

Figure S1. Fatty acid composition of filter-sterilized tryptic soy broth supplemented with 14mM glucose. (Becton Dickinson, Lot #2269294). Data represents the mean (n=2) with standard deviation.

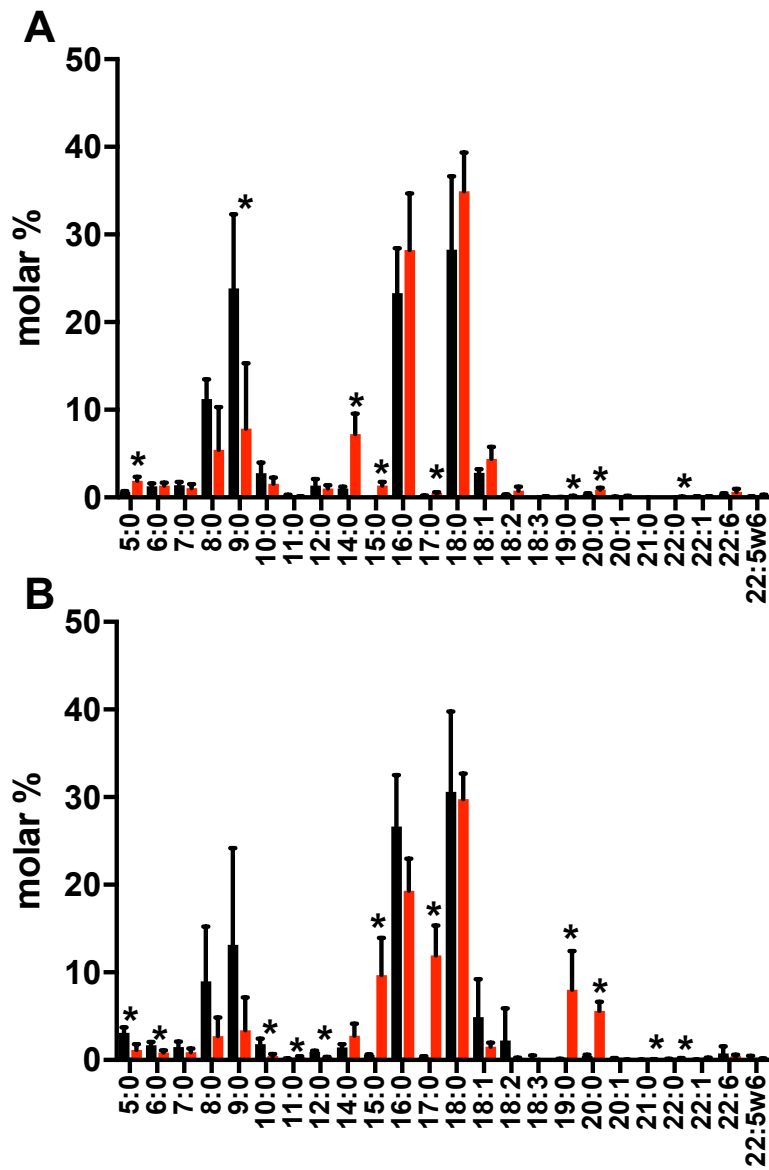


Figure S2. Identification of cellular free fatty acids in wildtype (black) and *fakA* mutant (red) grown for three (**A**) and six hours (**B**) in TSB+14mM glucose. Data is the mean (n=4) with standard deviation. “*” indicates a significant difference (p<0.05) between stains by student t-test.

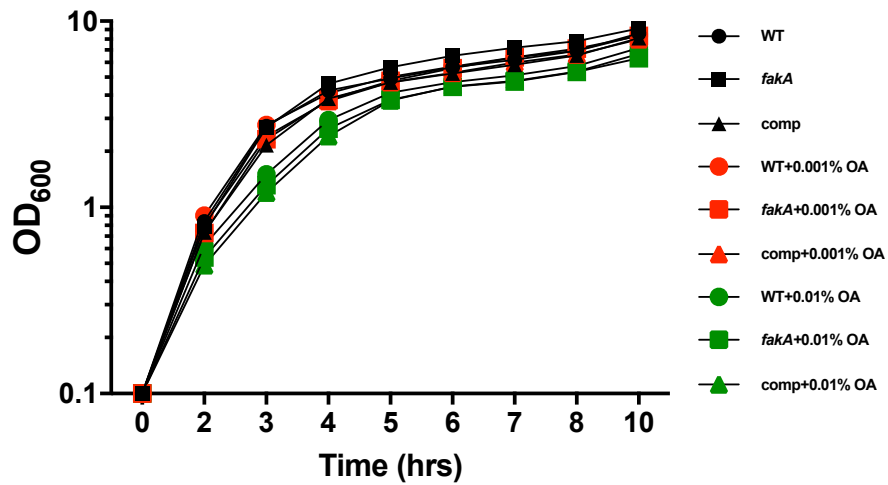


Figure S3. Growth of wildtype (circles), *fakA* mutant (squares), and *fakA* mutant complement with *fakA* on plasmid pJB165 (triangles) grown in TSB (black symbols), TSB+0.001% oleic acid (red symbols), and TSB+0.01% oleic acid (green symbols). Data represents the mean (n=4) with SD and is representative of three independent experiments. Error bars are present but are smaller than symbols.

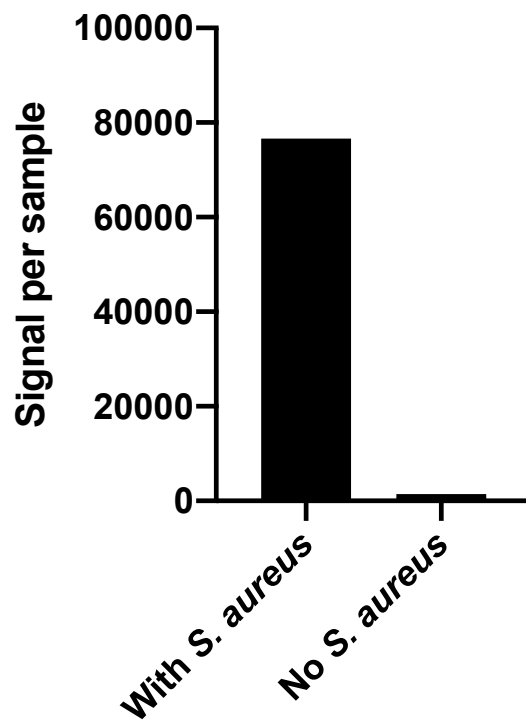


Figure S4. Lipid quantification from samples of mouse skin homogenate media with *S. aureus* bacteria or parallel sample treated identically but not inoculated with bacteria.

Table S1. Product ion analysis of pooled lipid extracts indicating most abundant acyl-chain composition of phosphatidylglycerol (PG) and lysyl-PG (LPG).

PG species	TSB		TSB+0.01% OA	
	WT	<i>fakA</i>	WT	<i>fakA</i>
30:0	15:0/15:0	15:0/15:0	15:0/15:0	15:0/15:0
31:0	15:0/16:0	15:0/16:0	15:0/16:0	15:0/16:0
32:1			14:0/18:1	
32:0	15:0/17:0	15:0/17:0	15:0/17:0	15:0/17:0
33:1			15:0/18:1	
33:0	15:0/18:0	15:0/18:0	15:0/18:0	15:0/18:0
34:1			14:0/20:1	
34:0	15:0/19:0	15:0/19:0	15:0/19:0	15:0/19:0
35:1			15:0/20:1	
35:0	15:0/20:0	15:0/20:0	15:0/20:0	15:0/20:0
36:0	15:0/21:0	15:0/21:0	15:0/21:0	15:0/21:0
37:1				
37:0		15:0/22:0	15:0/22:0	17:0/20:0
LPG species				
30:0	15:0/15:0	15:0/20:0	15:0/20:0	
31:0	15:0/16:0	15:0/16:0		
32:0	15:0/17:0	15:0/17:0	15:0/17:0	14:0/18:0
33:1			15:0/18:1	
33:0	15:0/18:0	15:0/18:0	15:0/18:0	
34:0	15:0/19:0	15:0/19:0	15:0/19:0	15:0/19:0
35:0	15:0/20:0	15:0/20:0	15:0/20:0	15:0/20:0
36:0		15:0/21:0		

Table S2. Analysis of FAME data from wildtype and *fakA* mutant grown in TSB with and without 0.001% and 0.01% oleic acid (OA). Data is from pooled replicates (n=4) from each strain and growth environment.

	Percentage of each compound					
	TSB		TSB + 0.001% OA		TSB + 0.01% OA	
	WT	<i>fakA</i>	WT	<i>fakA</i>	WT	<i>fakA</i>
iso 14:0	0.00	0.67	1.83	1.48	0.00	0.00
14:0	0.00	2.21	0.45	3.10	0.46	1.29
iso 15:0	10.48	10.26	10.85	10.23	2.69	2.52
anteiso 15:0	25.18	22.05	27.17	22.74	9.65	4.88
iso 16:0	1.81	2.29	2.01	2.58	0.32	0.77
16:0	3.01	3.98	2.83	4.63	0.80	1.79
iso 17:0	5.78	3.94	4.53	3.26	0.70	1.02
anteiso 17:0	8.18	8.21	6.54	6.11	1.40	2.33
iso 18:0	1.20	0.95	1.26	1.10	0.31	0.34
18:0	15.79	10.75	14.33	11.28	3.53	2.66
18:1	0.00	0.00	0.20	0.41	52.80	71.11
18:2 isomer	0.00	0.00	0.00	0.00	0.86	0.52
iso 19:0	4.30	3.59	3.66	3.01	3.50	1.80
anteiso 19:0	3.93	5.37	3.38	3.41	2.09	1.26
19:0	0.70	0.40	0.78	0.64	0.52	0.17
iso 20:0	0.42	0.63	0.57	0.79	0.19	0.28
20:0	18.26	22.71	18.14	23.43	5.97	6.92
20:1	0.00	0.00	0.00	0.00	12.14	0.00
iso 21:0	0.60	0.81	0.52	0.62	0.39	0.21
anteiso 21:0	0.36	0.86	0.43	0.50	0.27	0.14
22:0	0.00	0.32	0.20	0.39	0.00	0.00
22:1	0.00	0.00	0.00	0.00	1.41	0.00
% BCFA	62.25	59.64	62.74	55.81	21.51	15.55
% SCFA	37.75	40.36	36.93	43.88	77.63	83.94
BCFA/SCFA ratio	1.65	1.48	1.70	1.27	0.28	0.19
% Anteiso	37.66	36.50	37.52	32.75	13.41	8.61
% Iso	24.59	23.14	25.22	23.06	8.10	6.94
Anteiso/iso ratio	1.53	1.58	1.49	1.42	1.66	1.24