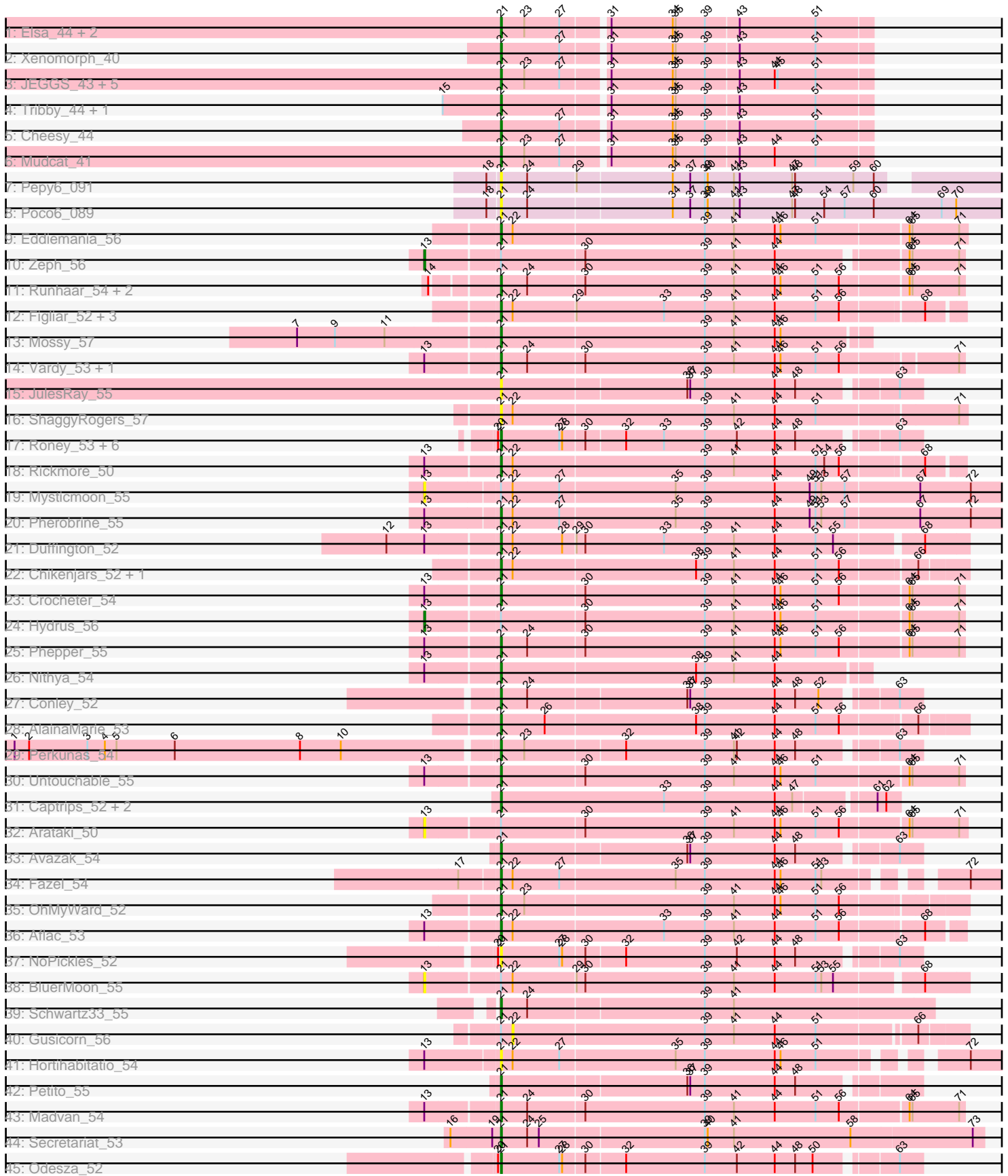


Pham 193994



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 193994 Report

This analysis was run 11/02/24 on database version 579.

Pham number 193994 has 68 members, 11 are drafts.

Phages represented in each track:

- Track 1 : Elsa\_44, Arcadia\_44, Nason\_44
- Track 2 : Xenomorph\_40
- Track 3 : JEGGS\_43, Benllo\_43, Mooshroom\_46, BenitoAntonio\_44, Kardesai\_45, Heisenberger\_43
- Track 4 : Tribby\_44, Correa\_42
- Track 5 : Cheesy\_44
- Track 6 : Mudcat\_41
- Track 7 : Pepy6\_091
- Track 8 : Poco6\_089
- Track 9 : Eddiemania\_56
- Track 10 : Zeph\_56
- Track 11 : Runhaar\_54, Kenosha\_53, Nadmeg\_55
- Track 12 : Figliar\_52, Jodelie19\_53, TenaciousP\_54, OlgasClover\_55
- Track 13 : Mossy\_57
- Track 14 : Vardy\_53, Burley\_54
- Track 15 : JulesRay\_55
- Track 16 : ShaggyRogers\_57
- Track 17 : Roney\_53, Kerry\_52, Tanis\_53, Capybara\_53, Gravy\_52, Gill\_53, Magel\_54
- Track 18 : Rickmore\_50
- Track 19 : Mysticmoon\_55
- Track 20 : Pherobrine\_55
- Track 21 : Duffington\_52
- Track 22 : Chickenjars\_52, EndAve\_55
- Track 23 : Crocheter\_54
- Track 24 : Hydrus\_56
- Track 25 : Phepper\_55
- Track 26 : Nithya\_54
- Track 27 : Conley\_52
- Track 28 : AlainaMarie\_53
- Track 29 : Perkunas\_54
- Track 30 : Untouchable\_55
- Track 31 : Captrips\_52, Artorias\_53, FortCran\_53
- Track 32 : Arataki\_50
- Track 33 : Avazak\_54
- Track 34 : Fazel\_54
- Track 35 : OhMyWard\_52

- Track 36 : Aflac\_53
- Track 37 : NoPickles\_52
- Track 38 : BluerMoon\_55
- Track 39 : Schwartz33\_55
- Track 40 : Gusicorn\_56
- Track 41 : Hortihabitatio\_54
- Track 42 : Petite\_55
- Track 43 : Madvan\_54
- Track 44 : Secretariat\_53
- Track 45 : Odesza\_52

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

The start number called the most often in the published annotations is 21, it was called in 55 of the 57 non-draft genes in the pham.

Genes that call this "Most Annotated" start:

- Aflac\_53, AlainaMarie\_53, Arcadia\_44, Artorias\_53, Avazak\_54, BenitoAntonio\_44, Benllo\_43, Burley\_54, Captrips\_52, Capybara\_53, Cheesy\_44, Chikenjars\_52, Conley\_52, Correa\_42, Crocheter\_54, Duffington\_52, Eddiemania\_56, Elsa\_44, EndAve\_55, Fazel\_54, Figliar\_52, FortCran\_53, Gill\_53, Gravy\_52, Heisenberger\_43, Hortihabitatio\_54, JEGGS\_43, Jodelie19\_53, JulesRay\_55, Kardesai\_45, Kenosha\_53, Kerry\_52, Madvan\_54, Magel\_54, Mooshroom\_46, Mossy\_57, Mudcat\_41, Nadmeg\_55, Nason\_44, Nithya\_54, NoPickles\_52, Odesza\_52, OhMyWard\_52, OlgasClover\_55, Pepy6\_091, Perkunas\_54, Petite\_55, Phepper\_55, Pherobrine\_55, Poco6\_089, Rickmore\_50, Roney\_53, Runhaar\_54, Schwartz33\_55, Secretariat\_53, ShaggyRogers\_57, Tanis\_53, TenaciousP\_54, Tribby\_44, Untouchable\_55, Vardy\_53, Xenomorph\_40,

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

- Arataki\_50, BluerMoon\_55, Gusicorn\_56, Hydrus\_56, Mysticmoon\_55, Zeph\_56,

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

- 

**Summary by start number:**

Start 13:

- Found in 17 of 68 ( 25.0% ) of genes in pham
- Manual Annotations of this start: 2 of 57
- Called 29.4% of time when present
- Phage (with cluster) where this start called: Arataki\_50 (DJ), BluerMoon\_55 (DJ), Hydrus\_56 (DJ), Mysticmoon\_55 (DJ), Zeph\_56 (DJ),

Start 21:

- Found in 68 of 68 ( 100.0% ) of genes in pham
- Manual Annotations of this start: 55 of 57
- Called 91.2% of time when present
- Phage (with cluster) where this start called: Aflac\_53 (DJ), AlainaMarie\_53 (DJ), Arcadia\_44 (AM), Artorias\_53 (DJ), Avazak\_54 (DJ), BenitoAntonio\_44 (AM),

Benllo\_43 (AM), Burley\_54 (DJ), Captrips\_52 (DJ), Capybara\_53 (DJ), Cheesy\_44 (AM), Chikenjars\_52 (DJ), Conley\_52 (DJ), Correa\_42 (AM), Crocheter\_54 (DJ), Duffington\_52 (DJ), Eddiemania\_56 (DJ), Elsa\_44 (AM), EndAve\_55 (DJ), Fazel\_54 (DJ), Figliar\_52 (DJ), FortCran\_53 (DJ), Gill\_53 (DJ), Gravy\_52 (DJ), Heisenberger\_43 (AM), Hortihabitatio\_54 (DJ), JEGGS\_43 (AM), Jodelie19\_53 (DJ), JulesRay\_55 (DJ), Kardesai\_45 (AM), Kenosha\_53 (DJ), Kerry\_52 (DJ), Madvan\_54 (DJ), Magel\_54 (DJ), Mooshroom\_46 (AM), Mossy\_57 (DJ), Mudcat\_41 (AM), Nadmeg\_55 (DJ), Nason\_44 (AM), Nithya\_54 (DJ), NoPickles\_52 (DJ), Odesza\_52 (DJ), OhMyWard\_52 (DJ), OlgasClover\_55 (DJ), Pepy6\_091 (CC), Perkunas\_54 (DJ), Petite\_55 (DJ), Phepper\_55 (DJ), Pherobrine\_55 (DJ), Poco6\_089 (CC), Rickmore\_50 (DJ), Roney\_53 (DJ), Runhaar\_54 (DJ), Schwartz33\_55 (DJ), Secretariat\_53 (DJ), ShaggyRogers\_57 (DJ), Tanis\_53 (DJ), TenaciousP\_54 (DJ), Tribby\_44 (AM), Untouchable\_55 (DJ), Vardy\_53 (DJ), Xenomorph\_40 (AM),

Start 22:

- Found in 17 of 68 ( 25.0% ) of genes in pham
- No Manual Annotations of this start.
- Called 5.9% of time when present
- Phage (with cluster) where this start called: Gusicorn\_56 (DJ),

### **Summary by clusters:**

There are 3 clusters represented in this pham: CC, AM, DJ,

Info for manual annotations of cluster AM:

- Start number 21 was manually annotated 13 times for cluster AM.

Info for manual annotations of cluster DJ:

- Start number 13 was manually annotated 2 times for cluster DJ.
- Start number 21 was manually annotated 42 times for cluster DJ.

### **Gene Information:**

Gene: Aflac\_53 Start: 37122, Stop: 37580, Start Num: 21

Candidate Starts for Aflac\_53:

(Start: 13 @37050 has 2 MA's), (Start: 21 @37122 has 55 MA's), (22, 37134), (33, 37287), (39, 37329), (41, 37359), (44, 37401), (51, 37443), (56, 37467), (68, 37545),

Gene: AlainaMarie\_53 Start: 37102, Stop: 37566, Start Num: 21

Candidate Starts for AlainaMarie\_53:

(Start: 21 @37102 has 55 MA's), (26, 37147), (38, 37300), (39, 37309), (44, 37381), (51, 37423), (56, 37447), (66, 37519),

Gene: Arataki\_50 Start: 36159, Stop: 36701, Start Num: 13

Candidate Starts for Arataki\_50:

(Start: 13 @36159 has 2 MA's), (Start: 21 @36231 has 55 MA's), (30, 36315), (39, 36438), (41, 36468), (44, 36510), (46, 36516), (51, 36552), (56, 36576), (64, 36642), (65, 36645), (71, 36693),

Gene: Arcadia\_44 Start: 30490, Stop: 30855, Start Num: 21

Candidate Starts for Arcadia\_44:

(Start: 21 @30490 has 55 MA's), (23, 30514), (27, 30550), (31, 30592), (34, 30655), (35, 30658), (39, 30688), (43, 30721), (51, 30799),

Gene: Artorias\_53 Start: 36489, Stop: 36887, Start Num: 21

Candidate Starts for Artorias\_53:

(Start: 21 @36489 has 55 MA's), (33, 36657), (39, 36699), (44, 36771), (47, 36789), (61, 36864), (62, 36873),

Gene: Avazak\_54 Start: 36834, Stop: 37244, Start Num: 21

Candidate Starts for Avazak\_54:

(Start: 21 @36834 has 55 MA's), (36, 37020), (37, 37023), (39, 37038), (44, 37110), (48, 37131), (63, 37221),

Gene: BenitoAntonio\_44 Start: 30067, Stop: 30432, Start Num: 21

Candidate Starts for BenitoAntonio\_44:

(Start: 21 @30067 has 55 MA's), (23, 30091), (27, 30127), (31, 30169), (34, 30232), (35, 30235), (39, 30265), (43, 30298), (44, 30334), (45, 30337), (51, 30376),

Gene: Benllo\_43 Start: 30751, Stop: 31116, Start Num: 21

Candidate Starts for Benllo\_43:

(Start: 21 @30751 has 55 MA's), (23, 30775), (27, 30811), (31, 30853), (34, 30916), (35, 30919), (39, 30949), (43, 30982), (44, 31018), (45, 31021), (51, 31060),

Gene: BluerMoon\_55 Start: 37073, Stop: 37609, Start Num: 13

Candidate Starts for BluerMoon\_55:

(Start: 13 @37073 has 2 MA's), (Start: 21 @37145 has 55 MA's), (22, 37157), (29, 37220), (30, 37229), (39, 37352), (41, 37382), (44, 37424), (51, 37466), (53, 37472), (55, 37484), (68, 37565),

Gene: Burley\_54 Start: 36888, Stop: 37352, Start Num: 21

Candidate Starts for Burley\_54:

(Start: 13 @36816 has 2 MA's), (Start: 21 @36888 has 55 MA's), (24, 36915), (30, 36972), (39, 37095), (41, 37125), (44, 37167), (46, 37173), (51, 37209), (56, 37233), (71, 37344),

Gene: Captrips\_52 Start: 35964, Stop: 36362, Start Num: 21

Candidate Starts for Captrips\_52:

(Start: 21 @35964 has 55 MA's), (33, 36132), (39, 36174), (44, 36246), (47, 36264), (61, 36339), (62, 36348),

Gene: Capybara\_53 Start: 36333, Stop: 36743, Start Num: 21

Candidate Starts for Capybara\_53:

(20, 36330), (Start: 21 @36333 has 55 MA's), (27, 36393), (28, 36396), (30, 36417), (32, 36456), (33, 36495), (39, 36537), (42, 36570), (44, 36609), (48, 36630), (63, 36720),

Gene: Cheesy\_44 Start: 30188, Stop: 30553, Start Num: 21

Candidate Starts for Cheesy\_44:

(Start: 21 @30188 has 55 MA's), (27, 30248), (31, 30290), (34, 30353), (35, 30356), (39, 30386), (43, 30419), (51, 30497),

Gene: Chikenjars\_52 Start: 37114, Stop: 37578, Start Num: 21

Candidate Starts for Chikenjars\_52:

(Start: 21 @37114 has 55 MA's), (22, 37126), (38, 37312), (39, 37321), (41, 37351), (44, 37393), (51, 37435), (56, 37459), (66, 37531),

Gene: Conley\_52 Start: 37120, Stop: 37530, Start Num: 21

Candidate Starts for Conley\_52:

(Start: 21 @37120 has 55 MA's), (24, 37147), (36, 37306), (37, 37309), (39, 37324), (44, 37396), (48, 37417), (52, 37441), (63, 37507),

Gene: Correa\_42 Start: 29373, Stop: 29738, Start Num: 21

Candidate Starts for Correa\_42:

(15, 29313), (Start: 21 @29373 has 55 MA's), (31, 29475), (34, 29538), (35, 29541), (39, 29571), (43, 29604), (51, 29682),

Gene: Crocheter\_54 Start: 37278, Stop: 37745, Start Num: 21

Candidate Starts for Crocheter\_54:

(Start: 13 @37206 has 2 MA's), (Start: 21 @37278 has 55 MA's), (30, 37362), (39, 37485), (41, 37515), (44, 37557), (46, 37563), (51, 37599), (56, 37623), (64, 37689), (65, 37692), (71, 37740),

Gene: Duffington\_52 Start: 36809, Stop: 37273, Start Num: 21

Candidate Starts for Duffington\_52:

(12, 36698), (Start: 13 @36737 has 2 MA's), (Start: 21 @36809 has 55 MA's), (22, 36821), (28, 36872), (29, 36884), (30, 36893), (33, 36974), (39, 37016), (41, 37046), (44, 37088), (51, 37130), (55, 37148), (68, 37229),

Gene: Eddiemania\_56 Start: 38023, Stop: 38493, Start Num: 21

Candidate Starts for Eddiemania\_56:

(Start: 21 @38023 has 55 MA's), (22, 38035), (39, 38230), (41, 38260), (44, 38302), (46, 38308), (51, 38344), (64, 38434), (65, 38437), (71, 38485),

Gene: Elsa\_44 Start: 30490, Stop: 30855, Start Num: 21

Candidate Starts for Elsa\_44:

(Start: 21 @30490 has 55 MA's), (23, 30514), (27, 30550), (31, 30592), (34, 30655), (35, 30658), (39, 30688), (43, 30721), (51, 30799),

Gene: EndAve\_55 Start: 37282, Stop: 37746, Start Num: 21

Candidate Starts for EndAve\_55:

(Start: 21 @37282 has 55 MA's), (22, 37294), (38, 37480), (39, 37489), (41, 37519), (44, 37561), (51, 37603), (56, 37627), (66, 37699),

Gene: Fazel\_54 Start: 36737, Stop: 37225, Start Num: 21

Candidate Starts for Fazel\_54:

(17, 36698), (Start: 21 @36737 has 55 MA's), (22, 36749), (27, 36797), (35, 36914), (39, 36944), (44, 37016), (46, 37022), (51, 37058), (53, 37064), (72, 37175),

Gene: Figliar\_52 Start: 37190, Stop: 37648, Start Num: 21

Candidate Starts for Figliar\_52:

(Start: 21 @37190 has 55 MA's), (22, 37202), (29, 37265), (33, 37355), (39, 37397), (41, 37427), (44, 37469), (51, 37511), (56, 37535), (68, 37613),

Gene: FortCran\_53 Start: 36489, Stop: 36887, Start Num: 21

Candidate Starts for FortCran\_53:

(Start: 21 @36489 has 55 MA's), (33, 36657), (39, 36699), (44, 36771), (47, 36789), (61, 36864), (62, 36873),

Gene: Gill\_53 Start: 36350, Stop: 36760, Start Num: 21

Candidate Starts for Gill\_53:

(20, 36347), (Start: 21 @36350 has 55 MA's), (27, 36410), (28, 36413), (30, 36434), (32, 36473), (33, 36512), (39, 36554), (42, 36587), (44, 36626), (48, 36647), (63, 36737),

Gene: Gravy\_52 Start: 36023, Stop: 36433, Start Num: 21

Candidate Starts for Gravy\_52:

(20, 36020), (Start: 21 @36023 has 55 MA's), (27, 36083), (28, 36086), (30, 36107), (32, 36146), (33, 36185), (39, 36227), (42, 36260), (44, 36299), (48, 36320), (63, 36410),

Gene: Gusicorn\_56 Start: 37216, Stop: 37665, Start Num: 22

Candidate Starts for Gusicorn\_56:

(Start: 21 @37204 has 55 MA's), (22, 37216), (39, 37411), (41, 37441), (44, 37483), (51, 37525), (66, 37618),

Gene: Heisenberger\_43 Start: 29931, Stop: 30296, Start Num: 21

Candidate Starts for Heisenberger\_43:

(Start: 21 @29931 has 55 MA's), (23, 29955), (27, 29991), (31, 30033), (34, 30096), (35, 30099), (39, 30129), (43, 30162), (44, 30198), (45, 30201), (51, 30240),

Gene: Hortihabitatio\_54 Start: 36942, Stop: 37460, Start Num: 21

Candidate Starts for Hortihabitatio\_54:

(Start: 13 @36870 has 2 MA's), (Start: 21 @36942 has 55 MA's), (22, 36954), (27, 37002), (35, 37119), (39, 37149), (44, 37221), (46, 37227), (51, 37263), (72, 37380),

Gene: Hydrus\_56 Start: 37978, Stop: 38517, Start Num: 13

Candidate Starts for Hydrus\_56:

(Start: 13 @37978 has 2 MA's), (Start: 21 @38050 has 55 MA's), (30, 38134), (39, 38257), (41, 38287), (44, 38329), (46, 38335), (51, 38371), (64, 38461), (65, 38464), (71, 38512),

Gene: JEGGS\_43 Start: 29985, Stop: 30350, Start Num: 21

Candidate Starts for JEGGS\_43:

(Start: 21 @29985 has 55 MA's), (23, 30009), (27, 30045), (31, 30087), (34, 30150), (35, 30153), (39, 30183), (43, 30216), (44, 30252), (45, 30255), (51, 30294),

Gene: Jodelie19\_53 Start: 38594, Stop: 39052, Start Num: 21

Candidate Starts for Jodelie19\_53:

(Start: 21 @38594 has 55 MA's), (22, 38606), (29, 38669), (33, 38759), (39, 38801), (41, 38831), (44, 38873), (51, 38915), (56, 38939), (68, 39017),

Gene: JulesRay\_55 Start: 36516, Stop: 36926, Start Num: 21

Candidate Starts for JulesRay\_55:

(Start: 21 @36516 has 55 MA's), (36, 36702), (37, 36705), (39, 36720), (44, 36792), (48, 36813), (63, 36903),

Gene: Kardesai\_45 Start: 30651, Stop: 31016, Start Num: 21

Candidate Starts for Kardesai\_45:

(Start: 21 @30651 has 55 MA's), (23, 30675), (27, 30711), (31, 30753), (34, 30816), (35, 30819), (39, 30849), (43, 30882), (44, 30918), (45, 30921), (51, 30960),

Gene: Kenosha\_53 Start: 37509, Stop: 37976, Start Num: 21

Candidate Starts for Kenosha\_53:

(14, 37449), (Start: 21 @37509 has 55 MA's), (24, 37536), (30, 37593), (39, 37716), (41, 37746), (44, 37788), (46, 37794), (51, 37830), (56, 37854), (64, 37920), (65, 37923), (71, 37971),

Gene: Kerry\_52 Start: 36023, Stop: 36433, Start Num: 21

Candidate Starts for Kerry\_52:

(20, 36020), (Start: 21 @36023 has 55 MA's), (27, 36083), (28, 36086), (30, 36107), (32, 36146), (33, 36185), (39, 36227), (42, 36260), (44, 36299), (48, 36320), (63, 36410),

Gene: Madvan\_54 Start: 36919, Stop: 37386, Start Num: 21

Candidate Starts for Madvan\_54:

(Start: 13 @36847 has 2 MA's), (Start: 21 @36919 has 55 MA's), (24, 36946), (30, 37003), (39, 37126), (41, 37156), (44, 37198), (51, 37240), (56, 37264), (64, 37330), (65, 37333), (71, 37381),

Gene: Magel\_54 Start: 36254, Stop: 36676, Start Num: 21

Candidate Starts for Magel\_54:

(20, 36251), (Start: 21 @36254 has 55 MA's), (27, 36314), (28, 36317), (30, 36338), (32, 36377), (33, 36416), (39, 36458), (42, 36491), (44, 36530), (48, 36551), (63, 36653),

Gene: Mooshroom\_46 Start: 30651, Stop: 31016, Start Num: 21

Candidate Starts for Mooshroom\_46:

(Start: 21 @30651 has 55 MA's), (23, 30675), (27, 30711), (31, 30753), (34, 30816), (35, 30819), (39, 30849), (43, 30882), (44, 30918), (45, 30921), (51, 30960),

Gene: Mossy\_57 Start: 39044, Stop: 39415, Start Num: 21

Candidate Starts for Mossy\_57:

(7, 38843), (9, 38882), (11, 38933), (Start: 21 @39044 has 55 MA's), (39, 39251), (41, 39281), (44, 39323), (46, 39329),

Gene: Mudcat\_41 Start: 31344, Stop: 31709, Start Num: 21

Candidate Starts for Mudcat\_41:

(Start: 21 @31344 has 55 MA's), (23, 31368), (27, 31404), (31, 31446), (34, 31509), (35, 31512), (39, 31542), (43, 31575), (44, 31611), (51, 31653),

Gene: Mysticmoon\_55 Start: 37671, Stop: 38270, Start Num: 13

Candidate Starts for Mysticmoon\_55:

(Start: 13 @37671 has 2 MA's), (Start: 21 @37743 has 55 MA's), (22, 37755), (27, 37803), (35, 37920), (39, 37950), (44, 38022), (49, 38058), (51, 38064), (53, 38070), (57, 38094), (67, 38169), (72, 38220),

Gene: Nadmeg\_55 Start: 38165, Stop: 38632, Start Num: 21

Candidate Starts for Nadmeg\_55:

(14, 38105), (Start: 21 @38165 has 55 MA's), (24, 38192), (30, 38249), (39, 38372), (41, 38402), (44, 38444), (46, 38450), (51, 38486), (56, 38510), (64, 38576), (65, 38579), (71, 38627),

Gene: Nason\_44 Start: 30490, Stop: 30855, Start Num: 21

Candidate Starts for Nason\_44:

(Start: 21 @30490 has 55 MA's), (23, 30514), (27, 30550), (31, 30592), (34, 30655), (35, 30658), (39, 30688), (43, 30721), (51, 30799),

Gene: Nithya\_54 Start: 37126, Stop: 37497, Start Num: 21

Candidate Starts for Nithya\_54:

(Start: 13 @37054 has 2 MA's), (Start: 21 @37126 has 55 MA's), (38, 37324), (39, 37333), (41, 37363), (44, 37405),

Gene: NoPickles\_52 Start: 35688, Stop: 36098, Start Num: 21

Candidate Starts for NoPickles\_52:



(20, 35685), (Start: 21 @35688 has 55 MA's), (27, 35748), (28, 35751), (30, 35772), (32, 35811), (39, 35892), (42, 35925), (44, 35964), (48, 35985), (63, 36075),

Gene: Odesza\_52 Start: 36078, Stop: 36488, Start Num: 21

Candidate Starts for Odesza\_52:

(20, 36075), (Start: 21 @36078 has 55 MA's), (27, 36138), (28, 36141), (30, 36162), (32, 36201), (39, 36282), (42, 36315), (44, 36354), (48, 36375), (50, 36393), (63, 36465),

Gene: OhMyWard\_52 Start: 38137, Stop: 38601, Start Num: 21

Candidate Starts for OhMyWard\_52:

(Start: 21 @38137 has 55 MA's), (23, 38161), (39, 38344), (41, 38374), (44, 38416), (46, 38422), (51, 38458), (56, 38482),

Gene: OlgasClover\_55 Start: 38175, Stop: 38633, Start Num: 21

Candidate Starts for OlgasClover\_55:

(Start: 21 @38175 has 55 MA's), (22, 38187), (29, 38250), (33, 38340), (39, 38382), (41, 38412), (44, 38454), (51, 38496), (56, 38520), (68, 38598),

Gene: Pepy6\_091 Start: 46716, Stop: 47210, Start Num: 21

Candidate Starts for Pepy6\_091:

(18, 46704), (Start: 21 @46716 has 55 MA's), (24, 46743), (29, 46791), (34, 46887), (37, 46905), (39, 46920), (40, 46923), (41, 46950), (43, 46956), (47, 47010), (48, 47013), (59, 47073), (60, 47094),

Gene: Perkunas\_54 Start: 36360, Stop: 36770, Start Num: 21

Candidate Starts for Perkunas\_54:

(1, 35874), (2, 35889), (3, 35949), (4, 35967), (5, 35979), (6, 36039), (8, 36168), (10, 36210), (Start: 21 @36360 has 55 MA's), (23, 36384), (32, 36483), (39, 36564), (41, 36594), (42, 36597), (44, 36636), (48, 36657), (63, 36747),

Gene: Petite\_55 Start: 38180, Stop: 38590, Start Num: 21

Candidate Starts for Petite\_55:

(Start: 21 @38180 has 55 MA's), (36, 38366), (37, 38369), (39, 38384), (44, 38456), (48, 38477),

Gene: Phepper\_55 Start: 37181, Stop: 37648, Start Num: 21

Candidate Starts for Phepper\_55:

(Start: 13 @37109 has 2 MA's), (Start: 21 @37181 has 55 MA's), (24, 37208), (30, 37265), (39, 37388), (41, 37418), (44, 37460), (46, 37466), (51, 37502), (56, 37526), (64, 37592), (65, 37595), (71, 37643),

Gene: Pherobrine\_55 Start: 38033, Stop: 38560, Start Num: 21

Candidate Starts for Pherobrine\_55:

(Start: 13 @37961 has 2 MA's), (Start: 21 @38033 has 55 MA's), (22, 38045), (27, 38093), (35, 38210), (39, 38240), (44, 38312), (49, 38348), (51, 38354), (53, 38360), (57, 38384), (67, 38459), (72, 38510),

Gene: Poco6\_089 Start: 48918, Stop: 49439, Start Num: 21

Candidate Starts for Poco6\_089:

(18, 48906), (Start: 21 @48918 has 55 MA's), (24, 48945), (34, 49089), (37, 49107), (39, 49122), (40, 49125), (41, 49152), (43, 49158), (47, 49212), (48, 49215), (54, 49245), (57, 49266), (60, 49296), (69, 49365), (70, 49380),

Gene: Rickmore\_50 Start: 34982, Stop: 35440, Start Num: 21

Candidate Starts for Rickmore\_50:

(Start: 13 @34910 has 2 MA's), (Start: 21 @34982 has 55 MA's), (22, 34994), (39, 35189), (41, 35219), (44, 35261), (51, 35303), (54, 35312), (56, 35327), (68, 35405),

Gene: Roney\_53 Start: 36376, Stop: 36786, Start Num: 21

Candidate Starts for Roney\_53:

(20, 36373), (Start: 21 @36376 has 55 MA's), (27, 36436), (28, 36439), (30, 36460), (32, 36499), (33, 36538), (39, 36580), (42, 36613), (44, 36652), (48, 36673), (63, 36763),

Gene: Runhaar\_54 Start: 36981, Stop: 37448, Start Num: 21

Candidate Starts for Runhaar\_54:

(14, 36921), (Start: 21 @36981 has 55 MA's), (24, 37008), (30, 37065), (39, 37188), (41, 37218), (44, 37260), (46, 37266), (51, 37302), (56, 37326), (64, 37392), (65, 37395), (71, 37443),

Gene: Schwartz33\_55 Start: 37144, Stop: 37581, Start Num: 21

Candidate Starts for Schwartz33\_55:

(Start: 21 @37144 has 55 MA's), (24, 37171), (39, 37348), (41, 37378),

Gene: Secretariat\_53 Start: 36006, Stop: 36494, Start Num: 21

Candidate Starts for Secretariat\_53:

(16, 35955), (19, 35997), (Start: 21 @36006 has 55 MA's), (24, 36033), (25, 36045), (39, 36210), (40, 36213), (41, 36240), (58, 36360), (73, 36483),

Gene: ShaggyRogers\_57 Start: 36933, Stop: 37400, Start Num: 21

Candidate Starts for ShaggyRogers\_57:

(Start: 21 @36933 has 55 MA's), (22, 36945), (39, 37140), (41, 37170), (44, 37212), (51, 37254), (71, 37392),

Gene: Tanis\_53 Start: 36196, Stop: 36606, Start Num: 21

Candidate Starts for Tanis\_53:

(20, 36193), (Start: 21 @36196 has 55 MA's), (27, 36256), (28, 36259), (30, 36280), (32, 36319), (33, 36358), (39, 36400), (42, 36433), (44, 36472), (48, 36493), (63, 36583),

Gene: TenaciousP\_54 Start: 38556, Stop: 39014, Start Num: 21

Candidate Starts for TenaciousP\_54:

(Start: 21 @38556 has 55 MA's), (22, 38568), (29, 38631), (33, 38721), (39, 38763), (41, 38793), (44, 38835), (51, 38877), (56, 38901), (68, 38979),

Gene: Tribby\_44 Start: 30206, Stop: 30571, Start Num: 21

Candidate Starts for Tribby\_44:

(15, 30146), (Start: 21 @30206 has 55 MA's), (31, 30308), (34, 30371), (35, 30374), (39, 30404), (43, 30437), (51, 30515),

Gene: Untouchable\_55 Start: 37530, Stop: 37997, Start Num: 21

Candidate Starts for Untouchable\_55:

(Start: 13 @37458 has 2 MA's), (Start: 21 @37530 has 55 MA's), (30, 37614), (39, 37737), (41, 37767), (44, 37809), (46, 37815), (51, 37851), (64, 37941), (65, 37944), (71, 37992),

Gene: Vardy\_53 Start: 36877, Stop: 37338, Start Num: 21

Candidate Starts for Vardy\_53:

(Start: 13 @36805 has 2 MA's), (Start: 21 @36877 has 55 MA's), (24, 36904), (30, 36961), (39, 37084), (41, 37114), (44, 37156), (46, 37162), (51, 37198), (56, 37222), (71, 37333),

Gene: Xenomorph\_40 Start: 29917, Stop: 30282, Start Num: 21

Candidate Starts for Xenomorph\_40:

(Start: 21 @29917 has 55 MA's), (27, 29977), (31, 30019), (34, 30082), (35, 30085), (39, 30115), (43, 30148), (51, 30226),

Gene: Zeph\_56 Start: 37958, Stop: 38485, Start Num: 13

Candidate Starts for Zeph\_56:

(Start: 13 @37958 has 2 MA's), (Start: 21 @38030 has 55 MA's), (30, 38114), (39, 38237), (41, 38267), (44, 38309), (64, 38429), (65, 38432), (71, 38480),