



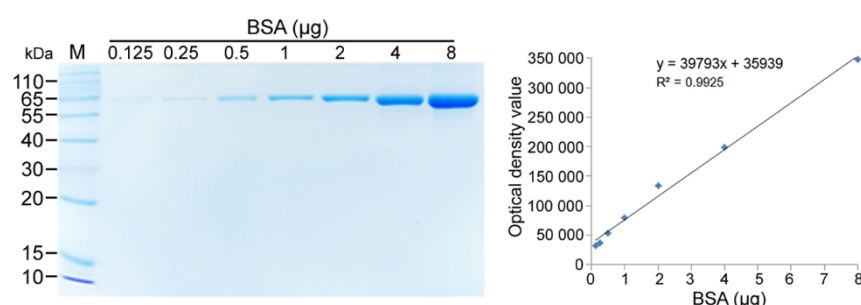
Article

# *Escherichia coli* Activate Extraintestinal Antibody Response and Provide Anti-infective Immunity

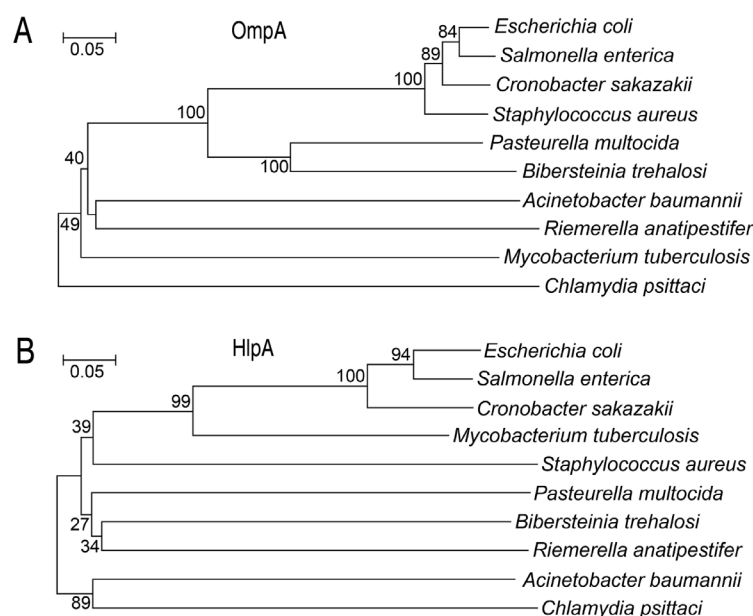
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**Figure S1.** SDS-PAGE analysis for different BAS concentrations as a standard protein concentration.



**Figure S2.** Construction of phylogenetic trees of OmpA and HlpA. A phylogenetic tree with bootstrap values based on the full-length protein sequences of OmpA (A) and HlpA (B). The tree was constructed using a neighbor-joining method.

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**Table S1.** Information of 69 OMPs of *E. coli* BW25113 (GenBank: CP009273.1).

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GenBank No.	Protein name	Gene name	MW (kDa)
AIN34438.1	Outer membrane lipoprotein	<i>blc</i>	18
AIN32568.1	Ferric iron outer membrane transporter	<i>cirA</i>	73.9
AIN31061.1	Putative transport	<i>cusC</i>	50.3
AIN30722.1	Copper homeostasis protein	<i>cutF</i>	25.8
AIN32752.1	Long-chain fatty acid transport protein	<i>fadL</i>	48.5
WP_202790439.1	Outer membrane usher protein	<i>faeD</i>	85
AIN34564.1	Citrate-dependent iron transport	<i>fecA</i>	85
AIN31074.1	Outer membrane receptor for ferric enterobactin	<i>fepA</i>	82.1
AIN30680.1	Outer membrane protein receptor for ferrichrome	<i>fhuA</i>	82.2
AIN31565.1	Outer membrane receptor for ferric iron uptake	<i>fhuE</i>	38
AIN34591.1	Export and assembly of type 1 fimbriae	<i>fimD</i>	96.5
AIN31542.1	Flagellar biosynthesis protein	<i>flgH</i>	24.6
AIN32418.1	Phase-variable bipartite outer membrane fluffing protein	<i>flu</i>	107
AIN30707.1	Periplasmic molecular chaperone for outer membrane proteins	<i>hlpA</i>	15.8
AIN33723.1	Putative transport portein	<i>hofQ</i>	44.7
AIN30669.1	Probable outer membrane porin protein involved in fimbrial assembly	<i>htrE</i>	95.5
AIN34323.1	Phage lambda receptor protein	<i>lamB</i>	49.9
AIN31667.1	Lipoprotein localization factor	<i>lolB</i>	21
AIN32115.1	Murein sacculus, peptidoglycan	<i>lpp</i>	8.3
AIN34367.1	Outer membrane factor of efflux pump	<i>mdtP</i>	53
AIN32219.1	Scaffolding protein for murein synthesizing machinery	<i>mipA</i>	27.8
AIN33188.1	Membrane-bound lytic murein transglycosylase A	<i>mltA</i>	40.4
AIN33076.1	Membrane-bound lytic murein transglycosylase B	<i>mltB</i>	40.2
AIN34585.1	N-acetylnuraminic acid outer membrane channel protein	<i>nanC</i>	27.9
AIN31057.1	Bacteriophage N4 receptor protein	<i>nfrA</i>	111
AIN32878.1	BamABCDE complex OM biogenesis lipoprotein	<i>nlpB</i>	36.8
M13457.1	5' IS5 insertion target sequence	<i>nmpC</i>	40.3
AIN31425.1	outer membrane protein A	<i>ompA</i>	37.2
AIN32626.1	outer membrane protein C	<i>ompC</i>	40
AIN31397.1	outer membrane protein F	<i>ompF</i>	39.3
AIN31779.1	outer membrane protein G	<i>ompG</i>	34.9
AIN31830.1	outer membrane protein N	<i>ompN</i>	41.2
TXR28241.1	outer membrane protein P	<i>ompP</i>	35
AIN31054.1	outer membrane protein T	<i>ompT</i>	35.7
AIN31713.1	outer membrane protein W	<i>ompW</i>	22.9
AIN31283.1	outer membrane protein X	<i>ompX</i>	18.6
AIN30591.1	LPS assembly OM complex LptDE, beta-barrel component	<i>ostA</i>	89.6
AIN31217.1	peptidoglycan-associated outer membrane lipoprotein	<i>paL</i>	19
AIN30760.1	Outer membrane phosphoporin protein E	<i>phoE</i>	38.9
AIN34131.1	Outer membrane phospholipase A	<i>pldA</i>	33
AIN31047.1	Putative lipoprotein, phage or prophage Related	<i>rzoD</i>	6.7
AIN33832.1	Outer membrane lipoprotein	<i>slp</i>	20.9
AIN32080.1	Outer membrane lipoprotein	<i>slyB</i>	15.6
AIN33386.1	Cell division, transport channel	<i>tolC</i>	53.7

AIN30910.1	Receptor of phage T6 and colicin K	<i>tsX</i>	33.6
AIN32754.1	Lipoprotein precursor	<i>vacJ</i>	27
AIN32480.1	Putative polysaccharide export protein	<i>wzA</i>	40
AIN30706.1	BamABCDE complex OM biogenesis outer membrane pore-forming assembly factor	<i>yaeT</i>	90.6
AIN31194.1	Putative outer membrane protein	<i>ybgQ</i>	39.8
AIN31241.1	Acyl-CoA thioesterase, lipoprotein	<i>ybhC</i>	46.3
AIN31274.1	Catecholate siderophore receptor	<i>ybiL</i>	81.96
AIN31334.1	Putative lipoprotein	<i>ybjP</i>	18.99
AIN31408.1	Putative outer membrane fimbrial subunit export usher protein	<i>ycbS</i>	95.2
AIN31451.1	Putative O-antigen capsule outer membrane auxillary protein export channel	<i>yccZ</i>	41
VWQ02925.1	Eyelet of channel	<i>yedS</i>	43
AIN32525.1	Putative outer membrane protein	<i>yehB</i>	92.3
AAA16385.1	Pertactin-like passenger domains	<i>yejo</i>	91.2
1450268	Outer membrane lipoprotein	<i>yfcU</i>	97.5
AIN32913.1	BamABCDE complex OM biogenesis lipoprotein	<i>yfgL</i>	41.9
AIN32994.1	OM biogenesis lipoprotein	<i>yfiO</i>	27.8
AIN33559.1	Putative outer membrane fimbrial subunit usher protein	<i>yhcD</i>	86.3
AIN33911.1	Putative outer membrane protein	<i>yiaT</i>	27.4
AIN34045.1	Carbohydrate-specific outer membrane porin	<i>yieC</i>	60.7
AAA60501.1	Multidrug resistance outer membrane protein	<i>yohG</i>	43
AAA60502	Multidrug resistance outer membrane protein	<i>yohH</i>	10.4
AIN33040.1	Putative ATP-binding component of a transport system	<i>ypjA</i>	157.5
AIN33366.1	Outer membrane lipoprotein	<i>yqhH</i>	9.5
CAD5996707.1	Outer membrane usher protein	<i>yqiG</i>	90
AIN33488.1	Putative outer membrane protein	<i>yraJ</i>	93

Table S2. Percentage of immunoglobulins bound with *E. coli* in serum immunoglobulin using the standard curve.

	Binding (IgM--Heavy chain) (µg)	Binding (IgG-Heavy chain) (µg)	Binding (Light chain) (µg)	Total binding (µg)	Serum anti- body (µg)	Binding rate (%)
a	7.365	7.154	2.81	34.656	57600	0.06
b	5.659	5.647	2.421	27.493	43200	0.064
c	2.987	2.89	1.418	14.591	28800	0.051
d	1.5	1.484	0.761	7.491	14400	0.052
Average	4.378	4.294	1.853	21.058	36000.000	0.057