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**Isolation and Characterisation of
Proteins from
Streptococcus pneumoniae
For Determination of Vaccine Potential**

By
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A thesis submitted of the requirements
for the Doctor of Philosophy
at the University of Canberra

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To mum and dad

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Abbreviations

Ac	Acetate
BAL	Bronchoalveolar lavage
BALT	Bronchus associated lymphoid tissue
BSA	Bovine Serum Albumin
Cbp	Choline binding protein
CbpA	Choline binding protein A
CFU	Colony forming units
ConA	Concanavalin A
DNTP	Dinucleotide peptides
DTT	Dithiothreitol
EDTA	Elthylenediaminetetraacetic acid
ELISA	Enzyme linked immunosorbent assay
GALT	Gut-associated lymphoid tissue
GAPDH	Glyceraldehyde-3-phosphate dehydrogenase
GIT	Gastrointestinal tract
IFA	Incomplete Freund's adjuvant
IgA	Immunoglobulin A
IgG	Immunoglobulin G
IPP	Intra-Peyer's patch
IPTG	Isopropyl-B-D-thiogalactopyranoside
IT	Intra-tracheal
HIC	H-binding inhibitor of complement
kDa	Kilodaltons
LB	Luria-Bertoni
LytA	Autolysin
M cells	Microfold cells
MALT	Mucosal associated lymphoid tissue
MHC	Major histocompatibility complex
MØ	Macrophage
NALT	Nasal associated lymphoid tissue
NTHi	Nontypeable <i>Haemophilus influenzae</i>
OD	Optical density
PAGE	Polyacrylamide gel electrophoresis
PBS	Phosphate buffered saline
PCM	Protein from Serum free Conditioned medium
PCR	Polymerase Chain Reaction
PiaA	Pneumococcal iron acquisition
PiuA	Pneumococcal iron uptake
PMN	Polymorphonuclear leukocyte
PP	Peyer's patches
PsaA	Pneumococcal surface antigen A
PSF	Penicillin, Streptomycin, Fungizone
PspA	Pneumococcal surface protein A
PspC	Pneumococcal surface protein C
PAF	Platelet activating factor
QBT	Equilibration buffer
RPMI	Royal Park Memorial Institute medium
SC	Subcutaneous delivery
SDS-PAGE	Sodium dodecyl sulfate-polyacrylamide gel electrophoresis
SEM	Standard error of the mean

sIgA	Secretory IgA
SPF	Specific Pathogen Free
SpsA	<i>S. pneumoniae</i> secretory IgA binding protein
SpUC11	Pneumococcal 11kDa protein
SpUC14	Pneumococcal 14kDa protein
SSC	Sodium chloride, Sodium acetate
TAE	Tris-acetate elthylenediaminetetraacetic acid
TBS	Tris buffered saline
Th ₂	T-helper 2
TE	Tris elthylenediaminetetraacetic acid
TNF	Tumour necrosis factor
TTBS	Tween 20 in Tris buffered saline
WBC	White Blood Cell
WKC	Whole killed cell

Publications arising from thesis

Patent

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