

# For improved pertussis vaccines a more detailed understanding of vaccine-induced immunity is required

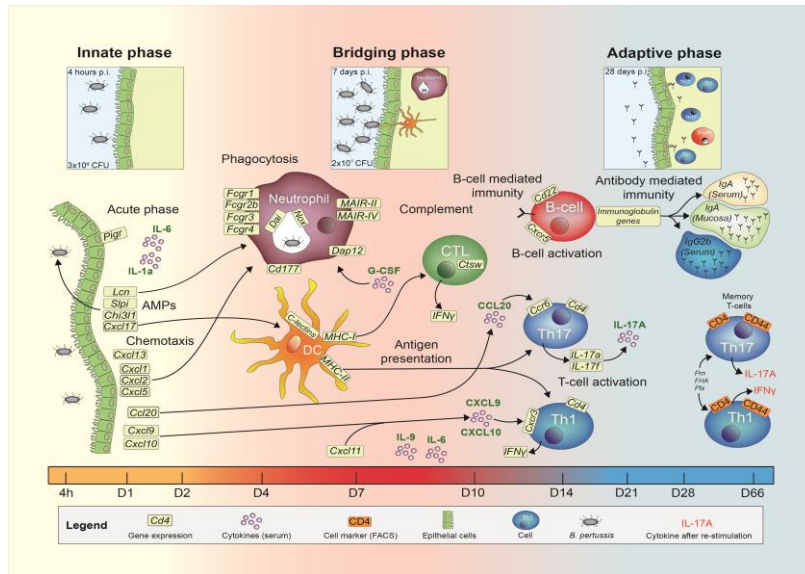
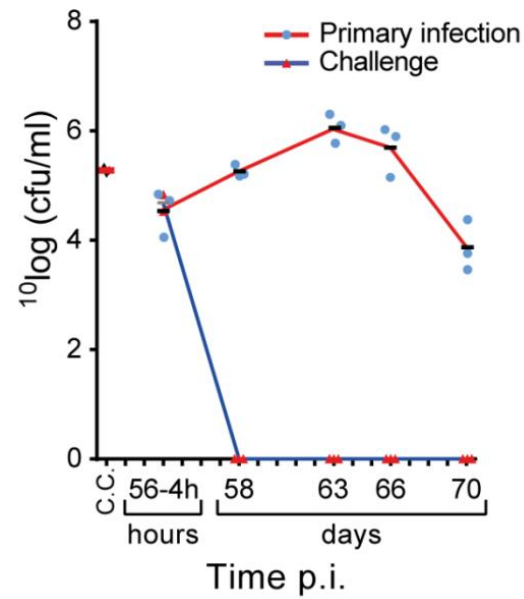
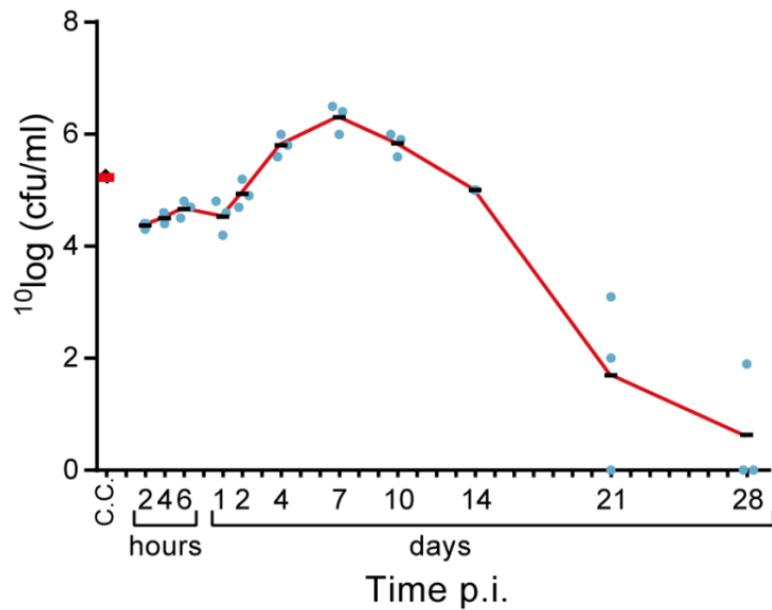
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 PLOS ONE

## Molecular Signatures of the Evolving Immune Response in Mice following a *Bordetella pertussis* Infection

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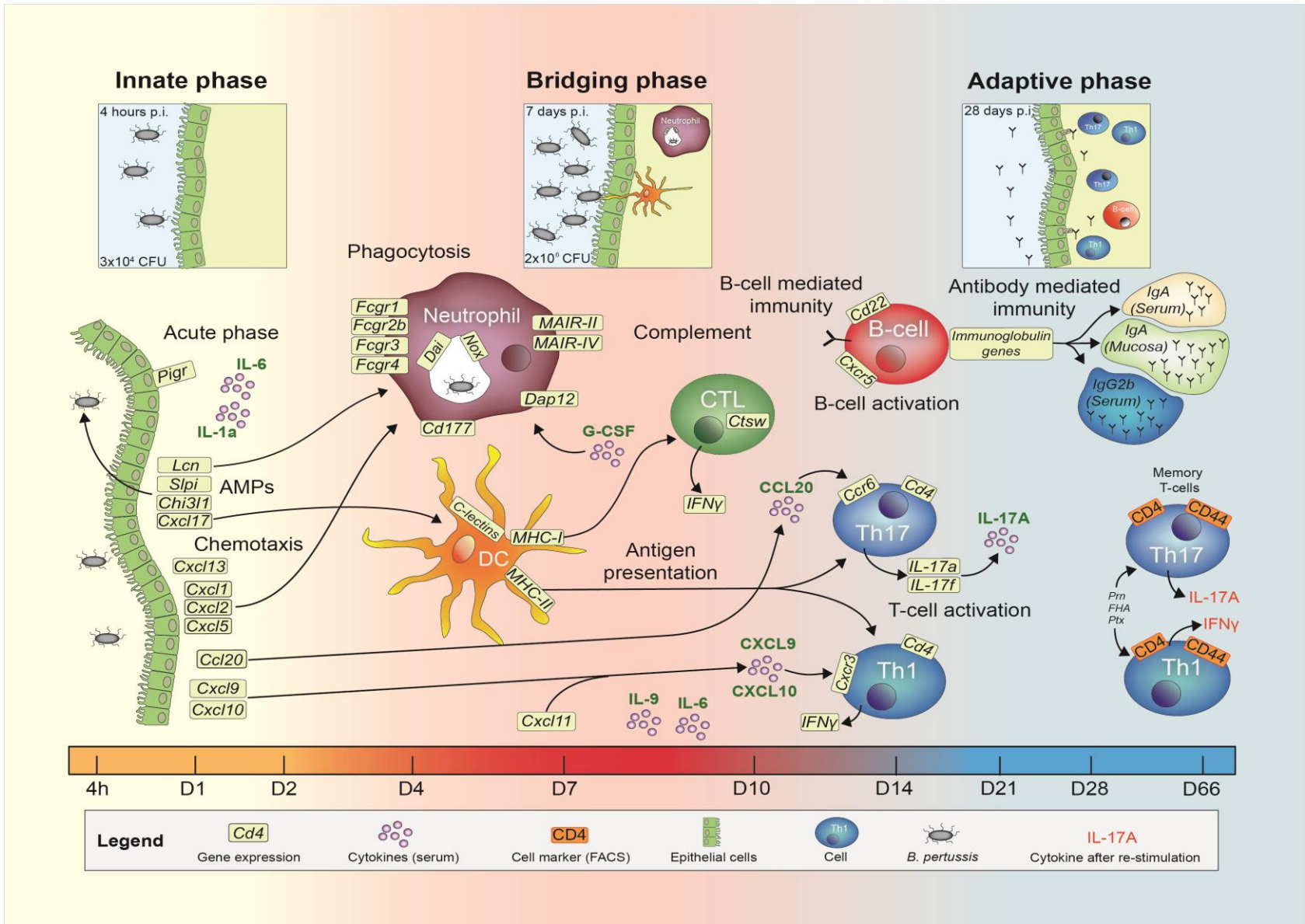
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Sterilizing immunity

Different layers:  
 Transcriptomics  
 Proteomics  
 Cellular response  
 CFU

Kinetics



# Which antigens should be presented?

and...

# In what kind of package should they be wrapped?

## Immunoproteomic Profiling of *Bordetella pertussis* Outer Membrane Vesicle Vaccine Reveals Broad and Balanced Humoral Immunogenicity

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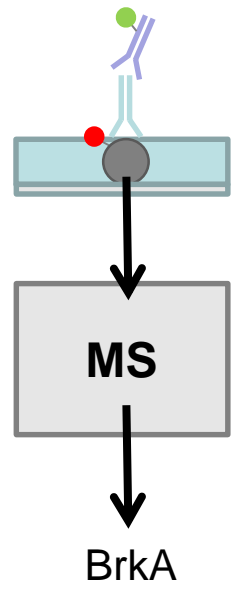
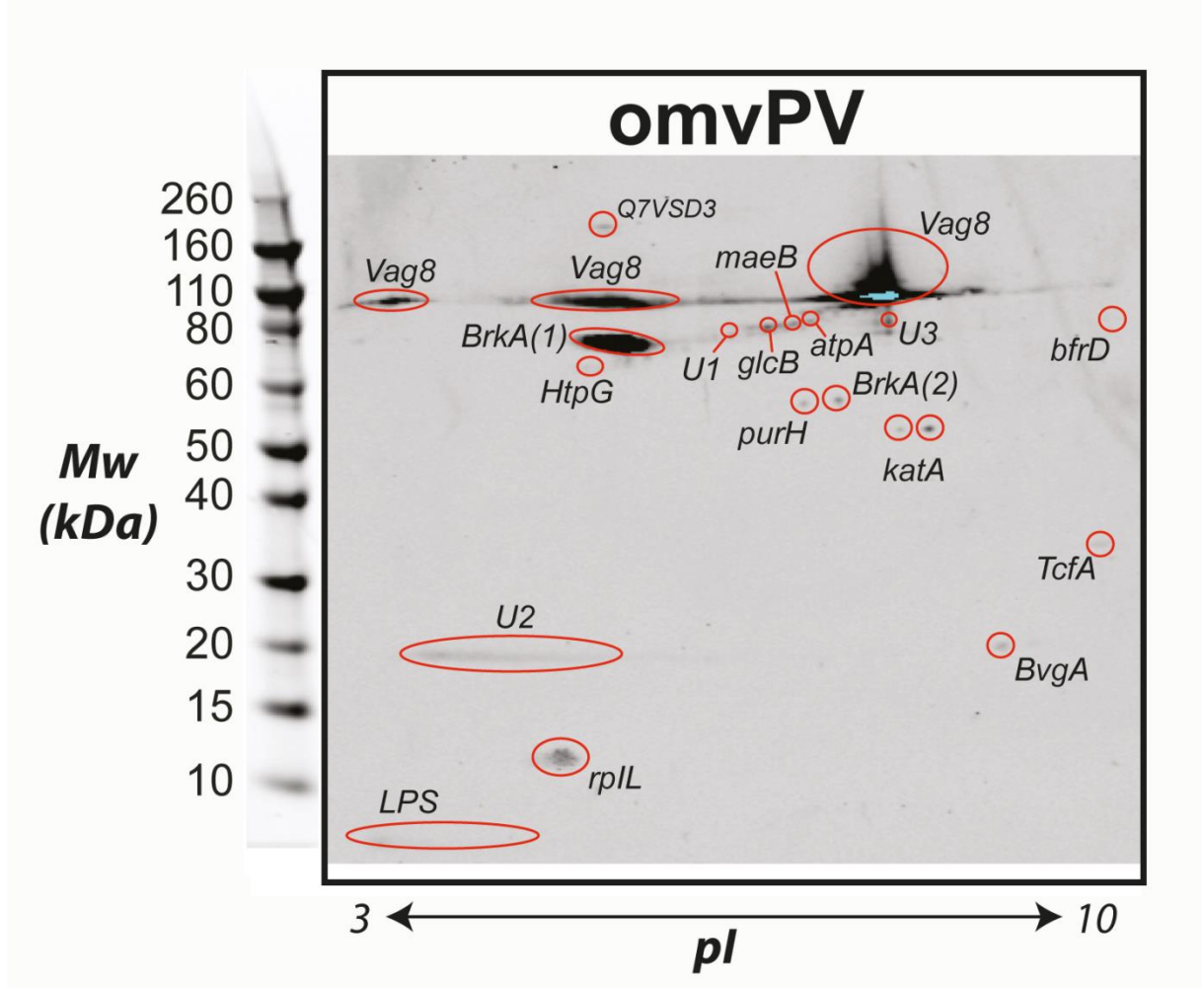
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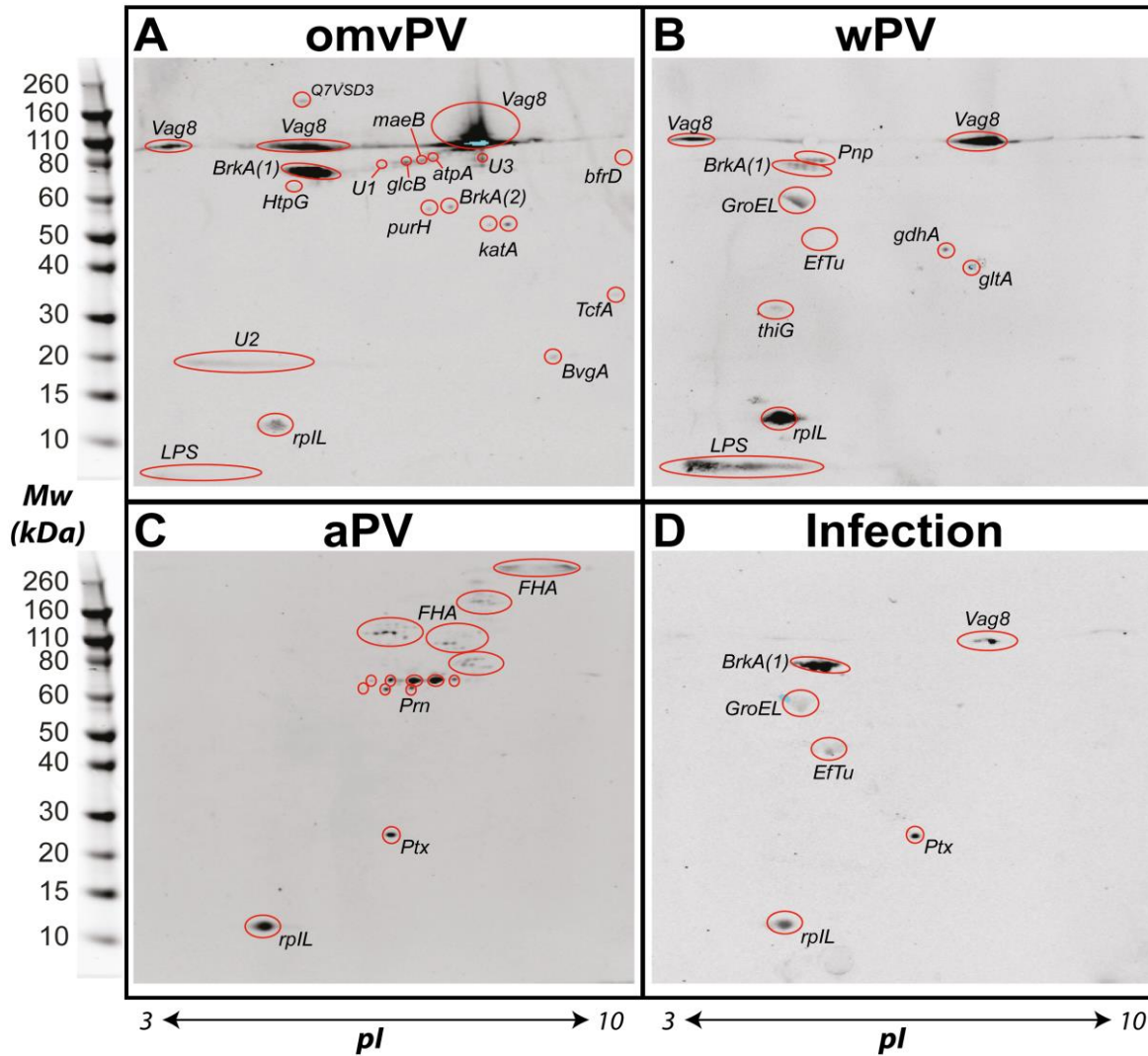
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# 2D-immunoblotting



# Antigen specificity



	# Abs
omvPV	16
wPV	9
aPV	3
Infection	5

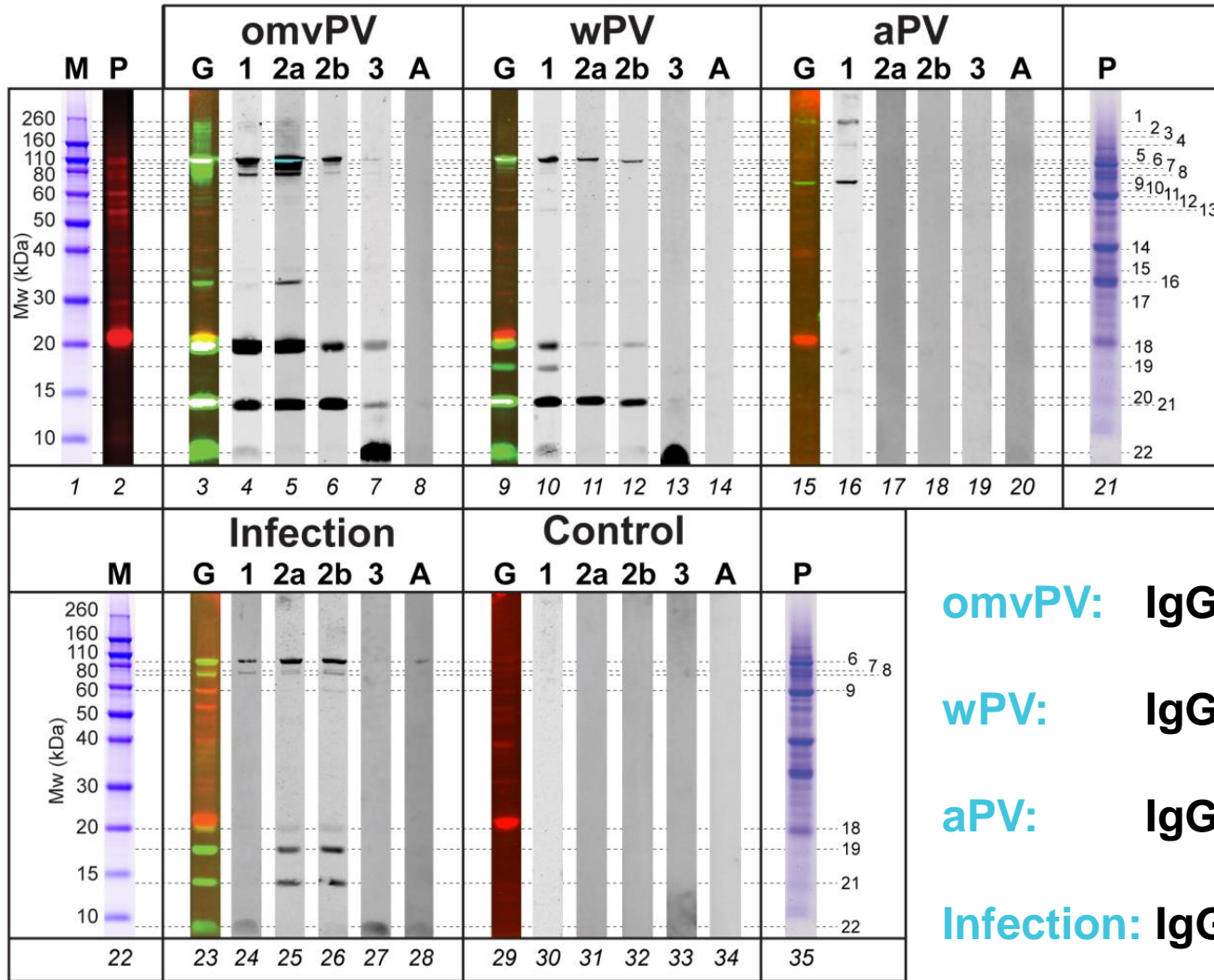
# Antibody profiles



Protein concentration LC-MS

IgG (n=3), subclasses and IgA (n=1), warping with Delta2D software

# Isotype and subclass distribution



- omvPV:** IgG1/2a/2b/3 (multiple)
- wPV:** IgG1/2a/2b (multiple)
- aPV:** IgG1 (3 antigens)
- Infection:** IgG2a/2b (multiple)



# Lung response

## Transcriptomics:

558 genes

- Up (red): 446
- Down (green): 112

## Functional analysis:

- GO-BP terms
- KEGG pathways

## Result:

Chronological cascade of immunological process

$p \leq 0.001$ ;  $FR \geq 1.5$

