



CRC

for

Premium

Quality

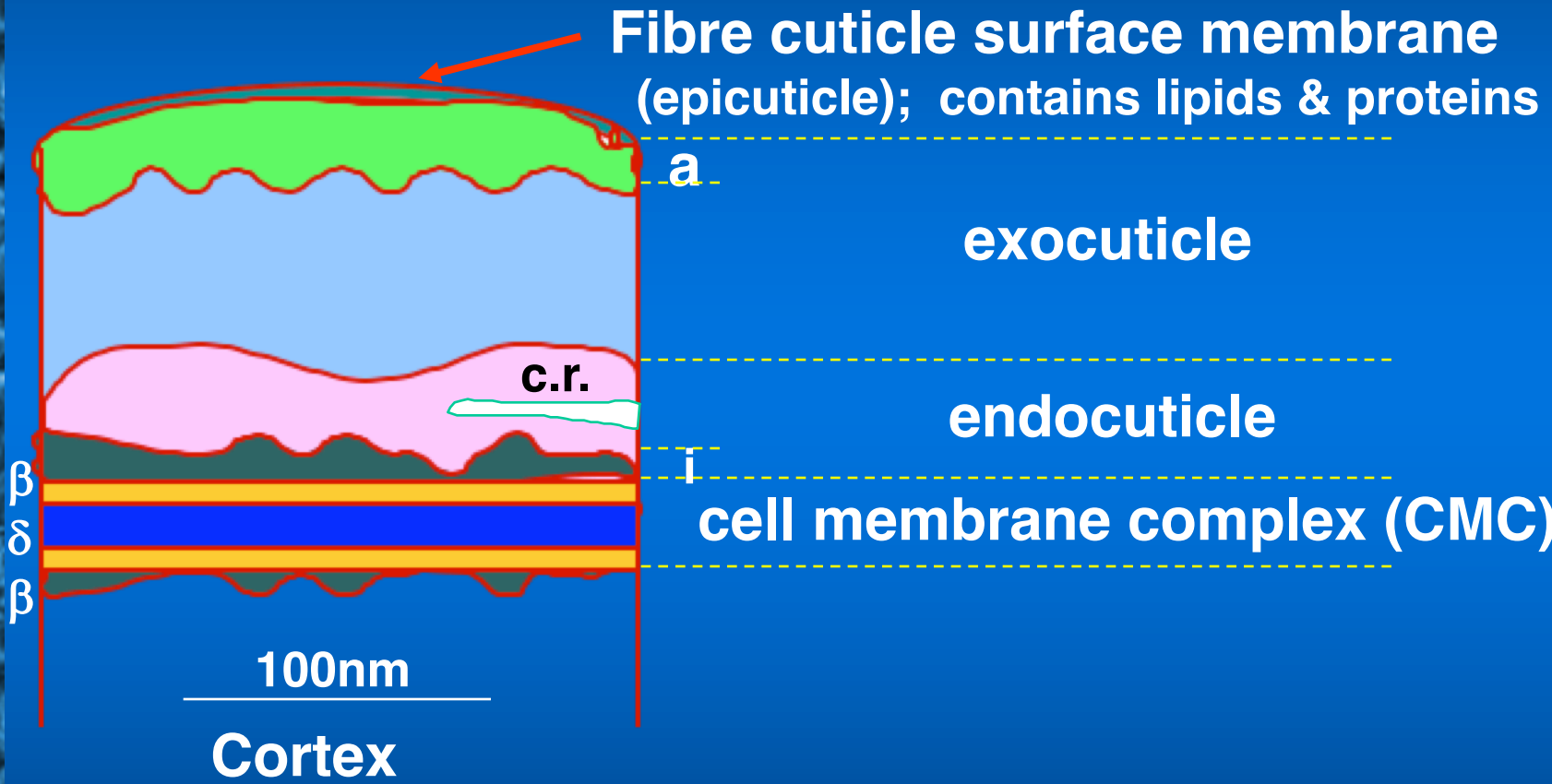
Wool

Detailed Fibre Cuticle Structure

Produced for the CRC for Premium Quality Wool undergraduate program by;
Dr. Les Jones, CSIRO Textile & Fibre Technology.



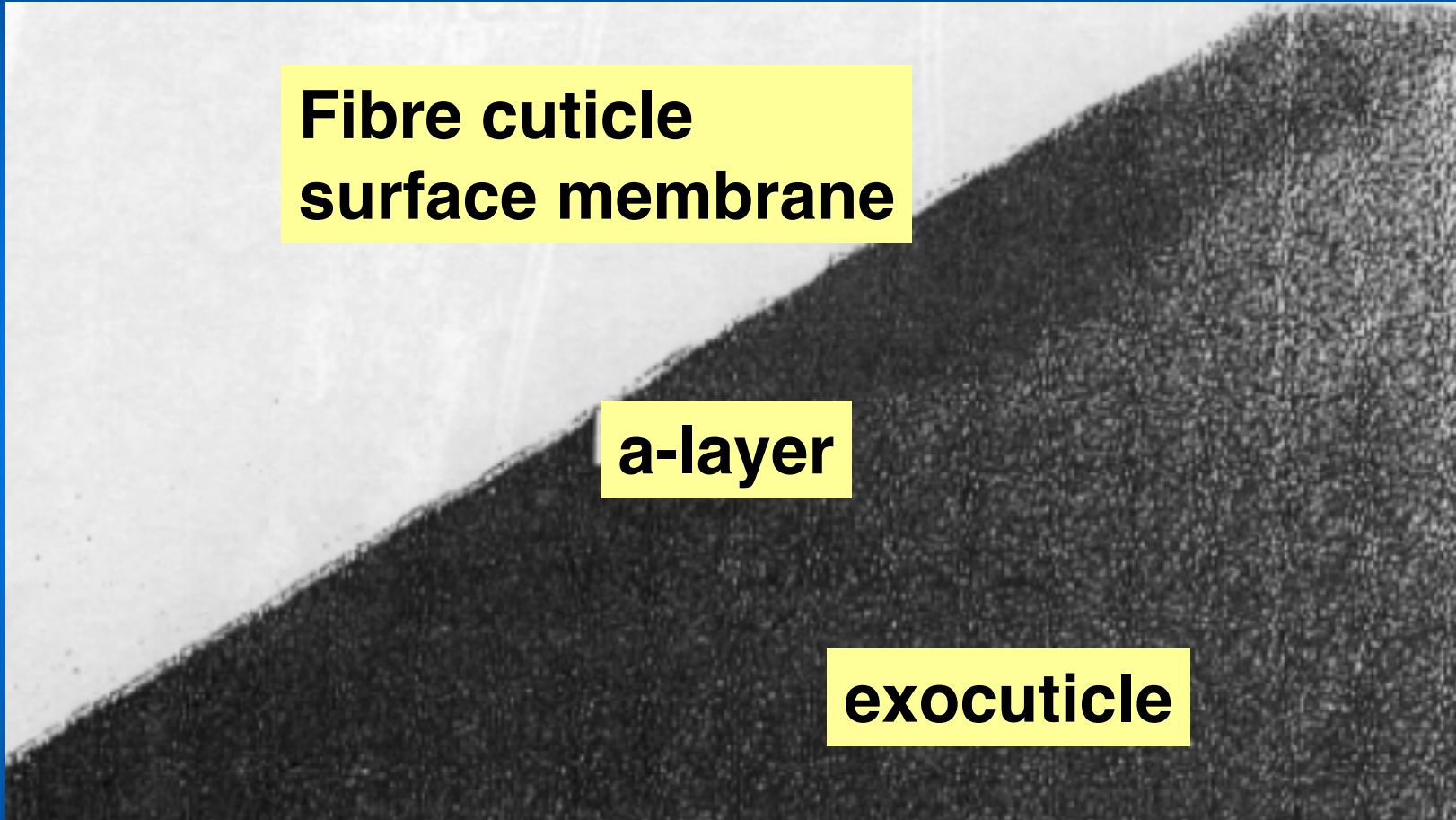
Fibre cuticle cell



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Fibre cuticle cell surface



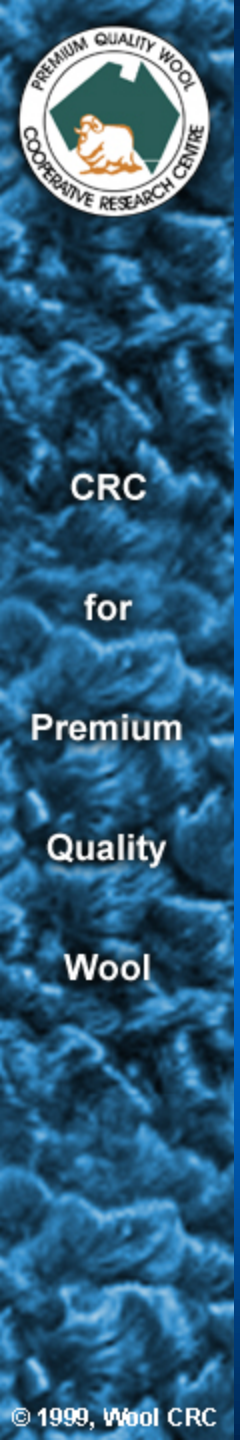
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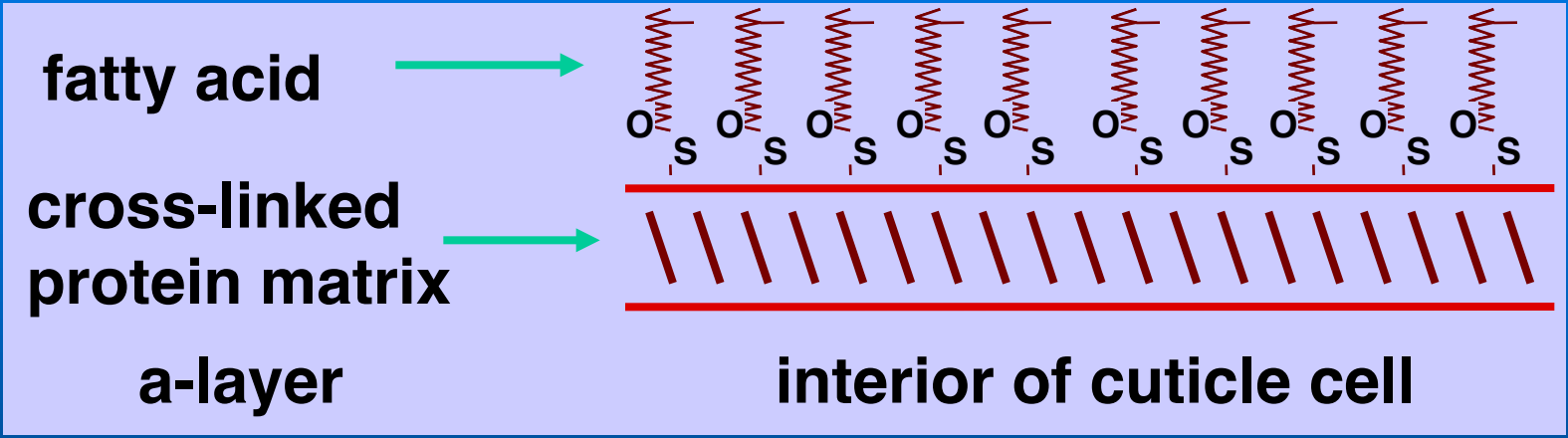
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Fibre cuticle surface membrane (FCUSM)

- composed of lipids and protein matrix
 - major fatty acid - 18-methyl eicosanoic acid (C_{21a})
 - protein associated with C_{21a} contains citrulline
 - iso-peptide bonds contributes to high stability of membrane





Proteinaceous barriers

- **a-layer (30-40nm) forms outer band**
 - intensely stained laminations beneath the surface lipid/protein bands
 - high content of cystine residues
 - network of disulfide bonds to produce barrier
- **remaining exocuticle less well stained**

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Endocuticle

- contains cellular remnants
- low cross-linking
- derived from cuticle cytoplasm organelles

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Cell membrane complex (CMC)

- between overlapping fibre cuticle cells
- consists of 3 layers
 - two β layers
 - (5nm; non staining)
 - one δ layer
 - (15nm; dark staining)
- sometimes an intracellular layer (*i*) is considered part of the CMC

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