Gene: Superstar\_29 Start: 22840, Stop: 23736, Start Num: 17

Candidate Starts for Superstar\_29:

(11, 22789), (17, 22840), (23, 22912), (26, 22927), (37, 23017), (41, 23059), (45, 23092), (56, 23224), (65, 23296), (101, 23485),

Gene: TagePighter\_26 Start: 21093, Stop: 22181, Start Num: 16

Candidate Starts for TagePighter\_26:

(Start: 16 @21093 has 37 MA's), (24, 21171), (25, 21177), (41, 21333), (54, 21498), (65, 21594), (73, 21693), (74, 21702), (81, 21774), (99, 21918), (103, 21954), (118, 22074),

Gene: Talos\_187 Start: 94395, Stop: 95468, Start Num: 15

Candidate Starts for Talos\_187:

(Start: 15 @94395 has 10 MA's), (40, 94611), (46, 94674), (55, 94803), (65, 94887), (73, 94986), (110, 95283), (119, 95433),

Gene: Toma\_26 Start: 21661, Stop: 22749, Start Num: 16

Candidate Starts for Toma\_26:

(Start: 16 @21661 has 37 MA's), (24, 21739), (25, 21745), (41, 21901), (54, 22066), (65, 22162), (73, 22261), (74, 22270), (81, 22342), (99, 22486), (103, 22522), (114, 22606), (118, 22642),

Gene: Triste\_25 Start: 21081, Stop: 22169, Start Num: 16

Candidate Starts for Triste\_25:

(Start: 16 @21081 has 37 MA's), (24, 21159), (25, 21165), (41, 21321), (54, 21486), (65, 21582), (73, 21681), (74, 21690), (81, 21762), (99, 21906), (103, 21942), (118, 22062),

Gene: TuanPN\_25 Start: 21116, Stop: 22204, Start Num: 16

Candidate Starts for TuanPN\_25:

(Start: 16 @21116 has 37 MA's), (24, 21194), (25, 21200), (41, 21356), (46, 21395), (54, 21521), (65, 21617), (73, 21716), (74, 21725), (81, 21794), (99, 21941), (103, 21977), (118, 22097),

Gene: Urza\_28 Start: 21922, Stop: 22908, Start Num: 16

Candidate Starts for Urza\_28:

(Start: 16 @21922 has 37 MA's), (24, 22000), (25, 22006), (34, 22081), (36, 22090), (44, 22180), (60, 22372), (64, 22414), (65, 22420),

Gene: VieEnRose\_28 Start: 21828, Stop: 22976, Start Num: 16

Candidate Starts for VieEnRose\_28:

(Start: 16 @21828 has 37 MA's), (24, 21906), (25, 21912), (34, 21987), (36, 21996), (41, 22068), (44, 22086), (53, 22221), (60, 22278), (64, 22320), (65, 22326), (69, 22377), (85, 22560), (100, 22707),

Gene: Werner\_25 Start: 21091, Stop: 22179, Start Num: 16

Candidate Starts for Werner\_25:

(Start: 16 @21091 has 37 MA's), (24, 21169), (25, 21175), (41, 21331), (54, 21496), (65, 21592), (73, 21691), (74, 21700), (81, 21772), (99, 21916), (103, 21952), (118, 22072),

Gene: Whatever\_25 Start: 21091, Stop: 22179, Start Num: 16

Candidate Starts for Whatever\_25:

(Start: 16 @21091 has 37 MA's), (24, 21169), (25, 21175), (41, 21331), (54, 21496), (65, 21592), (73, 21691), (74, 21700), (81, 21772), (99, 21916), (103, 21952), (118, 22072),

Gene: YasdniI\_25 Start: 21112, Stop: 22200, Start Num: 16

Candidate Starts for YasdniI\_25:

(Start: 16 @21112 has 37 MA's), (24, 21190), (25, 21196), (41, 21352), (46, 21391), (54, 21517), (65, 21613), (73, 21712), (74, 21721), (81, 21790), (99, 21937), (103, 21973), (118, 22093),

Gene: Zemlya\_27 Start: 21653, Stop: 22741, Start Num: 16

Candidate Starts for Zemlya\_27:

(9, 21590), (10, 21602), (Start: 16 @21653 has 37 MA's), (24, 21731), (25, 21737), (41, 21893), (46, 21932), (54, 22058), (65, 22154), (73, 22253), (74, 22262), (81, 22334), (99, 22478), (114, 22598), (118, 22634),

Gene: Zuko\_35 Start: 31679, Stop: 30726, Start Num: 14

Candidate Starts for Zuko\_35:

(8, 31745), (12, 31712), (Start: 14 @31679 has 2 MA's), (24, 31592), (26, 31580), (33, 31508), (39, 31460), (44, 31397), (53, 31262), (54, 31250), (59, 31214), (65, 31151), (70, 31088), (108, 30911), (117, 30815), (121, 30740),

Gene: phiSASD1\_40 Start: 16596, Stop: 17432, Start Num: 29

Candidate Starts for phiSASD1\_40:

(Start: 21 @16536 has 2 MA's), (29, 16596), (38, 16674), (58, 16905), (61, 16929), (63, 16947), (75, 17106), (80, 17172), (82, 17199), (84, 17214), (88, 17229), (92, 17271), (96, 17307), (105, 17379), (111, 17421),