Antibody Engineering: Antibodies as Diagnostics and Therapeutics

Using biomolecular engineering to manufacture proteins such as antibodies that may be useful in targeting cancer or building diagnostics for an early detection of inflammation. Once an antibody has been fully characterised and is taken for further development, the gene can be sequenced and humanised so that it does not cause allergic reactions in the body.

More Information

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Competitive advantage

- Antibodies are species-specific in their binding and target specific antigens in the extracellular matrix. They have variable carbohydrate structures attached that affect binding
- Detailed knowledge of all of the possible different types of carbohydrates attached to antibodies; required by the Food and Drug Administration and Therapeutic Goods Administration before they can proceed to clinical trial
- In-house patented expression technology to express proteins in human cell systems

Impact

- Antibodies are a major component of many diagnostic kits in the marketplace and are used for immunotherapies and cell targeting
- Developed a human bioengineered form of heparin using biomolecular engineering technology to produce the drug under a laboratory environment that will be cleaner, safer and have better and more predictable activity in the clinic

Successful outcomes

- Antibodies licensed non-exclusively to Merck Millipore and other companies for use as research reagents.

Capabilities and facilities

- The tissue culture and bioreactor facilities are available to engineer and manufacture antibodies in the laboratory
- State-of-the-art chemical analytical tools such as mass spectrometry and nuclear magnetic resonance together with more traditional biochemical and immunochemical methodology

Our partners

- Merck Millipore
- Neuclone
- CSIRO