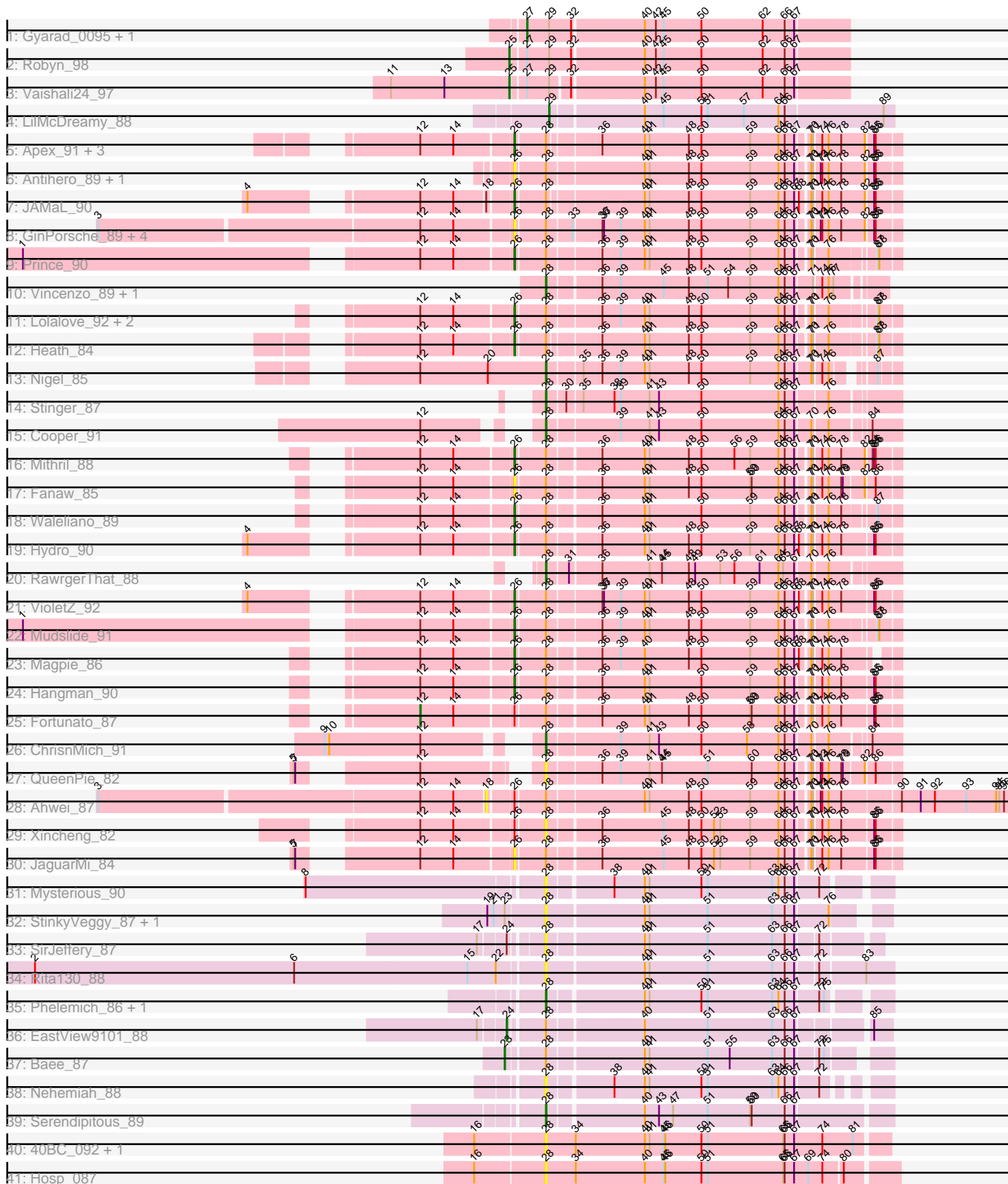


Pham 224622



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 224622 Report

This analysis was run 03/28/25 on database version 593.

Pham number 224622 has 56 members, 21 are drafts.

Phages represented in each track:

- Track 1 : Gyarad\_0095, Vivaldi\_97
- Track 2 : Robyn\_98
- Track 3 : Vaishali24\_97
- Track 4 : LilMcDreamy\_88
- Track 5 : Apex\_91, Frederick\_91, BobbyK\_90, Zemanar\_88
- Track 6 : Antihero\_89, Epah\_89
- Track 7 : JAMaL\_90
- Track 8 : GinPorsche\_89, Nanao\_89, Poster\_88, Lambano\_87, Hally898\_87
- Track 9 : Prince\_90
- Track 10 : Vincenzo\_89, AlanGrant\_90
- Track 11 : Lolalove\_92, BrownCNA\_90, Austelle\_90
- Track 12 : Heath\_84
- Track 13 : Nigel\_85
- Track 14 : Stinger\_87
- Track 15 : Cooper\_91
- Track 16 : Mithril\_88
- Track 17 : Fanaw\_85
- Track 18 : Waleliano\_89
- Track 19 : Hydro\_90
- Track 20 : RawrgerThat\_88
- Track 21 : VioletZ\_92
- Track 22 : Mudslide\_91
- Track 23 : Magpie\_86
- Track 24 : Hangman\_90
- Track 25 : Fortunato\_87
- Track 26 : ChrisnMich\_91
- Track 27 : QueenPie\_82
- Track 28 : Ahwei\_87
- Track 29 : Xincheng\_82
- Track 30 : JaguarMi\_84
- Track 31 : Mysterious\_90
- Track 32 : StinkyVeggy\_87, KarasumaRum\_87
- Track 33 : SirJeffery\_87
- Track 34 : Rita130\_88
- Track 35 : Phelemich\_86, Reprobate\_88
- Track 36 : EastView9101\_88
- Track 37 : Bae\_87

- Track 38 : Nehemiah\_88
- Track 39 : Serendipitous\_89
- Track 40 : 40BC\_092, 39HC\_092
- Track 41 : Hosp\_087

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

The start number called the most often in the published annotations is 26, it was called in 17 of the 35 non-draft genes in the pham.

Genes that call this "Most Annotated" start:

- Antihero\_89, Apex\_91, Austelle\_90, BobbyK\_90, BrownCNA\_90, Epah\_89, Fanaw\_85, Frederick\_91, GinPorsche\_89, Hally898\_87, Hangman\_90, Heath\_84, Hydro\_90, JAMaL\_90, JaguarMi\_84, Lambano\_87, Lolalove\_92, Magpie\_86, Mithril\_88, Mudslide\_91, Nanao\_89, Poster\_88, Prince\_90, VioletZ\_92, Waleliano\_89, Zemanar\_88,

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

- Ahwei\_87, Fortunato\_87, Xincheng\_82,

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

- 39HC\_092, 40BC\_092, AlanGrant\_90, Bae\_87, ChrisnMich\_91, Cooper\_91, EastView9101\_88, Gyarad\_0095, Hosp\_087, KarasumaRum\_87, LilMcDreamy\_88, Mysterious\_90, Nehemiah\_88, Nigel\_85, Phelemich\_86, QueenPie\_82, RawrgerThat\_88, Reprobate\_88, Rita130\_88, Robyn\_98, Serendipitous\_89, SirJeffery\_87, Stinger\_87, StinkyVeggy\_87, Vaishali24\_97, Vincenzo\_89, Vivaldi\_97,

**Summary by start number:**

Start 12:

- Found in 31 of 56 ( 55.4% ) of genes in pham
- Manual Annotations of this start: 1 of 35
- Called 3.2% of time when present
- Phage (with cluster) where this start called: Fortunato\_87 (B4),

Start 18:

- Found in 2 of 56 ( 3.6% ) of genes in pham
- No Manual Annotations of this start.
- Called 50.0% of time when present
- Phage (with cluster) where this start called: Ahwei\_87 (B4),

Start 23:

- Found in 3 of 56 ( 5.4% ) of genes in pham
- Manual Annotations of this start: 1 of 35
- Called 33.3% of time when present
- Phage (with cluster) where this start called: Bae\_87 (B5),

Start 24:

- Found in 2 of 56 ( 3.6% ) of genes in pham
- Manual Annotations of this start: 1 of 35

- Called 50.0% of time when present
- Phage (with cluster) where this start called: EastView9101\_88 (B5),

Start 25:

- Found in 2 of 56 ( 3.6% ) of genes in pham
- Manual Annotations of this start: 2 of 35
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Robyn\_98 (B1), Vaishali24\_97 (B1),

Start 26:

- Found in 29 of 56 ( 51.8% ) of genes in pham
- Manual Annotations of this start: 17 of 35
- Called 89.7% of time when present
- Phage (with cluster) where this start called: Antihero\_89 (B4), Apex\_91 (B4), Austelle\_90 (B4), BobbyK\_90 (B4), BrownCNA\_90 (B4), Epah\_89 (B4), Fanaw\_85 (B4), Frederick\_91 (B4), GinPorsche\_89 (B4), Hally898\_87 (B4), Hangman\_90 (B4), Heath\_84 (B4), Hydro\_90 (B4), JAMaL\_90 (B4), JaguarMi\_84 (B4), Lambano\_87 (B4), Lolalove\_92 (B4), Magpie\_86 (B4), Mithril\_88 (B4), Mudslide\_91 (B4), Nanao\_89 (B4), Poster\_88 (B4), Prince\_90 (B4), VioletZ\_92 (B4), Waleliano\_89 (B4), Zemanar\_88 (B4),

Start 27:

- Found in 4 of 56 ( 7.1% ) of genes in pham
- Manual Annotations of this start: 2 of 35
- Called 50.0% of time when present
- Phage (with cluster) where this start called: Gyarad\_0095 (B1), Vivaldi\_97 (B1),

Start 28:

- Found in 51 of 56 ( 91.1% ) of genes in pham
- Manual Annotations of this start: 10 of 35
- Called 41.2% of time when present
- Phage (with cluster) where this start called: 39HC\_092 (B6), 40BC\_092 (B6), AlanGrant\_90 (B4), ChrisnMich\_91 (B4), Cooper\_91 (B4), Hosp\_087 (B6), KarasumaRum\_87 (B5), Mysterious\_90 (B5), Nehemiah\_88 (B5), Nigel\_85 (B4), Phelemich\_86 (B5), QueenPie\_82 (B4), RawrgerThat\_88 (B4), Reprobate\_88 (B5), Rita130\_88 (B5), Serendipitous\_89 (B5), SirJeffery\_87 (B5), Stinger\_87 (B4), StinkyVeggy\_87 (B5), Vincenzo\_89 (B4), Xincheng\_82 (B4),

Start 29:

- Found in 5 of 56 ( 8.9% ) of genes in pham
- Manual Annotations of this start: 1 of 35
- Called 20.0% of time when present
- Phage (with cluster) where this start called: LilMcDreamy\_88 (B12),

### **Summary by clusters:**

There are 5 clusters represented in this pham: B4, B5, B6, B12, B1,

Info for manual annotations of cluster B1:

- Start number 25 was manually annotated 2 times for cluster B1.
- Start number 27 was manually annotated 2 times for cluster B1.

Info for manual annotations of cluster B12:

- Start number 29 was manually annotated 1 time for cluster B12.

Info for manual annotations of cluster B4:

- Start number 12 was manually annotated 1 time for cluster B4.
- Start number 26 was manually annotated 17 times for cluster B4.
- Start number 28 was manually annotated 7 times for cluster B4.

Info for manual annotations of cluster B5:

- Start number 23 was manually annotated 1 time for cluster B5.
- Start number 24 was manually annotated 1 time for cluster B5.
- Start number 28 was manually annotated 3 times for cluster B5.

### **Gene Information:**

Gene: 39HC\_092 Start: 66926, Stop: 66300, Start Num: 28

Candidate Starts for 39HC\_092:

(16, 67055), (Start: 28 @66926 has 10 MA's), (34, 66869), (40, 66740), (41, 66731), (45, 66710), (46, 66707), (50, 66638), (51, 66626), (65, 66485), (66, 66482), (67, 66464), (74, 66413), (81, 66356),

Gene: 40BC\_092 Start: 66926, Stop: 66300, Start Num: 28

Candidate Starts for 40BC\_092:

(16, 67055), (Start: 28 @66926 has 10 MA's), (34, 66869), (40, 66740), (41, 66731), (45, 66710), (46, 66707), (50, 66638), (51, 66626), (65, 66485), (66, 66482), (67, 66464), (74, 66413), (81, 66356),

Gene: Ahwei\_87 Start: 66494, Stop: 65571, Start Num: 18

Candidate Starts for Ahwei\_87:

(3, 67208), (Start: 12 @66614 has 1 MA's), (14, 66551), (18, 66494), (Start: 26 @66452 has 17 MA's), (Start: 28 @66401 has 10 MA's), (40, 66230), (41, 66221), (48, 66149), (50, 66125), (59, 66032), (64, 65981), (66, 65969), (67, 65951), (70, 65933), (71, 65930), (73, 65921), (74, 65918), (76, 65906), (78, 65882), (90, 65780), (91, 65744), (92, 65717), (93, 65657), (94, 65600), (95, 65594), (96, 65585),

Gene: AlanGrant\_90 Start: 68004, Stop: 67411, Start Num: 28

Candidate Starts for AlanGrant\_90:

(Start: 28 @68004 has 10 MA's), (36, 67911), (39, 67878), (45, 67800), (48, 67752), (51, 67716), (54, 67677), (59, 67635), (64, 67584), (66, 67572), (67, 67554), (71, 67524), (74, 67512), (76, 67500), (77, 67491),

Gene: Antihero\_89 Start: 66371, Stop: 65703, Start Num: 26

Candidate Starts for Antihero\_89:

(Start: 26 @66371 has 17 MA's), (Start: 28 @66320 has 10 MA's), (40, 66152), (41, 66143), (48, 66071), (50, 66047), (59, 65954), (64, 65903), (66, 65891), (67, 65873), (70, 65855), (71, 65852), (73, 65843), (74, 65840), (76, 65828), (78, 65804), (82, 65759), (85, 65747), (86, 65744),

Gene: Apex\_91 Start: 67472, Stop: 66804, Start Num: 26

Candidate Starts for Apex\_91:

(Start: 12 @67640 has 1 MA's), (14, 67577), (Start: 26 @67472 has 17 MA's), (Start: 28 @67421 has 10 MA's), (36, 67331), (40, 67253), (41, 67244), (48, 67172), (50, 67148), (59, 67055), (64, 67004), (66, 66992), (67, 66974), (70, 66956), (71, 66953), (74, 66941), (76, 66929), (78, 66905), (82, 66860), (85, 66848), (86, 66845),

Gene: Austelle\_90 Start: 68073, Stop: 67420, Start Num: 26

Candidate Starts for Austelle\_90:

(Start: 12 @68241 has 1 MA's), (14, 68178), (Start: 26 @68073 has 17 MA's), (Start: 28 @68022 has 10 MA's), (36, 67929), (39, 67896), (40, 67851), (41, 67842), (48, 67770), (50, 67746), (59, 67653), (64, 67602), (66, 67590), (67, 67572), (70, 67554), (71, 67551), (76, 67527), (87, 67455), (88, 67452),

Gene: Bae\_87 Start: 66191, Stop: 65547, Start Num: 23

Candidate Starts for Bae\_87:

(Start: 23 @66191 has 1 MA's), (Start: 28 @66128 has 10 MA's), (40, 65963), (41, 65954), (51, 65846), (55, 65804), (63, 65729), (66, 65705), (67, 65687), (72, 65651), (75, 65642),

Gene: BobbyK\_90 Start: 66980, Stop: 66312, Start Num: 26

Candidate Starts for BobbyK\_90:

(Start: 12 @67148 has 1 MA's), (14, 67085), (Start: 26 @66980 has 17 MA's), (Start: 28 @66929 has 10 MA's), (36, 66839), (40, 66761), (41, 66752), (48, 66680), (50, 66656), (59, 66563), (64, 66512), (66, 66500), (67, 66482), (70, 66464), (71, 66461), (74, 66449), (76, 66437), (78, 66413), (82, 66368), (85, 66356), (86, 66353),

Gene: BrownCNA\_90 Start: 67488, Stop: 66835, Start Num: 26

Candidate Starts for BrownCNA\_90:

(Start: 12 @67656 has 1 MA's), (14, 67593), (Start: 26 @67488 has 17 MA's), (Start: 28 @67437 has 10 MA's), (36, 67344), (39, 67311), (40, 67266), (41, 67257), (48, 67185), (50, 67161), (59, 67068), (64, 67017), (66, 67005), (67, 66987), (70, 66969), (71, 66966), (76, 66942), (87, 66870), (88, 66867),

Gene: ChrisnMich\_91 Start: 66059, Stop: 65439, Start Num: 28

Candidate Starts for ChrisnMich\_91:

(9, 66395), (10, 66386), (Start: 12 @66218 has 1 MA's), (Start: 28 @66059 has 10 MA's), (39, 65930), (41, 65876), (43, 65858), (50, 65780), (58, 65693), (64, 65636), (66, 65624), (67, 65606), (70, 65579), (76, 65552), (84, 65492),

Gene: Cooper\_91 Start: 66596, Stop: 65976, Start Num: 28

Candidate Starts for Cooper\_91:

(Start: 12 @66749 has 1 MA's), (Start: 28 @66596 has 10 MA's), (39, 66467), (41, 66413), (43, 66395), (50, 66317), (64, 66173), (66, 66161), (67, 66143), (70, 66116), (76, 66089), (84, 66029),

Gene: EastView9101\_88 Start: 65729, Stop: 65082, Start Num: 24

Candidate Starts for EastView9101\_88:

(17, 65771), (Start: 24 @65729 has 1 MA's), (Start: 28 @65675 has 10 MA's), (40, 65510), (51, 65393), (63, 65276), (66, 65252), (67, 65234), (85, 65117),

Gene: Epah\_89 Start: 66371, Stop: 65703, Start Num: 26

Candidate Starts for Epah\_89:

(Start: 26 @66371 has 17 MA's), (Start: 28 @66320 has 10 MA's), (40, 66152), (41, 66143), (48, 66071), (50, 66047), (59, 65954), (64, 65903), (66, 65891), (67, 65873), (70, 65855), (71, 65852), (73, 65843), (74, 65840), (76, 65828), (78, 65804), (82, 65759), (85, 65747), (86, 65744),

Gene: Fanaw\_85 Start: 67084, Stop: 66422, Start Num: 26

Candidate Starts for Fanaw\_85:

(Start: 12 @67252 has 1 MA's), (14, 67189), (Start: 26 @67084 has 17 MA's), (Start: 28 @67033 has 10 MA's), (36, 66943), (40, 66865), (41, 66856), (48, 66784), (50, 66760), (59, 66667), (60, 66664), (64, 66616), (66, 66604), (67, 66586), (70, 66568), (71, 66565), (74, 66553), (76, 66541), (78, 66517), (79, 66514), (82, 66478), (86, 66463),

Gene: Fortunato\_87 Start: 66949, Stop: 66113, Start Num: 12

Candidate Starts for Fortunato\_87:

(Start: 12 @66949 has 1 MA's), (14, 66886), (Start: 26 @66781 has 17 MA's), (Start: 28 @66730 has 10 MA's), (36, 66640), (40, 66562), (41, 66553), (48, 66481), (50, 66457), (59, 66364), (60, 66361), (64, 66313), (66, 66301), (67, 66283), (70, 66265), (71, 66262), (74, 66250), (76, 66238), (78, 66214), (85, 66157), (86, 66154),

Gene: Frederick\_91 Start: 67286, Stop: 66618, Start Num: 26

Candidate Starts for Frederick\_91:

(Start: 12 @67454 has 1 MA's), (14, 67391), (Start: 26 @67286 has 17 MA's), (Start: 28 @67235 has 10 MA's), (36, 67145), (40, 67067), (41, 67058), (48, 66986), (50, 66962), (59, 66869), (64, 66818), (66, 66806), (67, 66788), (70, 66770), (71, 66767), (74, 66755), (76, 66743), (78, 66719), (82, 66674), (85, 66662), (86, 66659),

Gene: GinPorsche\_89 Start: 66368, Stop: 65700, Start Num: 26

Candidate Starts for GinPorsche\_89:

(3, 67130), (Start: 12 @66536 has 1 MA's), (14, 66473), (Start: 26 @66368 has 17 MA's), (Start: 28 @66317 has 10 MA's), (33, 66278), (36, 66227), (37, 66224), (39, 66194), (40, 66149), (41, 66140), (48, 66068), (50, 66044), (59, 65951), (64, 65900), (66, 65888), (67, 65870), (70, 65852), (71, 65849), (73, 65840), (74, 65837), (76, 65825), (78, 65801), (82, 65756), (85, 65744), (86, 65741),

Gene: Gyarad\_0095 Start: 66382, Stop: 65804, Start Num: 27

Candidate Starts for Gyarad\_0095:

(Start: 27 @66382 has 2 MA's), (Start: 29 @66343 has 1 MA's), (32, 66301), (40, 66175), (42, 66154), (45, 66142), (50, 66070), (62, 65956), (66, 65917), (67, 65899),

Gene: Hally898\_87 Start: 66208, Stop: 65540, Start Num: 26

Candidate Starts for Hally898\_87:

(3, 66970), (Start: 12 @66376 has 1 MA's), (14, 66313), (Start: 26 @66208 has 17 MA's), (Start: 28 @66157 has 10 MA's), (33, 66118), (36, 66067), (37, 66064), (39, 66034), (40, 65989), (41, 65980), (48, 65908), (50, 65884), (59, 65791), (64, 65740), (66, 65728), (67, 65710), (70, 65692), (71, 65689), (73, 65680), (74, 65677), (76, 65665), (78, 65641), (82, 65596), (85, 65584), (86, 65581),

Gene: Hangman\_90 Start: 67581, Stop: 66913, Start Num: 26

Candidate Starts for Hangman\_90:

(Start: 12 @67749 has 1 MA's), (14, 67686), (Start: 26 @67581 has 17 MA's), (Start: 28 @67530 has 10 MA's), (36, 67440), (40, 67362), (41, 67353), (50, 67257), (59, 67164), (64, 67113), (66, 67101), (67, 67083), (70, 67065), (71, 67062), (74, 67050), (76, 67038), (78, 67014), (85, 66957), (86, 66954),

Gene: Heath\_84 Start: 65351, Stop: 64701, Start Num: 26

Candidate Starts for Heath\_84:

(Start: 12 @65519 has 1 MA's), (14, 65456), (Start: 26 @65351 has 17 MA's), (Start: 28 @65300 has 10 MA's), (36, 65210), (40, 65132), (41, 65123), (48, 65051), (50, 65027), (59, 64934), (64, 64883), (66, 64871), (67, 64853), (70, 64835), (71, 64832), (76, 64808), (87, 64736), (88, 64733),

Gene: Hosp\_087 Start: 64231, Stop: 63587, Start Num: 28

Candidate Starts for Hosp\_087:

(16, 64360), (Start: 28 @64231 has 10 MA's), (34, 64174), (40, 64045), (45, 64015), (46, 64012), (50, 63943), (51, 63931), (65, 63790), (66, 63787), (67, 63769), (69, 63742), (74, 63715), (80, 63682),

Gene: Hydro\_90 Start: 67357, Stop: 66692, Start Num: 26

Candidate Starts for Hydro\_90:

(4, 67777), (Start: 12 @67525 has 1 MA's), (14, 67462), (Start: 26 @67357 has 17 MA's), (Start: 28 @67306 has 10 MA's), (36, 67216), (40, 67138), (41, 67129), (48, 67057), (50, 67033), (59, 66940), (64, 66889), (66, 66877), (67, 66859), (68, 66856), (70, 66841), (71, 66838), (74, 66826), (76, 66814), (78, 66790), (85, 66736), (86, 66733),

Gene: JAMaL\_90 Start: 66895, Stop: 66227, Start Num: 26

Candidate Starts for JAMaL\_90:

(4, 67309), (Start: 12 @67057 has 1 MA's), (14, 66994), (18, 66937), (Start: 26 @66895 has 17 MA's), (Start: 28 @66844 has 10 MA's), (40, 66676), (41, 66667), (48, 66595), (50, 66571), (59, 66478), (64, 66427), (66, 66415), (67, 66397), (68, 66394), (70, 66379), (71, 66376), (74, 66364), (76, 66352), (78, 66328), (82, 66283), (85, 66271), (86, 66268),

Gene: JaguarMi\_84 Start: 67336, Stop: 66665, Start Num: 26

Candidate Starts for JaguarMi\_84:

(5, 67675), (7, 67672), (Start: 12 @67504 has 1 MA's), (14, 67441), (Start: 26 @67336 has 17 MA's), (Start: 28 @67285 has 10 MA's), (36, 67195), (45, 67081), (48, 67033), (50, 67009), (52, 66985), (53, 66973), (59, 66916), (64, 66865), (66, 66853), (67, 66835), (70, 66817), (71, 66814), (74, 66802), (76, 66790), (78, 66766), (85, 66712), (86, 66709),

Gene: KarasumaRum\_87 Start: 65724, Stop: 65134, Start Num: 28

Candidate Starts for KarasumaRum\_87:

(19, 65826), (21, 65814), (Start: 23 @65796 has 1 MA's), (Start: 28 @65724 has 10 MA's), (40, 65550), (41, 65541), (51, 65433), (63, 65316), (66, 65292), (67, 65274), (76, 65217),

Gene: Lambano\_87 Start: 66208, Stop: 65540, Start Num: 26

Candidate Starts for Lambano\_87:

(3, 66970), (Start: 12 @66376 has 1 MA's), (14, 66313), (Start: 26 @66208 has 17 MA's), (Start: 28 @66157 has 10 MA's), (33, 66118), (36, 66067), (37, 66064), (39, 66034), (40, 65989), (41, 65980), (48, 65908), (50, 65884), (59, 65791), (64, 65740), (66, 65728), (67, 65710), (70, 65692), (71, 65689), (73, 65680), (74, 65677), (76, 65665), (78, 65641), (82, 65596), (85, 65584), (86, 65581),

Gene: LilMcDreamy\_88 Start: 66128, Stop: 65508, Start Num: 29

Candidate Starts for LilMcDreamy\_88:

(Start: 29 @66128 has 1 MA's), (40, 65966), (45, 65933), (50, 65861), (51, 65849), (57, 65780), (64, 65717), (66, 65705), (89, 65528),

Gene: Lolalove\_92 Start: 67385, Stop: 66732, Start Num: 26

Candidate Starts for Lolalove\_92:

(Start: 12 @67553 has 1 MA's), (14, 67490), (Start: 26 @67385 has 17 MA's), (Start: 28 @67334 has 10 MA's), (36, 67241), (39, 67208), (40, 67163), (41, 67154), (48, 67082), (50, 67058), (59, 66965), (64, 66914), (66, 66902), (67, 66884), (70, 66866), (71, 66863), (76, 66839), (87, 66767), (88, 66764),

Gene: Magpie\_86 Start: 67131, Stop: 66481, Start Num: 26

Candidate Starts for Magpie\_86:

(Start: 12 @67299 has 1 MA's), (14, 67236), (Start: 26 @67131 has 17 MA's), (Start: 28 @67080 has 10 MA's), (36, 66990), (39, 66957), (40, 66912), (48, 66831), (50, 66807), (59, 66714), (64, 66663), (66, 66651), (67, 66633), (68, 66630), (70, 66615), (71, 66612), (74, 66600), (76, 66588), (78, 66564),

Gene: Mithril\_88 Start: 67142, Stop: 66471, Start Num: 26

Candidate Starts for Mithril\_88:

(Start: 12 @67310 has 1 MA's), (14, 67247), (Start: 26 @67142 has 17 MA's), (Start: 28 @67091 has 10 MA's), (36, 67001), (40, 66923), (41, 66914), (48, 66842), (50, 66818), (56, 66755), (59, 66725), (64, 66674), (66, 66662), (67, 66644), (70, 66626), (71, 66623), (74, 66611), (76, 66599), (78, 66575),



(82, 66530), (84, 66521), (85, 66518), (86, 66515),

Gene: Mudslide\_91 Start: 67615, Stop: 66962, Start Num: 26

Candidate Starts for Mudslide\_91:

(1, 68467), (Start: 12 @67783 has 1 MA's), (14, 67720), (Start: 26 @67615 has 17 MA's), (Start: 28 @67564 has 10 MA's), (36, 67471), (39, 67438), (40, 67393), (41, 67384), (48, 67312), (50, 67288), (59, 67195), (64, 67144), (66, 67132), (67, 67114), (70, 67096), (71, 67093), (76, 67069), (87, 66997), (88, 66994),

Gene: Mysterious\_90 Start: 65876, Stop: 65298, Start Num: 28

Candidate Starts for Mysterious\_90:

(8, 66308), (Start: 28 @65876 has 10 MA's), (38, 65771), (40, 65714), (41, 65705), (50, 65609), (51, 65597), (63, 65480), (64, 65468), (66, 65456), (67, 65438), (72, 65399),

Gene: Nanao\_89 Start: 66221, Stop: 65553, Start Num: 26

Candidate Starts for Nanao\_89:

(3, 66983), (Start: 12 @66389 has 1 MA's), (14, 66326), (Start: 26 @66221 has 17 MA's), (Start: 28 @66170 has 10 MA's), (33, 66131), (36, 66080), (37, 66077), (39, 66047), (40, 66002), (41, 65993), (48, 65921), (50, 65897), (59, 65804), (64, 65753), (66, 65741), (67, 65723), (70, 65705), (71, 65702), (73, 65693), (74, 65690), (76, 65678), (78, 65654), (82, 65609), (85, 65597), (86, 65594),

Gene: Nehemiah\_88 Start: 65744, Stop: 65178, Start Num: 28

Candidate Starts for Nehemiah\_88:

(Start: 28 @65744 has 10 MA's), (38, 65639), (40, 65582), (41, 65573), (50, 65477), (51, 65465), (63, 65348), (64, 65336), (66, 65324), (67, 65306), (72, 65267),

Gene: Nigel\_85 Start: 65605, Stop: 65015, Start Num: 28

Candidate Starts for Nigel\_85:

(Start: 12 @65845 has 1 MA's), (20, 65716), (Start: 28 @65605 has 10 MA's), (35, 65548), (36, 65512), (39, 65479), (40, 65434), (41, 65425), (48, 65353), (50, 65329), (59, 65236), (64, 65185), (66, 65173), (67, 65155), (70, 65128), (71, 65125), (74, 65113), (76, 65101), (87, 65050),

Gene: Phelemich\_86 Start: 65786, Stop: 65199, Start Num: 28

Candidate Starts for Phelemich\_86:

(Start: 28 @65786 has 10 MA's), (40, 65621), (41, 65612), (50, 65516), (51, 65504), (63, 65387), (64, 65375), (66, 65363), (67, 65345), (72, 65306), (75, 65297),

Gene: Poster\_88 Start: 66222, Stop: 65554, Start Num: 26

Candidate Starts for Poster\_88:

(3, 66984), (Start: 12 @66390 has 1 MA's), (14, 66327), (Start: 26 @66222 has 17 MA's), (Start: 28 @66171 has 10 MA's), (33, 66132), (36, 66081), (37, 66078), (39, 66048), (40, 66003), (41, 65994), (48, 65922), (50, 65898), (59, 65805), (64, 65754), (66, 65742), (67, 65724), (70, 65706), (71, 65703), (73, 65694), (74, 65691), (76, 65679), (78, 65655), (82, 65610), (85, 65598), (86, 65595),

Gene: Prince\_90 Start: 67482, Stop: 66829, Start Num: 26

Candidate Starts for Prince\_90:

(1, 68334), (Start: 12 @67650 has 1 MA's), (14, 67587), (Start: 26 @67482 has 17 MA's), (Start: 28 @67431 has 10 MA's), (36, 67338), (39, 67305), (40, 67260), (41, 67251), (48, 67179), (50, 67155), (59, 67062), (64, 67011), (66, 66999), (67, 66981), (70, 66963), (71, 66960), (76, 66936), (87, 66864), (88, 66861),

Gene: QueenPie\_82 Start: 65696, Stop: 65082, Start Num: 28

Candidate Starts for QueenPie\_82:

(5, 66044), (7, 66041), (Start: 12 @65876 has 1 MA's), (Start: 28 @65696 has 10 MA's), (36, 65603), (39, 65570), (41, 65516), (44, 65495), (45, 65492), (51, 65408), (60, 65324), (64, 65276), (66, 65264), (67, 65246), (70, 65228), (71, 65225), (73, 65216), (74, 65213), (76, 65201), (78, 65177), (79, 65174), (82, 65138), (86, 65123),

Gene: RawrgerThat\_88 Start: 66936, Stop: 66319, Start Num: 28

Candidate Starts for RawrgerThat\_88:

(Start: 28 @66936 has 10 MA's), (31, 66900), (36, 66843), (41, 66756), (44, 66735), (45, 66732), (48, 66684), (49, 66672), (53, 66624), (56, 66597), (61, 66552), (64, 66516), (65, 66507), (67, 66486), (70, 66459), (76, 66432),

Gene: Reprobate\_88 Start: 65791, Stop: 65204, Start Num: 28

Candidate Starts for Reprobate\_88:

(Start: 28 @65791 has 10 MA's), (40, 65626), (41, 65617), (50, 65521), (51, 65509), (63, 65392), (64, 65380), (66, 65368), (67, 65350), (72, 65311), (75, 65302),

Gene: Rita130\_88 Start: 65916, Stop: 65299, Start Num: 28

Candidate Starts for Rita130\_88:

(2, 66870), (6, 66375), (15, 66045), (22, 65991), (Start: 28 @65916 has 10 MA's), (40, 65745), (41, 65736), (51, 65628), (63, 65511), (66, 65487), (67, 65469), (72, 65433), (83, 65352),

Gene: Robyn\_98 Start: 67147, Stop: 66548, Start Num: 25

Candidate Starts for Robyn\_98:

(Start: 25 @67147 has 2 MA's), (Start: 27 @67126 has 2 MA's), (Start: 29 @67087 has 1 MA's), (32, 67045), (40, 66919), (42, 66898), (45, 66886), (50, 66814), (62, 66700), (66, 66661), (67, 66643),

Gene: Serendipitous\_89 Start: 65633, Stop: 65031, Start Num: 28

Candidate Starts for Serendipitous\_89:

(Start: 28 @65633 has 10 MA's), (40, 65468), (43, 65444), (47, 65420), (51, 65354), (59, 65273), (60, 65270), (66, 65213), (67, 65195),

Gene: SirJeffery\_87 Start: 65697, Stop: 65122, Start Num: 28

Candidate Starts for SirJeffery\_87:

(17, 65790), (Start: 24 @65748 has 1 MA's), (Start: 28 @65697 has 10 MA's), (40, 65532), (41, 65523), (51, 65415), (63, 65298), (66, 65274), (67, 65256), (72, 65220),

Gene: Stinger\_87 Start: 65601, Stop: 64981, Start Num: 28

Candidate Starts for Stinger\_87:

(Start: 28 @65601 has 10 MA's), (30, 65568), (35, 65541), (38, 65484), (39, 65472), (41, 65418), (43, 65400), (50, 65322), (64, 65178), (66, 65166), (67, 65148), (76, 65094),

Gene: StinkyVeggy\_87 Start: 65724, Stop: 65134, Start Num: 28

Candidate Starts for StinkyVeggy\_87:

(19, 65826), (21, 65814), (Start: 23 @65796 has 1 MA's), (Start: 28 @65724 has 10 MA's), (40, 65550), (41, 65541), (51, 65433), (63, 65316), (66, 65292), (67, 65274), (76, 65217),

Gene: Vaishali24\_97 Start: 66820, Stop: 66230, Start Num: 25

Candidate Starts for Vaishali24\_97:

(11, 67039), (13, 66937), (Start: 25 @66820 has 2 MA's), (Start: 27 @66799 has 2 MA's), (Start: 29 @66760 has 1 MA's), (32, 66727), (40, 66601), (42, 66580), (45, 66568), (50, 66496), (62, 66382), (66, 66343), (67, 66325),

Gene: Vincenzo\_89 Start: 68034, Stop: 67441, Start Num: 28

Candidate Starts for Vincenzo\_89:

(Start: 28 @68034 has 10 MA's), (36, 67941), (39, 67908), (45, 67830), (48, 67782), (51, 67746), (54, 67707), (59, 67665), (64, 67614), (66, 67602), (67, 67584), (71, 67554), (74, 67542), (76, 67530), (77, 67521),

Gene: VioletZ\_92 Start: 67510, Stop: 66836, Start Num: 26

Candidate Starts for VioletZ\_92:

(4, 67930), (Start: 12 @67678 has 1 MA's), (14, 67615), (Start: 26 @67510 has 17 MA's), (Start: 28 @67459 has 10 MA's), (36, 67363), (37, 67360), (39, 67330), (40, 67285), (41, 67276), (48, 67204), (50, 67180), (59, 67087), (64, 67036), (66, 67024), (67, 67006), (68, 67003), (70, 66988), (71, 66985), (74, 66973), (76, 66961), (78, 66937), (85, 66880), (86, 66877),

Gene: Vivaldi\_97 Start: 67032, Stop: 66454, Start Num: 27

Candidate Starts for Vivaldi\_97:

(Start: 27 @67032 has 2 MA's), (Start: 29 @66993 has 1 MA's), (32, 66951), (40, 66825), (42, 66804), (45, 66792), (50, 66720), (62, 66606), (66, 66567), (67, 66549),

Gene: Waleliano\_89 Start: 67237, Stop: 66587, Start Num: 26

Candidate Starts for Waleliano\_89:

(Start: 12 @67405 has 1 MA's), (14, 67342), (Start: 26 @67237 has 17 MA's), (Start: 28 @67186 has 10 MA's), (36, 67096), (40, 67018), (41, 67009), (50, 66913), (59, 66820), (64, 66769), (66, 66757), (67, 66739), (70, 66721), (71, 66718), (76, 66694), (78, 66670), (87, 66622),

Gene: Xincheng\_82 Start: 67236, Stop: 66616, Start Num: 28

Candidate Starts for Xincheng\_82:

(Start: 12 @67455 has 1 MA's), (14, 67392), (Start: 26 @67287 has 17 MA's), (Start: 28 @67236 has 10 MA's), (36, 67146), (45, 67032), (48, 66984), (50, 66960), (52, 66936), (53, 66924), (59, 66867), (64, 66816), (66, 66804), (67, 66786), (70, 66768), (71, 66765), (74, 66753), (76, 66741), (78, 66717), (85, 66663), (86, 66660),

Gene: Zemanar\_88 Start: 67185, Stop: 66517, Start Num: 26

Candidate Starts for Zemanar\_88:

(Start: 12 @67353 has 1 MA's), (14, 67290), (Start: 26 @67185 has 17 MA's), (Start: 28 @67134 has 10 MA's), (36, 67044), (40, 66966), (41, 66957), (48, 66885), (50, 66861), (59, 66768), (64, 66717), (66, 66705), (67, 66687), (70, 66669), (71, 66666), (74, 66654), (76, 66642), (78, 66618), (82, 66573), (85, 66561), (86, 66558),