

Table 5. Nonorthologous ORFs in *Staphylococcus epidermidis* ATCC 12228

ORF ID	COG*	Product
Transport systems		
SE1106	-	ABC transporter (membrane spanning protein)
SE0137	D	Capsular polysaccharide synthesis enzyme Cap5B
SE0105	E	Arginine/ornithine antiporter
SE0222	E	Glycine betaine/carnitine/choline ABC transporter (ATP-binding) opuCA
SE0223	E	OpuCB protein
SE0225	E	OpuCD protein
SE2004	E	Amino acid ABC transporter-like protein
SE2015	E	OpuCD protein
SE2018	E	Glycine betaine/carnitine/choline ABC transporter (ATP-binding) opuCA
SE2130	E	D-serine/D-alanine/glycine transporter
SE2101	G	PTS enzyme II glucose-specific factor IIABC component
SE0123	GEPR	Sugar transporter
SE0196	GEPR	Transmembrane efflux pump protein
SE0241	GEPR	Multidrug resistance protein
SE1757	GEPR	Multidrug resistance protein
SE2238	GEPR	TcaB protein
SE2396	GEPR	Transporter
SE0146	M	Conserved hypothetical protein
SE0259	M	Glycine betaine transporter opuD-like protein
SE2016	M	Glycine betaine/carnitine/choline ABC transporter (osmoprotec) opuCC
SE0062	P	Copper-transporting ATPase copA
SE0073	P	Cadmium efflux system accessory protein
SE0074	P	Putative divalent heavy-metal cations transporter
SE0078	P	Cadmium resistance transporter, putative
SE0084	P	Mercuric transport protein
SE0126	P	Copper-transporting ATPase copA
SE0138	P	Arsenical resistance operon trans-acting ArsD
SE0251	P	ABC transporter, periplasmic binding component
SE0334	P	Arsenic efflux pump protein
SE0335	P	Arsenic efflux pump protein
SE0462	P	Conserved hypothetical protein
SE1515	P	Putative cadmium resistance transporter
SE1955	P	Copper export proteins
SE1957	P	Copper export proteins
SE0117	Q	ABC transporter (ATP-binding protein)
SE0140	R	Putative membrane protein
SE2170	R	Anaerobic dicarboxylate transport
Regulation systems		
SE1636	-	AgrD protein
SE0107	E	Arginine repressor
SE0081	K	Conserved hypothetical protein
SE0093	K	Transcriptional regulator tetR-family
SE0104	K	Transcription regulator Crp/Fnr family protein
SE0139	K	Arsenical resistance operon repressor-like protein
SE1642	K	Sucrose operon repressor
SE1871	K	Transcription regulator
SE1891	K	Transcription regulator RpiR family
SE2410	K	Transcriptional regulator AcrR family
SE1102	KG	Lactose phosphotransferase system repressor
SE0121	T	Two-component sensor histidine kinase
SE0120	TK	Response regulator
Mobile elements		
SE0042	-	Abortive phage resistance protein
SE0045	-	Truncated transposase
SE0063	-	Truncated transposase
SE0064	-	Truncated transposase
SE0065	-	Truncated transposase
SE0066	-	Truncated transposase
SE0067	-	Truncated transposase
SE0100	-	Transposase
SE0257	-	Truncated transposase
SE0355	-	Truncated transposase
SE0483	-	Truncated transposase
SE0495	-	Truncated transposase
SE0568	-	Conserved hypothetical protein
SE0590	-	Truncated transposase
SE0651	-	Truncated transposase
SE0652	-	Truncated transposase
SE0668	-	Truncated transposase
SE0702	-	Transposase
SE0711	-	IS605/IS200-like transposase
SE0808	-	Truncated transposase
SE0809	-	Truncated transposase
SE0989	-	Phage protein
SE0990	-	Conserved hypothetical protein

SE1005	-	Truncated transposase
SE1044	-	Truncated transposase
SE1219	-	Truncated transposase
SE1319	-	Truncated transposase
SE1363	-	Truncated transposase
SE1386	-	Truncated transposase
SE1454	-	Truncated transposase
SE1470	-	Similar to phage phi PVL amidase
SE1475	-	Abortive phage resistance protein
SE1539	-	Truncated transposase
SE1839	-	Truncated transposase
SE1899	-	Truncated transposase
SE1982	-	Truncated transposase
SE1990	-	Truncated transposase
SE2078	-	Truncated transposase
SE2134	-	Truncated transposase
SE2153	-	Truncated transposase
SE2203	-	Truncated transposase
SE2235	-	Truncated transposase
SE2338	-	Truncated transposase
SE0051	L	Conserved hypothetical protein
SE0056	L	Cassette chromosome recombinase B
SE0057	L	Cassette chromosome recombinase A
SE0059	L	Cassette chromosome recombinase A
SE0071	L	Transposase for IS-like element
SE0076	L	Truncated transposase
SE0079	L	Transposase for IS-like element
SE0101	L	Transposase
SE0111	L	Putative replication initiation protein Rep
SE0282	L	Transposase
SE0628	L	Conserved hypothetical protein
SE0667	L	Transposase
SE0675	L	Conserved hypothetical protein
SE0687	L	Conserved hypothetical protein
SE0710	L	Recombinase Sin
SE0988	L	Integrase XerD family protein
SE1013	L	IS605/IS200-like transposase
SE1292	L	IS605/IS200-like transposase
SE1453	L	Conserved hypothetical protein
SE1455	L	Transposase
SE1467	L	Integrase
SE1472	L	Integrase
SE1487	L	Replication-associated protein
SE1509	L	Integrase
SE1721	L	Transposase
SE1900	L	Transposase
SE1983	L	Transposase
SE2079	L	Transposase
SE2208	L	IS605/IS200-like transposase
SE2260	L	Conserved hypothetical protein

Virulence factors and antibiotics resistance

SE0722	-	Serine protease HtrA
SE0828	-	Lipoprotein VsaC
SE0848	-	Phenol soluble modulins β 1/ β 2
SE0849	-	Phenol soluble modulins β 1/ β 2
SE1634	-	δ -Haemolysin
SE1632	K	Ser-Asp rich fibrinogen-binding protein
SE0185	R	Glycerol ester hydrolase
SE0245	R	Triacylglycerol lipase precursor
SE2403	R	Glycerol ester hydrolase

Other function assigned

SE0086	-	Organomercurial lyase
SE0709	-	Alcohol dehydrogenase
SE1104	-	Phosphohydrolases, lcc family
SE2057	-	Thiamine phosphate synthase
SE2394	-	Poly (glycerol-phosphate) α -glucosyltransferase
SE0077	C	Dihydrolipoamide dehydrogenase component of pyruvate dehydrogenase E3
SE0080	C	Regulatory protein
SE0085	C	Dihydrolipoamide dehydrogenase
SE0195	C	Putative NADH-dependent flavin oxidoreductase
SE0235	C	Glycerol dehydrogenase
SE0253	C	Dihydrolipoamide dehydrogenase
SE0254	C	Branched-chain α -keto acid dehydrogenase E1
SE0255	C	Branched-chain α -keto acid dehydrogenase E1
SE0256	C	Dihydrolipoamide S-acetyltransferase
SE1914	C	L-ribulokinase
SE2145	C	L-lactate dehydrogenase
SE0096	CR	Alginate lyase

SE0102	E	Putative carbamate kinase
SE0103	E	Ornithine carbamoyltransferase
SE0106	E	Arginine deiminase
SE0112	E	Pyridoxal-deC
SE0216	E	Succinyl-diaminopimelate desuccinylase
SE1209	E	Ornithine aminotransferase
SE1656	E	Acetolactate synthase small subunit
SE2035	E	Succinyl-diaminopimelate desuccinylase
SE2058	E	Glycine oxidase
SE2220	E	Succinyl-diaminopimelate desuccinylase
SE0320	ER	Xylitol dehydrogenase
SE2019	ER	Sorbitol dehydrogenase
SE2098	ER	Sorbitol dehydrogenase-like protein
SE0755	F	Inosine-uridine preferring nucleoside hydrolase
SE1736	F	Deoxyribose-phosphate aldolase
SE2060	F	Thiamine biosynthesis protein
SE0703	G	Glucose-6-phosphate 1-dehydrogenase
SE0705	G	Glucose-6-phosphate 1-dehydrogenase
SE1161	G	Glycerol-3-phosphate dehydrogenase
SE1781	G	6-Phospho- β -galactosidase
SE0181	H	8-Amino-7-oxononanoate synthase
SE0194	H	Thiamine biosynthesis lipoprotein
SE1976	H	Uroporphyrin-III C-methyltransferase
SE2061	H	Molybdopterin biosynthesis protein moeB
SE2178	H	Uroporphyrin-III C-methyltransferase
SE0997	I	Cardiolipin synthetase-like protein
SE0026	J	Spermidine acetyltransferase
SE0046	J	Spermidine acetyltransferase
SE0946	J	Ribosome-binding factor A
SE1164	J	30S ribosomal protein S1
SE1813	J	50S ribosomal protein L14
SE0043	L	Type I restriction enzyme R protein
SE0044	L	Probable specificity determinant HsdS
SE0091	L	Type I restriction enzyme R protein
SE0108	L	Type I restriction-modification system endonuclease
SE0115	L	Coenzyme PQQ synthesis protein E
SE0706	L	UvrA-like protein
SE1482	L	DNA topoisomerase III topB
SE0025	M	Teichoic acid biosynthesis protein F
SE0168	M	Galactosamine-containing minor teichoic acid biosynthesis protein
SE0170	M	Galactosamine-containing minor teichoic acid biosynthesis protein
SE1480	M	Sortase
SE2041	M	Poly (glycerol-phosphate) α -glucosyltransferase
SE2199	M	Teichoic acid biosynthesis protein F
SE2318	M	Poly (glycerol-phosphate) α -glucosyltransferase
SE2393	M	Poly (glycerol-phosphate) α -glucosyltransferase
SE0072	N	Lipoprotein signal peptidase
SE2397	N	Type-1 signal peptidase 1B
SE0127	Q	Putative multicopper oxidases
SE2356	Q	2-Oxo-hepta-3-ene-1,7-dioate hydratase
SE0197	QR	Acetoin(diacetyl)reductase
SE0157	R	Malate:quinone oxidoreductase
SE0226	R	Tributyryn esterase
SE0266	R	Malate:quinone oxidoreductase
SE2154	R	Coenzyme A disulfide reductase
SE2158	R	Malate:quinone oxidoreductase
Unknown		
SE0017	S	Hypothetical protein
SE0024	S	Hypothetical protein
SE0027	S	Conserved hypothetical protein
SE0028	S	Conserved hypothetical protein
SE0029	S	Conserved hypothetical protein
SE0031	S	Conserved hypothetical protein
SE0032	S	Conserved hypothetical protein
SE0033	S	Conserved hypothetical protein
SE0041	-	Abi- α protein
SE0047	S	Hypothetical protein
SE0049	S	Hypothetical protein
SE0050	S	Conserved hypothetical protein
SE0052	S	Conserved hypothetical protein
SE0053	S	Conserved hypothetical protein
SE0054	-	Conserved hypothetical protein
SE0055	S	Conserved hypothetical protein
SE0058	-	Conserved hypothetical protein
SE0060	S	Hypothetical protein
SE0061	S	Hypothetical protein
SE0068	S	Hypothetical protein
SE0070	S	Hypothetical protein
SE0082	-	Conserved hypothetical protein

SE0083	-	Conserved hypothetical protein
SE0087	-	Conserved hypothetical protein
SE0088	S	Hypothetical protein
SE0089	S	Hypothetical protein
SE0092	S	Hypothetical protein
SE0097	S	Hypothetical protein
SE0098	-	Conserved hypothetical protein
SE0099	S	Hypothetical protein
SE0109	S	Hypothetical protein
SE0113	S	Hypothetical protein
SE0114	-	Conserved hypothetical protein
SE0116	S	Hypothetical protein
SE0118	S	Hypothetical protein
SE0119	S	Hypothetical protein
SE0122	S	Hypothetical protein
SE0124	-	Immunodominant antigen B
SE0125	S	Hypothetical protein
SE0128	-	Conserved hypothetical protein
SE0131	-	Conserved hypothetical protein
SE0141	S	Hypothetical protein
SE0143	S	Hypothetical protein
SE0144	S	Conserved hypothetical protein
SE0148	S	Hypothetical protein
SE0149	S	Hypothetical protein
SE0150	S	Hypothetical protein
SE0151	S	Hypothetical protein
SE0153	-	Conserved hypothetical protein
SE0154	S	Hypothetical protein
SE0155	S	Hypothetical protein
SE0158	S	Hypothetical protein
SE0159	S	Hypothetical protein
SE0169	S	Hypothetical protein
SE0171	S	Hypothetical protein
SE0172	S	Hypothetical protein
SE0173	S	Hypothetical protein
SE0174	S	Hypothetical protein
SE0176	S	Hypothetical protein
SE0177	S	Hypothetical protein
SE0178	S	Hypothetical protein
SE0186	-	Conserved hypothetical protein
SE0187	-	Conserved hypothetical protein
SE0190	S	Hypothetical protein
SE0192	S	Hypothetical protein
SE0200	S	Hypothetical protein
SE0204	S	Hypothetical protein
SE0207	S	Hypothetical protein
SE0230	S	Hypothetical protein
SE0233	S	Hypothetical protein
SE0239	GEPR	Multidrug resistance protein
SE0240	S	Hypothetical protein
SE0246	S	Hypothetical protein
SE0248	R	Conserved hypothetical protein
SE0260	S	Hypothetical protein
SE0265	S	Hypothetical protein
SE0268	-	Conserved hypothetical protein
SE0279	S	Hypothetical protein
SE0280	S	Hypothetical protein
SE0302	S	Hypothetical protein
SE0316	S	Hypothetical protein
SE0328	S	Hypothetical protein
SE0333	S	Hypothetical protein
SE0336	S	Hypothetical protein
SE0345	S	Hypothetical protein
SE0377	-	Conserved hypothetical protein
SE0378	S	Hypothetical protein
SE0391	-	Conserved hypothetical protein
SE0393	S	Hypothetical protein
SE0394	S	Hypothetical protein
SE0416	S	Hypothetical protein
SE0417	S	Hypothetical protein
SE0453	L	Conserved hypothetical protein
SE0458	S	Hypothetical protein
SE0469	S	Hypothetical protein
SE0476	S	Hypothetical protein
SE0482	S	Hypothetical protein
SE0496	S	Hypothetical protein
SE0497	S	Hypothetical protein
SE0498	S	Hypothetical protein
SE0508	S	Hypothetical protein
SE0540	S	Hypothetical protein

SE0552	S	Hypothetical protein
SE0555	S	Hypothetical protein
SE0567	S	Hypothetical protein
SE0570	-	Conserved hypothetical protein
SE0572	S	Hypothetical protein
SE0574	S	Hypothetical protein
SE0575	-	Conserved hypothetical protein
SE0582	S	Hypothetical protein
SE0589	S	Hypothetical protein
SE0597	S	Hypothetical protein
SE0603	S	Hypothetical protein
SE0611	S	Hypothetical protein
SE0612	S	Hypothetical protein
SE0661	S	Hypothetical protein
SE0671	-	Conserved hypothetical protein
SE0704	S	Hypothetical protein
SE0708	S	Hypothetical protein
SE0719	-	Conserved hypothetical protein
SE0730	S	Hypothetical protein
SE0732	-	Truncated Pre protein
SE0733	S	Hypothetical protein
SE0734	-	Conserved hypothetical protein
SE0735	-	Conserved hypothetical protein
SE0737	S	Hypothetical protein
SE0739	S	Hypothetical protein
SE0742	S	Hypothetical protein
SE0820	S	Hypothetical protein
SE0829	S	Hypothetical protein
SE0846	S	Hypothetical protein
SE0847	S	Hypothetical protein
SE0870	-	Secretory antigen SsaA
SE0874	S	Hypothetical protein
SE0882	-	Conserved hypothetical protein
SE0919	-	Conserved hypothetical protein
SE0920	S	Hypothetical protein
SE0961	-	Competence-damage inducible protein
SE0992	-	Conserved hypothetical protein
SE0993	S	Hypothetical protein
SE0994	-	Conserved hypothetical protein
SE1001	-	Conserved hypothetical protein
SE1021	S	Hypothetical protein
SE1056	S	Hypothetical protein
SE1084	S	Hypothetical protein
SE1085	S	Hypothetical protein
SE1095	S	Hypothetical protein
SE1098	S	Hypothetical protein
SE1101	S	Hypothetical protein
SE1103	Q	Conserved hypothetical protein
SE1112	S	Hypothetical protein
SE1124	S	Conserved hypothetical protein
SE1129	-	Conserved hypothetical protein
SE1149	S	Hypothetical protein
SE1173	S	Hypothetical protein
SE1189	S	Hypothetical protein
SE1223	S	Hypothetical protein
SE1239	S	Hypothetical protein
SE1316	S	Hypothetical protein
SE1362	S	Hypothetical protein
SE1364	S	Hypothetical protein
SE1395	S	Hypothetical protein
SE1399	S	Hypothetical protein
SE1420	S	Hypothetical protein
SE1445	S	Hypothetical protein
SE1465	S	Hypothetical protein
SE1466	-	Conserved hypothetical protein
SE1468	S	Hypothetical protein
SE1469	S	Hypothetical protein
SE1471	S	Hypothetical protein
SE1473	S	Hypothetical protein
SE1474	-	Conserved hypothetical protein
SE1476	S	Hypothetical protein
SE1477	-	Conserved hypothetical protein
SE1478	-	LtrC-like protein
SE1479	S	Hypothetical protein
SE1481	-	Conserved hypothetical protein
SE1483	-	Conserved hypothetical protein
SE1484	S	Hypothetical protein
SE1485	S	Hypothetical protein
SE1486	S	Hypothetical protein
SE1488	S	Hypothetical protein

SE1489	-	Secretory antigen SsaA-like protein
SE1490	-	Putative ATPase TraE
SE1491	-	Conserved hypothetical protein
SE1492	S	Hypothetical protein
SE1493	S	Hypothetical protein
SE1494	-	Conserved hypothetical protein
SE1495	-	Conserved hypothetical protein
SE1496	S	Hypothetical protein
SE1497	L	Hypothetical protein
SE1498	-	Conserved hypothetical protein
SE1499	S	Hypothetical protein
SE1500	S	Hypothetical protein
SE1501	S	Hypothetical protein
SE1502	S	Hypothetical protein
SE1503	S	Hypothetical protein
SE1504	S	Hypothetical protein
SE1506	S	Hypothetical protein
SE1507	S	Hypothetical protein
SE1508	S	Hypothetical protein
SE1522	S	Hypothetical protein
SE1534	S	Conserved hypothetical protein
SE1536	-	Conserved hypothetical protein
SE1544	S	Hypothetical protein
SE1556	S	Hypothetical protein
SE1575	-	Immunodominant antigen B
SE1605	-	Conserved hypothetical protein
SE1610	S	Hypothetical protein
SE1614	S	Conserved hypothetical protein
SE1628	S	Hypothetical protein
SE1641	S	Hypothetical protein
SE1663	S	Hypothetical protein
SE1664	S	Hypothetical protein
SE1665	S	Hypothetical protein
SE1683	S	Hypothetical protein
SE1714	S	Hypothetical protein
SE1741	S	Hypothetical protein
SE1744	-	Conserved hypothetical protein
SE1755	S	Hypothetical protein
SE1773	-	Alkaline shock protein 23
SE1854	-	FDHD protein
SE1859	S	Hypothetical protein
SE1872	-	SsaA protein
SE1886	-	Protein of pXO2-46
SE1887	-	Conserved hypothetical protein
SE1894	-	Conserved hypothetical protein
SE1909	S	Hypothetical protein
SE1910	S	Hypothetical protein
SE1915	S	Hypothetical protein
SE1916	S	Hypothetical protein
SE1918	-	Conserved hypothetical protein
SE1921	-	Conserved hypothetical protein
SE1922	S	Hypothetical protein
SE1931	S	Hypothetical protein
SE1953	-	Conserved hypothetical protein
SE1954	-	Conserved hypothetical protein
SE1956	S	Hypothetical protein
SE1980	S	Hypothetical protein
SE2006	S	Hypothetical protein
SE2008	N	Lipoprotein precursor
SE2026	-	Conserved hypothetical protein
SE2031	S	Hypothetical protein
SE2037	-	Conserved hypothetical protein
SE2049	S	Hypothetical protein
SE2050	-	Truncated hypothetical protein
SE2051	I	Unknown
SE2059	-	Conserved hypothetical protein
SE2065	S	Hypothetical protein
SE2072	S	Hypothetical protein
SE2083	S	Hypothetical protein
SE2084	S	Hypothetical protein
SE2100	S	Hypothetical protein
SE2123	S	Hypothetical protein
SE2124	-	SsaA protein
SE2127	S	Hypothetical protein
SE2128	S	Conserved hypothetical protein
SE2136	-	TcaA protein
SE2137	S	Hypothetical protein
SE2138	S	Hypothetical protein
SE2149	S	Hypothetical protein
SE2151	-	Conserved hypothetical protein

SE2152	S	Hypothetical protein
SE2155	S	Hypothetical protein
SE2169	S	Hypothetical protein
SE2173	S	Hypothetical protein
SE2182	S	Hypothetical protein
SE2186	S	Hypothetical protein
SE2190	S	Hypothetical protein
SE2191	-	Conserved hypothetical protein
SE2196	-	Conserved hypothetical protein
SE2198	MG	Conserved hypothetical protein
SE2200	-	Conserved hypothetical protein
SE2202	S	Hypothetical protein
SE2204	L	Conserved hypothetical protein
SE2205	S	Hypothetical protein
SE2206	S	Hypothetical protein
SE2211	S	Hypothetical protein
SE2223	-	Conserved hypothetical protein
SE2224	-	Conserved hypothetical protein
SE2226	S	Hypothetical protein
SE2234	S	Hypothetical protein
SE2237	-	Conserved hypothetical protein
SE2250	S	Hypothetical protein
SE2251	S	Hypothetical protein
SE2252	S	Hypothetical protein
SE2264	-	Conserved hypothetical protein
SE2265	S	Hypothetical protein
SE2304	S	Hypothetical protein
SE2325	-	Conserved hypothetical protein
SE2327	S	Hypothetical protein
SE2331	S	Hypothetical protein
SE2334	-	Conserved hypothetical protein
SE2336	S	Hypothetical protein
SE2340	S	Hypothetical protein
SE2341	S	Conserved hypothetical protein
SE2342	S	Conserved hypothetical protein
SE2343	S	Hypothetical protein
SE2344	S	Hypothetical protein
SE2359	S	Hypothetical protein
SE2361	S	Hypothetical protein
SE2363	S	Hypothetical protein
SE2366	S	Hypothetical protein
SE2368	S	Hypothetical protein
SE2385	S	Hypothetical protein
SE2398	S	Hypothetical protein
SE2399	S	Hypothetical protein
SE2404	S	Hypothetical protein
SE2407	Q	Conserved hypothetical protein
SE2413	S	Hypothetical protein

* Classification based on COGs category described in Fig. 1.