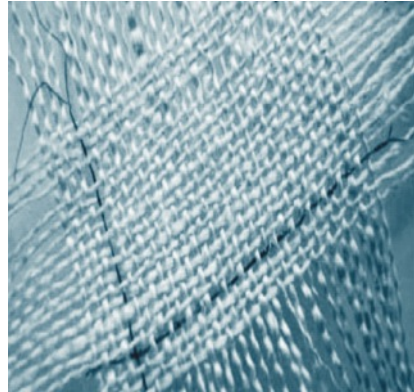
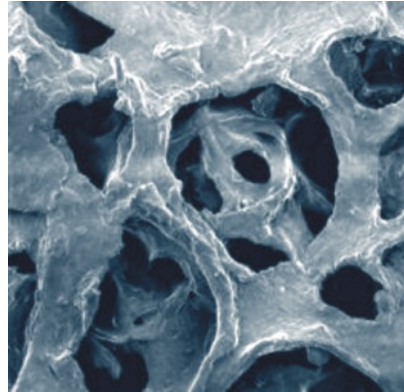


Spinning CNT



Conductive Thread



Tissue Scaffold



Sheep to Suit

Navigating a future for wool in a changing world

Nigel Johnson
CSIRO

R & D IS TO BLAME!

Innovation Pressure

Performance

High End

Consumer
Expectation

Low End

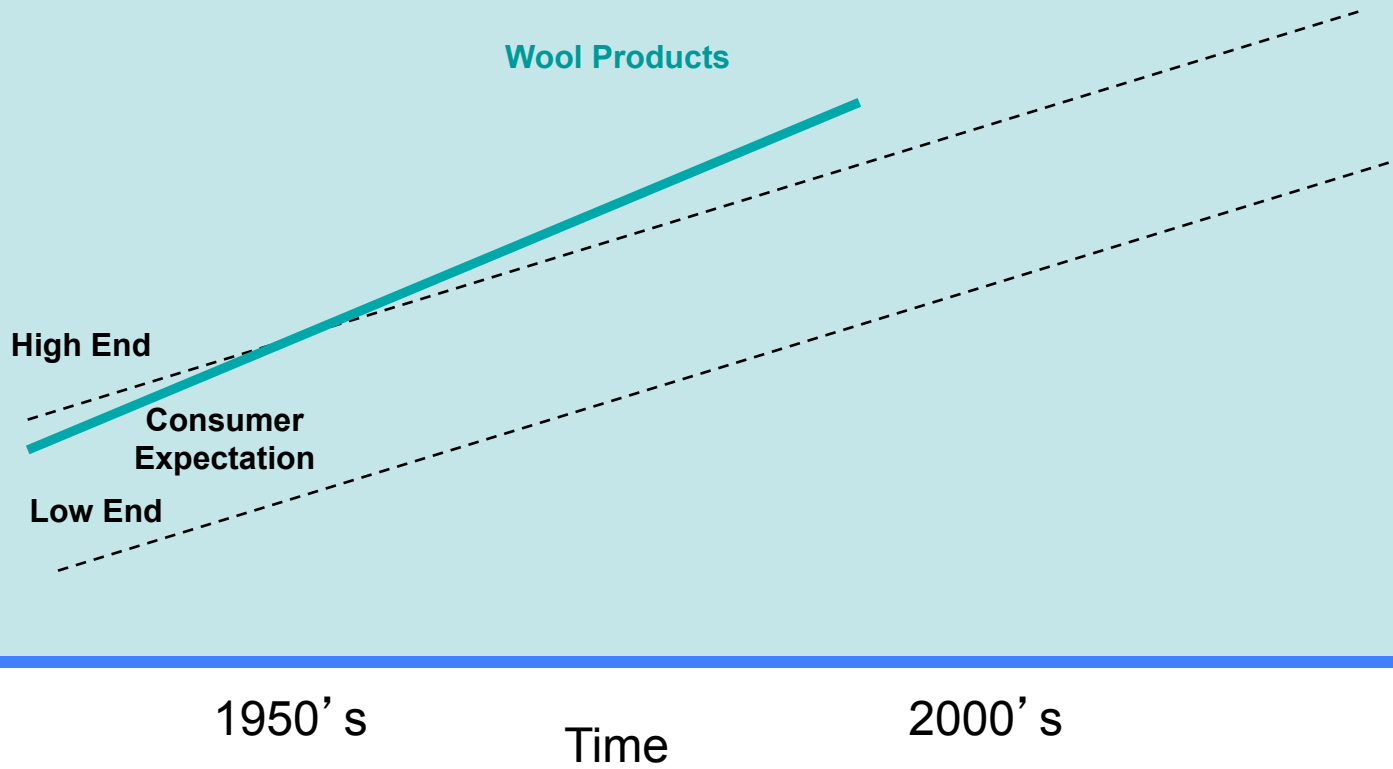
1950' s

Time

2000' s

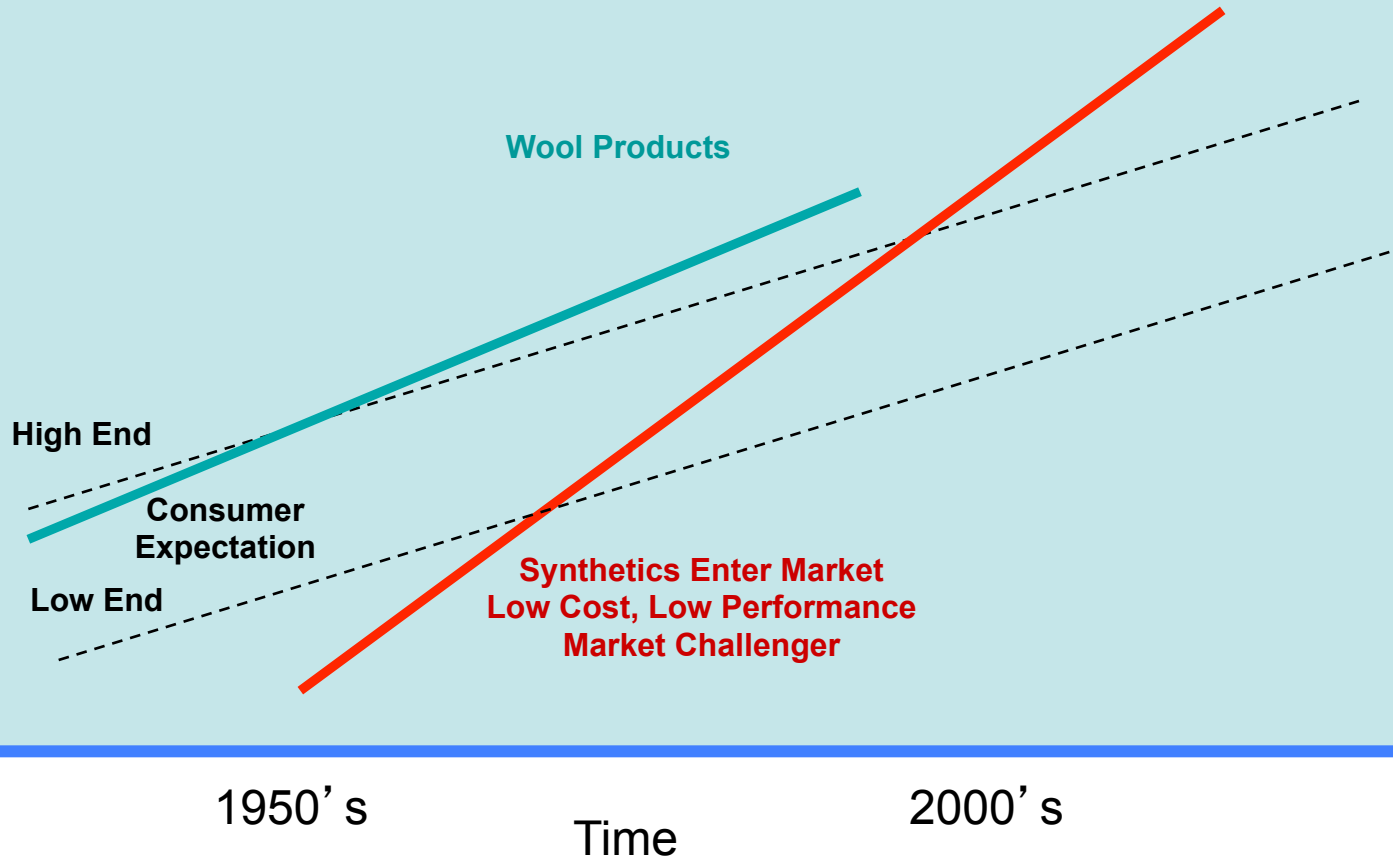
Innovation Pressure

Performance



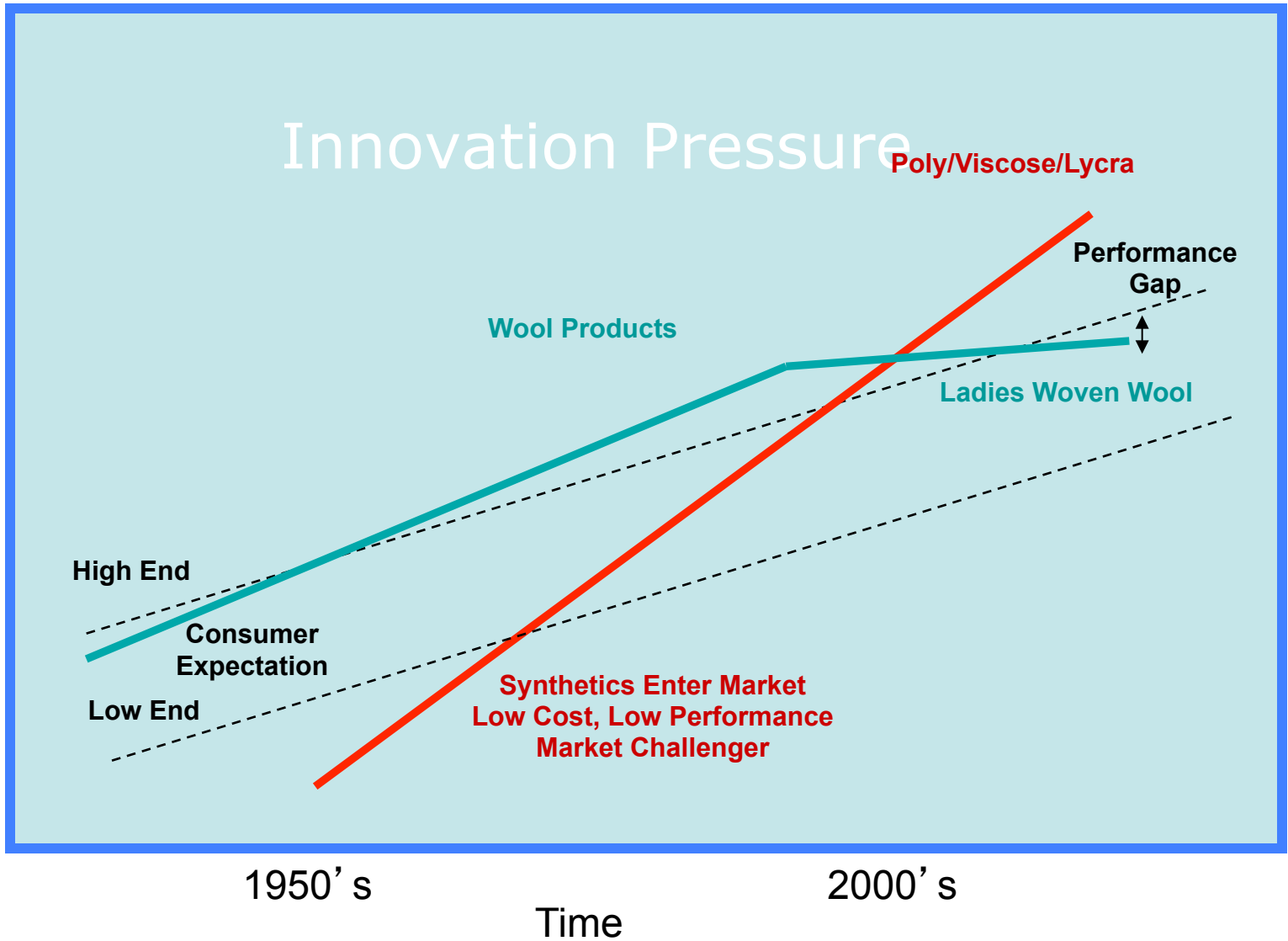
Innovation Pressure

Performance



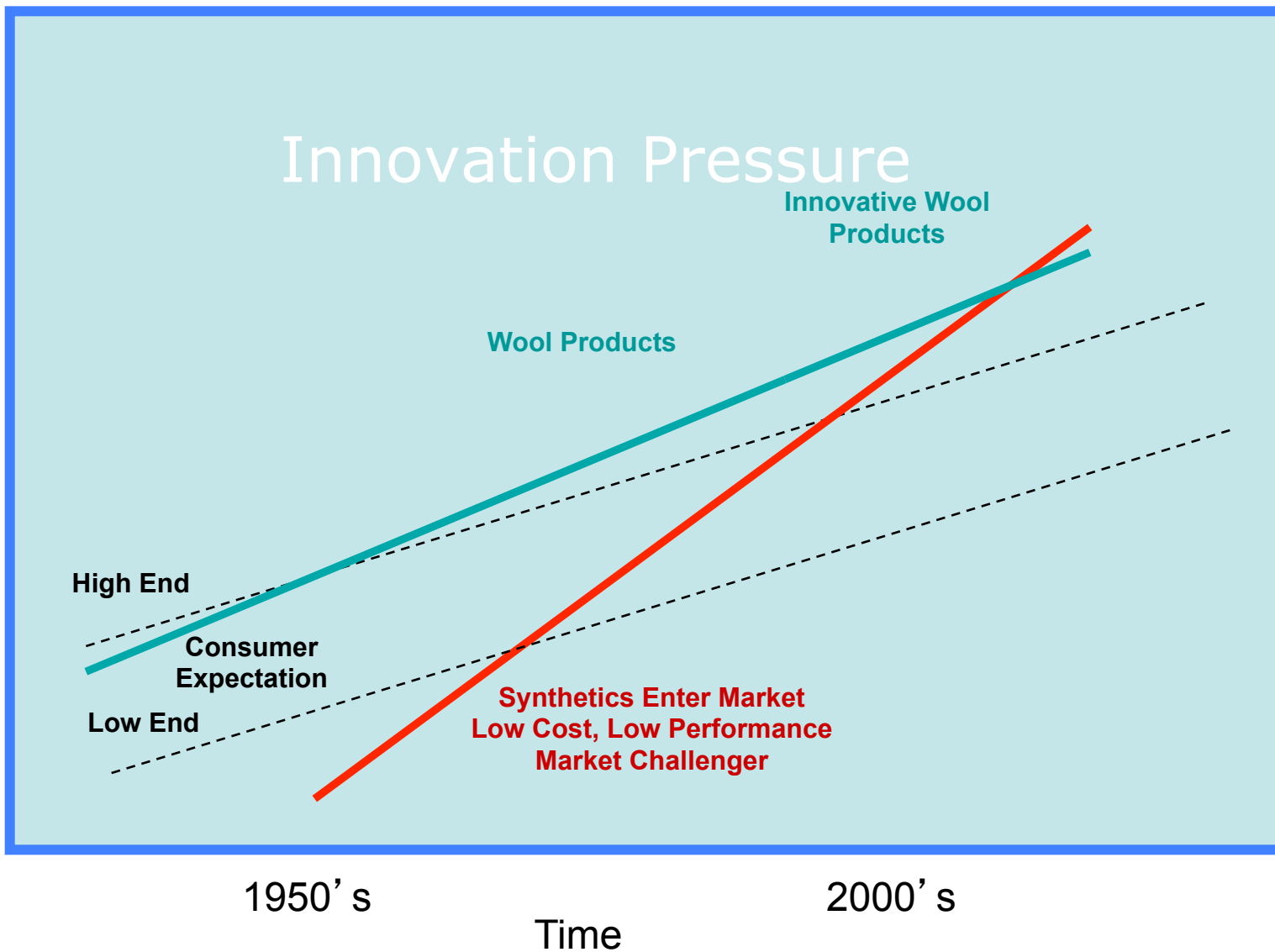
Innovation Pressure

Performance



Innovation Pressure

Performance

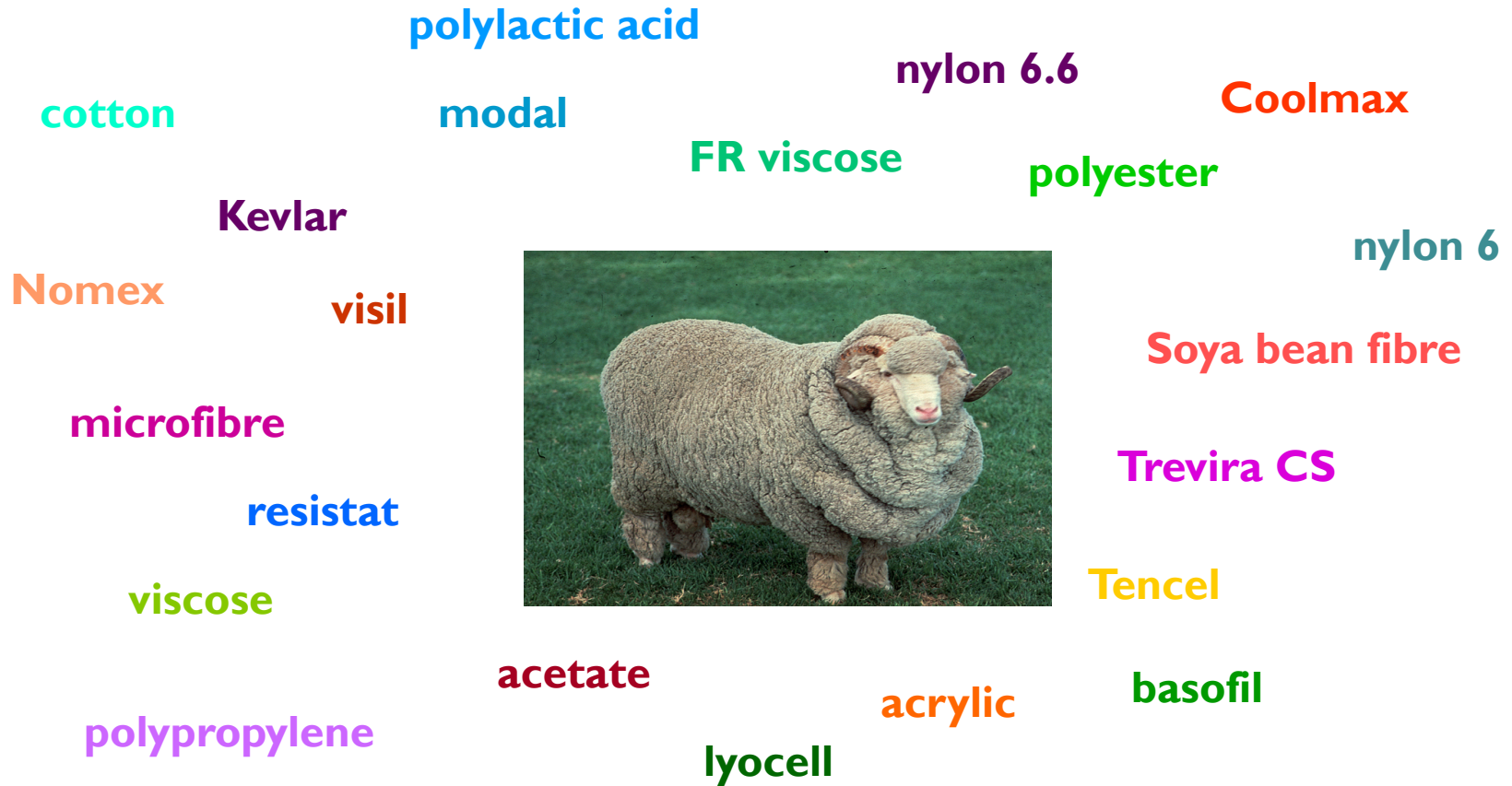


1950' s

Time

2000' s

Competition driven by science



Other 20th Century innovations that have damaged the wool industry



**Washing
Machines**

**Tumble
dryers**



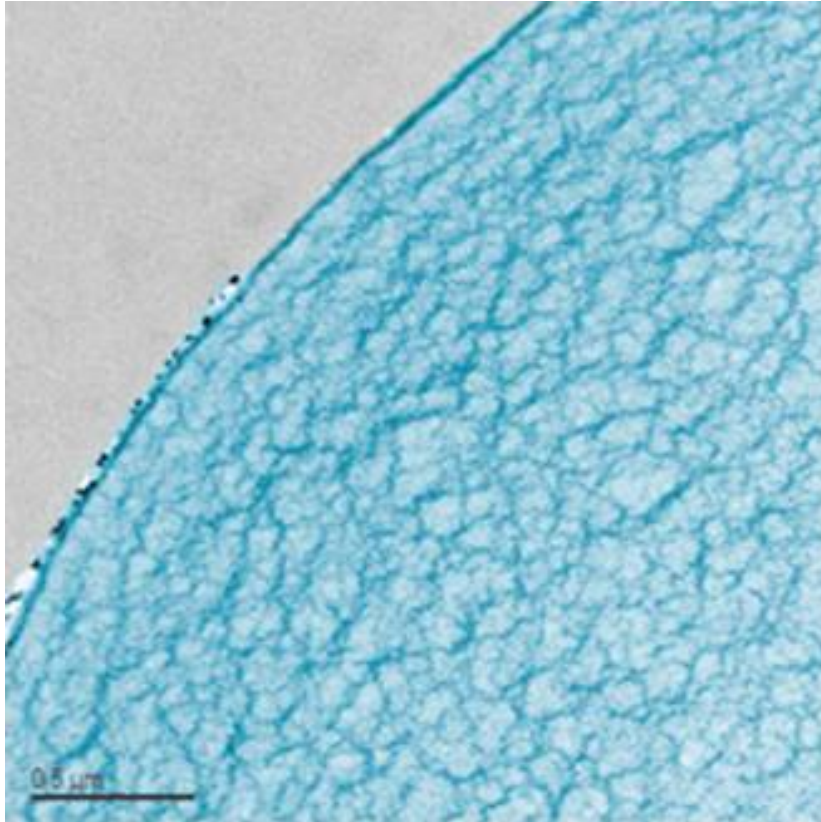
**Climate
Control**



**“Breathables” and
Polarfleece**

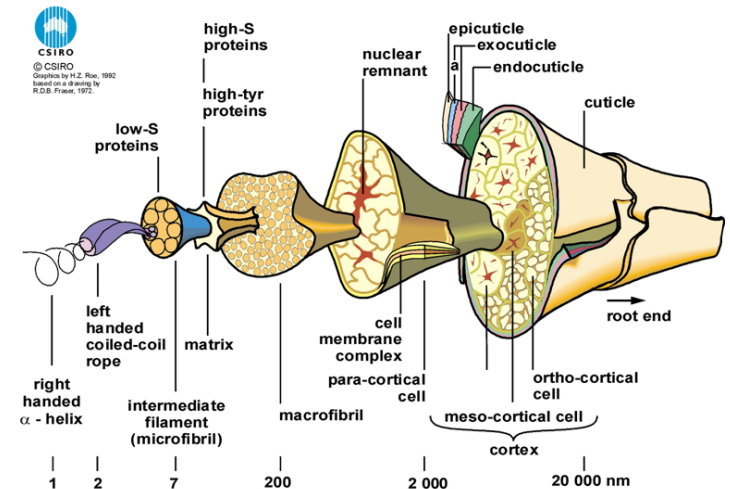


Wool's new competitors from R & D - Active TENCEL



Source: www.lenzig.com

Nano-fibril structure



Wool's new competitors from R & D – New cotton products

Cotton jackets and jumpers



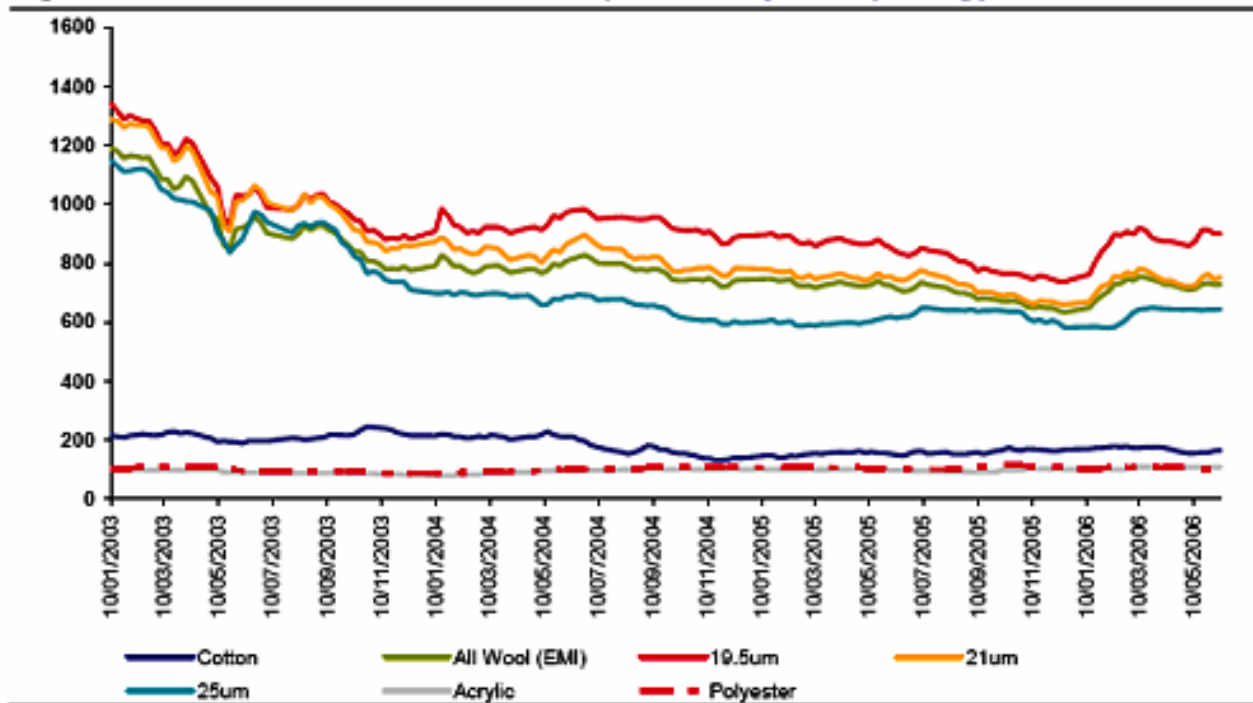
Source: www.labelsfree.com



Source: www.phildar.com

Wool still getting 3x to 4x the price of competitors

Figure 5 Price of wool, cotton and synthetics (cents per kg)



Note: Acrylic and polyester prices are indexed prices only

Note: EMI - Eastern Market Indicator

Data source: Woolmark

Wool research fights back

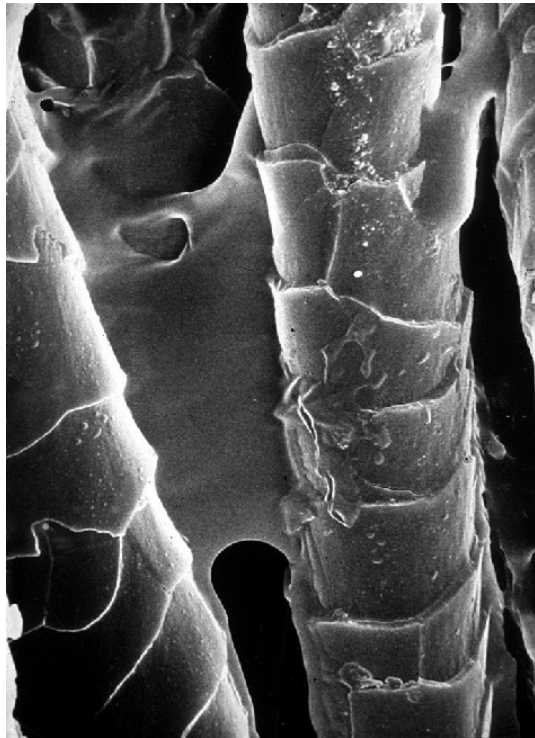


CSIRO Wool Research in Geelong

1960s

Shrink Proofing

Catch up with machine washability



Setting and Permanent press

Catch up with fashions for pleat and crease



Sale by Sample (1970s) – enabled by science



Catch up
with
engineered,
specified,
fibres