

SUPPLEMENTAL MATERIAL

Increased Innate Immune Susceptibility in Hyperpigmented Bacteriophage-Resistant Mutants of *Pseudomonas aeruginosa*

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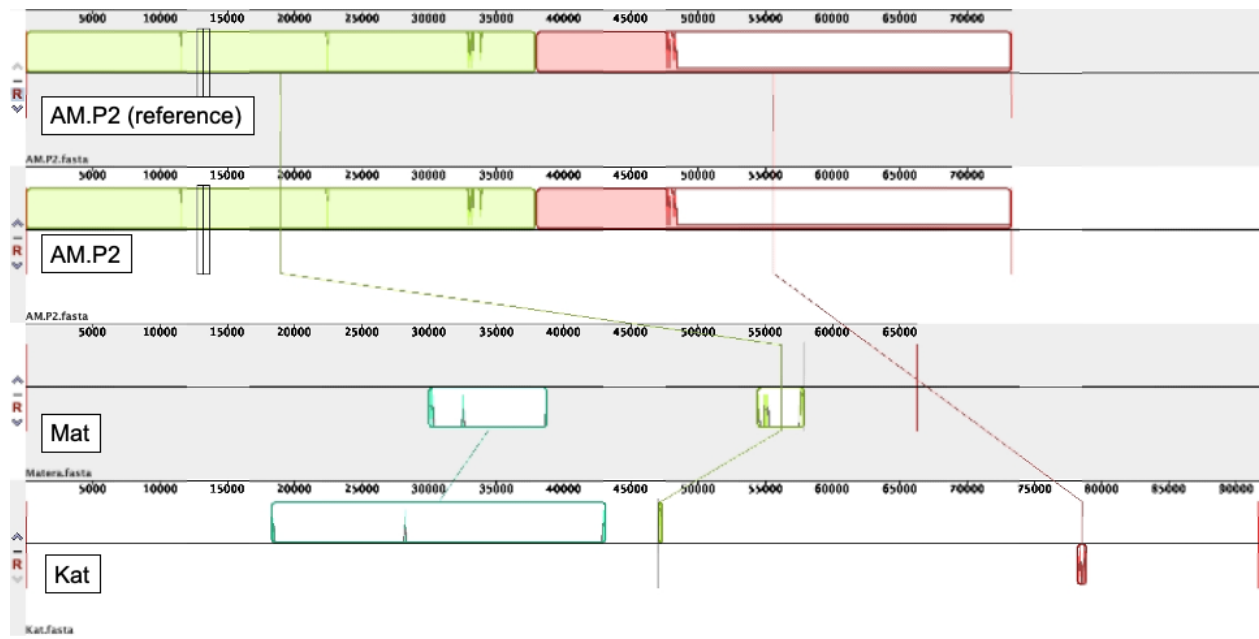


Figure S1: progressiveMauve alignment of AM.P2, Mat, and Kat phages.

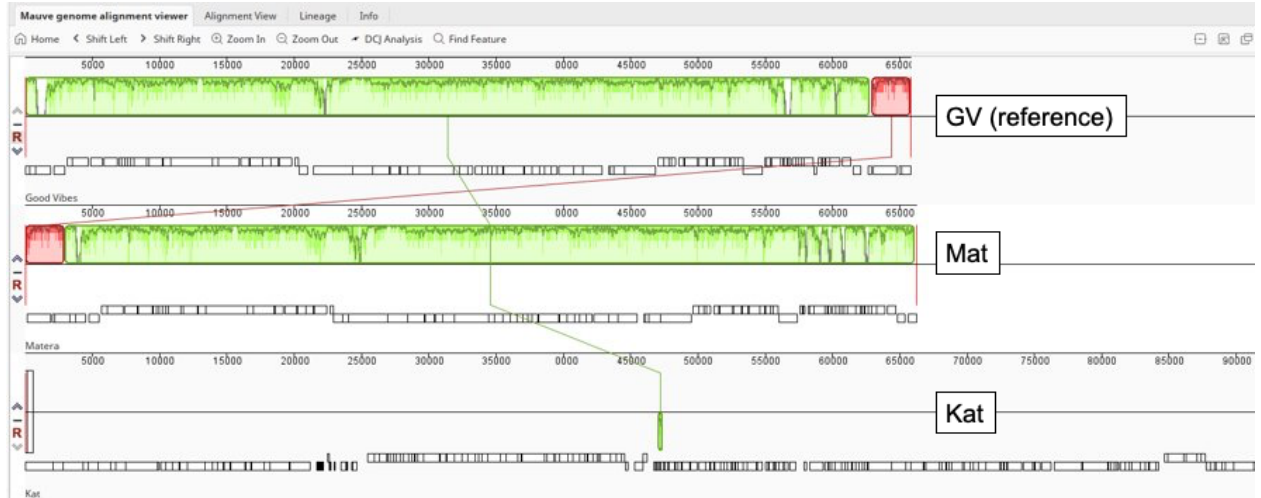


Figure S2: progressiveMauve alignment of Mat and Kat phages

Supplementary Table 1: Common deleted genes in AM.P2-X-1, Mat-X-1, and Kat-X-2

	gene	locus_tag	product	start	stop	size (bp)
1	eraR	PA1980	sensor kinase EraR	2165876	2166553	678
2		PA1981	hypothetical protein	2167227	2166580	648
3	exaA	PA1982	quinoprotein ethanol dehydrogenase	2169152	2167281	1,872
4	exaB	PA1983	cytochrome C550	2169464	2169901	438
5	exaC	PA1984	NAD ⁺ dependent aldehyde dehydrogenase ExaC	2169988	2171508	1,521
6	pqqA	PA1985	coenzyme PQQ synthesis protein A	2171865	2171936	72
7	pqqB	PA1986	coenzyme PQQ synthesis protein B	2171989	2172903	915
8	pqqC	PA1987	pyrroloquinoline-quinone synthase	2172913	2173665	753
9	pqqD	PA1988	coenzyme PQQ synthesis protein D	2173662	2173940	279
10	pqqE	PA1989	coenzyme PQQ synthesis protein E	2173912	2175057	1,146
11	pqqH	PA1990	peptidase	2175062	2176888	1,827
12		PA1991	iron-containing alcohol dehydrogenase	2176974	2178137	1,164
13	ercS	PA1992	sensor histidine kinase	2178121	2179815	1,695
14		PA1993	hypothetical protein	2181056	2179848	1,209
15		PA1994	hypothetical protein	2181744	2181181	564
16		PA1995	hypothetical protein	2182097	2181741	357
17	ppiC1	PA1996	peptidyl-prolyl cis-trans isomerase C1	2182394	2182116	279
18		PA1997	acetoacetyl-CoA synthetase	2184407	2182452	1,956
19	dhcR	PA1998	transcriptional regulator DhcR	2185395	2184475	921
20	dhcA	PA1999	dehydrocarnitine CoA transferase subunit A	2185527	2186225	699
21	dhcB	PA2000	dehydrocarnitine CoA transferase subunit B	2186260	2186916	657
22	atoB	PA2001	acetyl-CoA acetyltransferase	2187065	2188246	1,182
23		PA2002	hypothetical protein	2188459	2189883	1,425
24	bdhA	PA2003	3-hydroxybutyrate dehydrogenase	2190854	2190084	771
25		PA2004	hypothetical protein	2192282	2190891	1,392
26		PA2005	transcriptional regulator	2193989	2192544	1,446
27		PA2006	major facilitator superfamily transporter	2195410	2194058	1,353
28	maiA	PA2007	methylacetoacetate isomerase	2196132	2195494	639
29	fahA	PA2008	fumarylacetoacetase	2197427	2196129	1,299
30	hmgA	PA2009	homogentisate 1,2-dioxygenase	2198730	2197432	1,299
31	hmgR	PA2010	transcriptional regulator	2198891	2199694	804
32	liuE	PA2011	3-hydroxy-3-isohehexenylglutaryl-CoA/hydroxy-methylglutaryl-CoA lyase	2200664	2199762	903
33	liuD	PA2012	methylcrotonyl-CoA carboxylase subunit alpha	2202652	2200685	1,968
34	liuC	PA2013	gamma-carboxygeranyl-CoA hydratase	2203446	2202649	798
35	liuB	PA2014	methylcrotonyl-CoA carboxylase subunit beta	2205067	2203460	1,608
36	liuA	PA2015	isovaleryl-CoA dehydrogenase	2206353	2205190	1,164
37	liuR	PA2016	liu genes regulator	2206806	2206402	405
38		PA2017	hypothetical protein	2206999	2207928	930
39	mexY	PA2018	multidrug efflux protein	2211306	2208169	3,138
40	mexX	PA2019	multidrug efflux lipoprotein	2212512	2211322	1,191
41	mexZ	PA2020	transcriptional regulator	2212677	2213309	633
42		PA2021	hypothetical protein	2213539	2213315	225
43		PA2022	UDP-glucose 6-dehydrogenase	2213693	2215054	1,362
44	galU	PA2023	UTP-glucose-1-phosphate uridylyltransferase	2215102	2215941	840
45		PA2024	ring-cleaving dioxygenase	2216543	2216121	423
46	gor	PA2025	glutathione reductase	2216688	2218043	1,356
47		PA2026	hypothetical protein	2219099	2218098	1,002
48		PA2027	hypothetical protein	2219645	2219253	393
49		PA2028	transcriptional regulator	2219778	2220251	474
50		PA2029	hypothetical protein	2220275	2220574	300
51		PA2030	hypothetical protein	2220906	2220649	258
52		PA2031	hypothetical protein	2221157	2220903	255
53		PA2032	transcriptional regulator	2221337	2222761	1,425
54		PA2033	hypothetical protein	2222896	2223804	909
55		PA2034	hypothetical protein	2223804	2224478	675
56		PA2035	thiamine pyrophosphate protein	2226144	2224486	1,659
57		PA2036	hypothetical protein	2226879	2227400	522
58		PA2037	hypothetical protein	2227541	2229001	1,461
59		PA2038	hypothetical protein	2229440	2229126	315
60		PA2039	hypothetical protein	2230183	2229425	759
61		PA2040	glutamine synthetase	2230689	2232065	1,377
62		PA2041	amino acid permease	2232222	2233592	1,371
63		PA2042	serine/threonine transporter SstT	2234080	2235309	1,230
64		PA2043	hypothetical protein	2235430	2236332	903
65		PA2044	hypothetical protein	2238366	2236492	1,875
66		PA2045	membrane protein insertion efficiency factor	2238801	2238541	261
67		PA2046	hypothetical protein	2240214	2238860	1,355
68	cmrA	PA2047	chloramphenicol resistance activator CmrA	2241291	2240302	990

69		PA2048	hypothetical protein	2241816	2242112	297
70		PA2049	hypothetical protein	2244164	2242170	1,995
71		PA2050	RNA polymerase sigma factor	2244492	2244998	507
72		PA2051	transmembrane sensor	2244995	2245948	954
73	cynS	PA2052	cyanate hydratase	2246456	2245986	471
74	cynT	PA2053	carbonic anhydrase	2247158	2246496	663
75	cynR	PA2054	DNA-binding transcriptional regulator CynR	2247273	2248160	888
76		PA2055	major facilitator superfamily transporter	2249582	2248167	1,416
77		PA2056	transcriptional regulator	2249693	2250595	903
78	sppR	PA2057	TonB-dependent receptor	2251275	2253815	2,541
79	sppA	PA2058	ABC transporter substrate-binding protein	2253819	2255627	1,809
80	sppB	PA2059	ABC transporter permease	2255629	2256702	1,074
81	sppC	PA2060	ABC transporter permease	2256704	2257720	1,017
82	sppD	PA2061	ABC transporter ATP-binding protein	2257722	2259332	1,611
83		PA2062	pyridoxal-phosphate dependent protein	2259478	2260659	1,182
84		PA2063	hypothetical protein	2260862	2262085	1,224
85	pcoB	PA2064	copper resistance protein B	2263082	2262105	978
86	pcoA	PA2065	copper resistance protein A	2264977	2263079	1,899
87		PA2066	hypothetical protein	2265764	2265126	639
88		PA2067	hydrolase	2266429	2265761	669
89		PA2068	major facilitator superfamily transporter	2267594	2266431	1,164
90		PA2069	carbamoyl transferase	2269362	2267638	1,725
91		PA2070	hypothetical protein	2272184	2269542	2,643
92	fusA2	PA2071	elongation factor G	2272460	2274568	2,109
93		PA2072	hypothetical protein	2274740	2277334	2,595
94		PA2073	transporter membrane subunit	2277552	2278982	1,431
95		PA2074	hypothetical protein	2278982	2279794	813
96		PA2075	hypothetical protein	2281578	2279917	1,662
97		PA2076	transcriptional regulator	2282480	2283382	903
98		PA2077	hypothetical protein	2285323	2283419	1,905
99		PA2078	hypothetical protein	2287237	2285363	1,875
100		PA2079	amino acid permease	2288929	2287523	1,407
101	kynU	PA2080	kynureninase KynU	2290335	2289085	1,251
102	kynB	PA2081	kynurenine formamidase KynB	2290980	2290339	642
103	kynR	PA2082	transcriptional regulator	2291113	2291589	477
104		PA2083	ring-hydroxylating dioxygenase subunit	2291791	2293065	1,275
105		PA2084	asparagine synthetase	2293153	2294985	1,833
106		PA2085	ring-hydroxylating dioxygenase small subunit	2295013	2295522	510
107		PA2086	epoxide hydrolase	2295533	2296435	903
108		PA2087	hypothetical protein	2296432	2297088	657
109		PA2088	hypothetical protein	2297072	2297920	849
110		PA2089	hypothetical protein	2298012	2300663	2,652
111		PA2090	hypothetical protein	2300676	2301755	1,080
112		PA2091	hypothetical protein	2301752	2303035	1,284
113		PA2092	major facilitator superfamily transporter	2303022	2304215	1,194
114		PA2093	RNA polymerase sigma factor	2304318	2304827	510
115		PA2094	transmembrane sensor	2304824	2305780	957
116		PA2095	hypothetical protein	2306627	2305782	846
117		PA2096	transcriptional regulator	2307810	2306776	1,035
118		PA2097	flavin-binding monooxygenase	2307957	2309432	1,476
119		PA2098	esterase	2309443	2310372	930
120		PA2099	short-chain dehydrogenase	2310357	2311112	756
121		PA2100	transcriptional regulator	2312766	2311333	1,434
122		PA2101	hypothetical protein	2312899	2313789	891
123		PA2102	hypothetical protein	2313791	2314249	459
124		PA2103	molybdopterin biosynthesis protein MoeB	2314512	2315690	1,179
125		PA2104	cysteine synthase	2315709	2316626	918
126		PA2105	acetyltransferase	2316708	2317403	696
127		PA2106	hypothetical protein	2317400	2318134	735
128		PA2107	hypothetical protein	2318624	2318226	399
129		PA2108	thiamine pyrophosphate protein	2318795	2320567	1,773
130		PA2109	hypothetical protein	2321062	2320586	477
131		PA2110	hypothetical protein	2322071	2321130	942
132		PA2111	hypothetical protein	2322781	2322068	714
133		PA2112	hypothetical protein	2323521	2322778	744
134	opdO	PA2113	pyroglutamate porin OpdO	2324783	2323554	1,230
135		PA2114	major facilitator superfamily transporter	2326079	2324808	1,272
136		PA2115	transcriptional regulator	2326334	2327287	954
137		PA2116	hypothetical protein	2327394	2328191	798
138		PA2117	hypothetical protein	2329156	2328176	981
139	ada	PA2118	O6-methylguanine-DNA methyltransferase	2329348	2330424	1,077
140		PA2118a	hypothetical protein	2330833	2330591	243

141		PA2119	alcohol dehydrogenase	2332059	2330959	1,101
142		PA2120	hypothetical protein	2332820	2332392	429
143		PA2121	transcriptional regulator	2333873	2332968	906
144		PA2122	hypothetical protein	2333999	2335135	1,137
145		PA2123	transcriptional regulator	2335172	2336104	933
146		PA2124	dehydrogenase	2336209	2337846	1,638
147		PA2125	aldehyde dehydrogenase	2337868	2339316	1,449
148	cgrC	PA2126	cupA gene regulator C	2339987	2339352	636
149	cgrB	PA2126.1	cupA gene regulator B	2340417	2339905	513
150	cgrA	PA2127	cupA gene regulator A	2341640	2340414	1,227
151	cupA1	PA2128	fimbrial subunit CupA1	2342493	2343044	552
152	cupA2	PA2129	chaperone CupA2	2343132	2343878	747
153	cupA3	PA2130	usher CupA3	2343862	2346480	2,619
154	cupA4	PA2131	fimbrial subunit CupA4	2346477	2347838	1,362
155	cupA5	PA2132	chaperone CupA5	2347828	2348541	714
156		PA2133	Cyclic-guanylate-specific phosphodiesterase	2348538	2349395	858
157		PA2134	hypothetical protein	2349488	2350060	573
158		PA2135	transporter	2350089	2351453	1,365
159		PA2136	hypothetical protein	2352430	2351906	525
160		PA2137	hypothetical protein	2352532	2353068	537
161	ligD	PA2138	multifunctional non-homologous end joining protein LigD	2353086	2355608	2,523
162		PA2139	hypothetical protein	2355684	2355898	215
163		PA2140	metallothionein	2355918	2356157	240
164		PA2141	hypothetical protein	2356168	2356716	549
165		PA2142	short-chain dehydrogenase	2356713	2357573	861
166		PA2142a	hypothetical protein	2357781	2357593	189
167		PA2143	hypothetical protein	2358024	2358311	288
168	glgP	PA2144	glycogen phosphorylase	2358364	2360802	2,439
169		PA2145	hypothetical protein	2361207	2360809	399
170		PA2146	hypothetical protein	2361706	2361873	168
171	katE	PA2147	catalase HPII	2361954	2364083	2,130
172		PA2148	hypothetical protein	2364311	2364802	492
173		PA2149	hypothetical protein	2364816	2365058	243
174		PA2150	non-homologous end joining protein Ku	2365081	2365962	882
175		PA2151	alpha-1,4-glucan:maltose-1-phosphate maltosyltransferase	2366106	2368100	1,995
176		PA2152	trehalose synthase	2368111	2371413	3,303
177	glgB	PA2153	1,4-alpha-glucan branching protein GlgB	2371410	2373608	2,199
178		PA2154	hypothetical protein	2374605	2373610	996
179		PA2155	cardiolipin synthase 2	2375807	2374602	1,206
180		PA2156	hypothetical protein	2376541	2375804	738
181		PA2157	hypothetical protein	2377476	2376538	939
182		PA2158	alcohol dehydrogenase	2378727	2377480	1,248
183		PA2159	hypothetical protein	2379210	2378794	417
184		PA2160	glycosyl hydrolase	2381460	2379310	2,151
185		PA2161	hypothetical protein	2381778	2381473	306
186		PA2162	malto-oligosyltrehalose synthase	2384555	2381775	2,781
187		PA2163	4-alpha-glucanotransferase	2386602	2384548	2,055
188		PA2164	glycosyl hydrolase	2388346	2386595	1,752
189		PA2165	glycogen synthase	2389887	2388346	1,542
190		PA2166	hypothetical protein	2390255	2390620	366
191		PA2167	hypothetical protein	2390949	2392046	1,098
192		PA2168	hypothetical protein	2392043	2392819	777
193		PA2169	hypothetical protein	2392945	2393397	453
194		PA2170	hypothetical protein	2393424	2393633	210
195		PA2171	hypothetical protein	2393708	2394178	471
196		PA2172	hypothetical protein	2394182	2395258	1,077
197		PA2173	hypothetical protein	2395285	2395635	351
198		PA2173a	hypothetical protein	2395691	2395912	222
199		PA2174	hypothetical protein	2396252	2395944	309
200		PA2175	hypothetical protein	2396883	2396536	348
201		PA2176	hypothetical protein	2397486	2396896	591
202		PA2177	sensor/response regulator hybrid protein	2397569	2399668	2,100
203		PA2178	hypothetical protein	2400280	2399672	609
204		PA2179	hypothetical protein	2401605	2400655	951
205		PA2180	hypothetical protein	2402965	2401589	1,377
206		PA2181	glutamate--cysteine ligase	2403151	2404284	1,134
207		PA2182	hypothetical protein	2404655	2404386	270
208		PA2183	hypothetical protein	2405233	2404949	285
209		PA2184	hypothetical protein	2405739	2405230	510
210	katN	PA2185	non-heme catalase KatN	2405993	2406877	885
211		PA2187	hypothetical protein	2407236	2407661	426
212		PA2188	alcohol dehydrogenase	2408847	2407681	1,167

213		PA2189	hypothetical protein	2409107	2409661	555
214		PA2190	hypothetical protein	2409837	2410181	345
215	exoY	PA2191	adenylate cyclase	2411480	2410344	1,137
216		PA2192	hypothetical protein	2411709	2412122	414
217	hcnA	PA2193	hydrogen cyanide synthase subunit HcnA	2412546	2412860	315
218	hcnB	PA2194	hydrogen cyanide synthase subunit HcnB	2412857	2414251	1,395
219	hcnC	PA2195	hydrogen cyanide synthase subunit HcnC	2414254	2415507	1,254
220		PA2196	transcriptional regulator	2415661	2416245	585
221		PA2197	hypothetical protein	2416376	2417413	1,038
222		PA2198	hypothetical protein	2417410	2417754	345
223		PA2199	dehydrogenase	2417760	2418635	876
224		PA2200	hypothetical protein	2418723	2420318	1,596
225		PA2201	hypothetical protein	2420443	2421327	885
226		PA2202	amino acid permease	2422020	2421343	678
227		PA2203	amino acid permease	2422738	2422022	717

Supplementary Table 2: MIC₉₀ values for gentamicin (GEN), ciprofloxacin (CIP), and azithromycin (AZM).

	GEN (µg/ml)	CIP (µg/ml)	AZM (µg/ml)
PAO1	4	1	2
<i>ΔhmgA</i>	4	0.5	1-2
<i>ΔhmgA::hmgA</i>	4	0.5	1-2
AM.P2-X-1	≤0.25	2	1-2
AM.P2-X-1:: <i>hmgA</i>	≤0.25	2	1-2