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Understanding MOG and AQP-4 Antibody Testing

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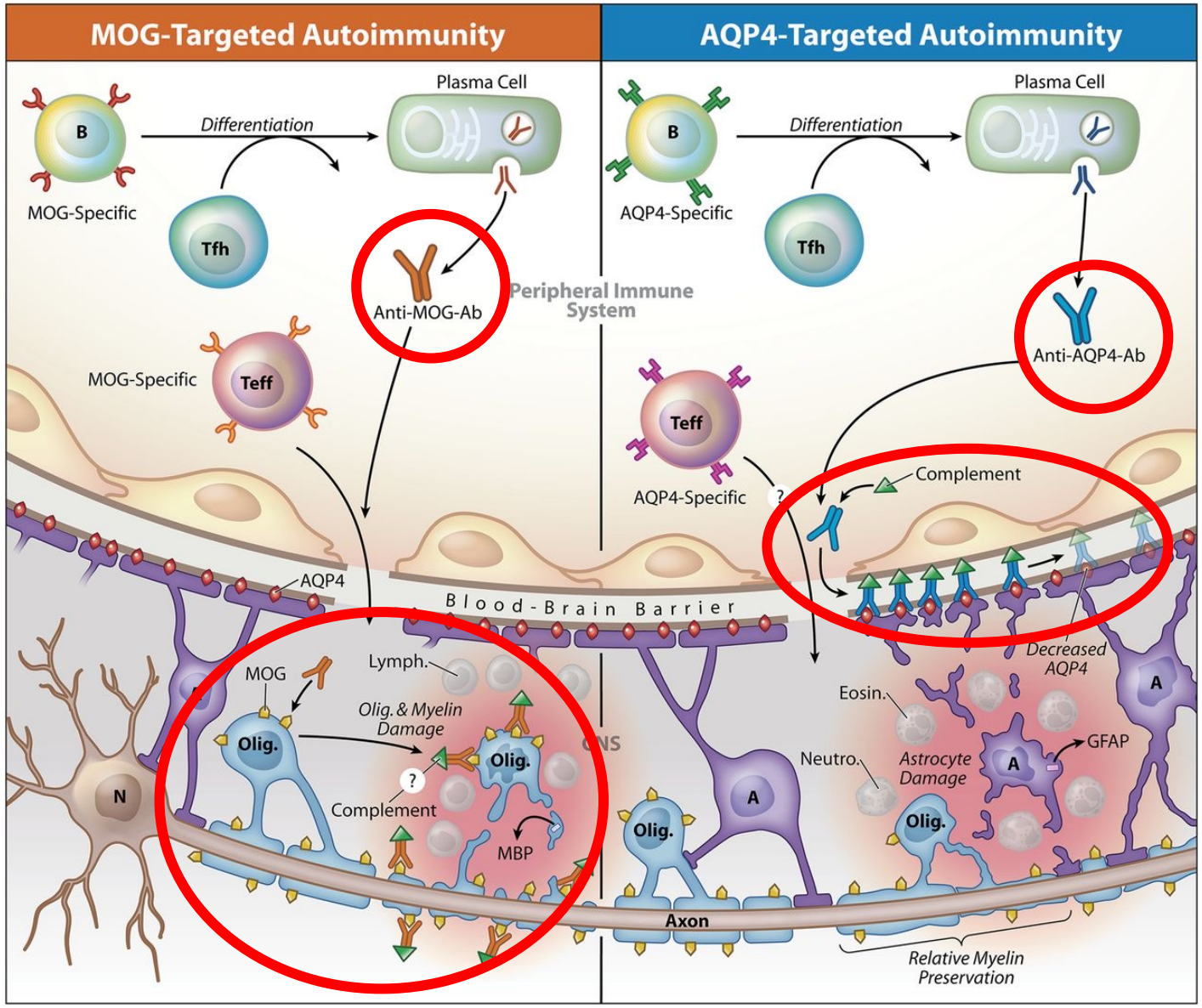
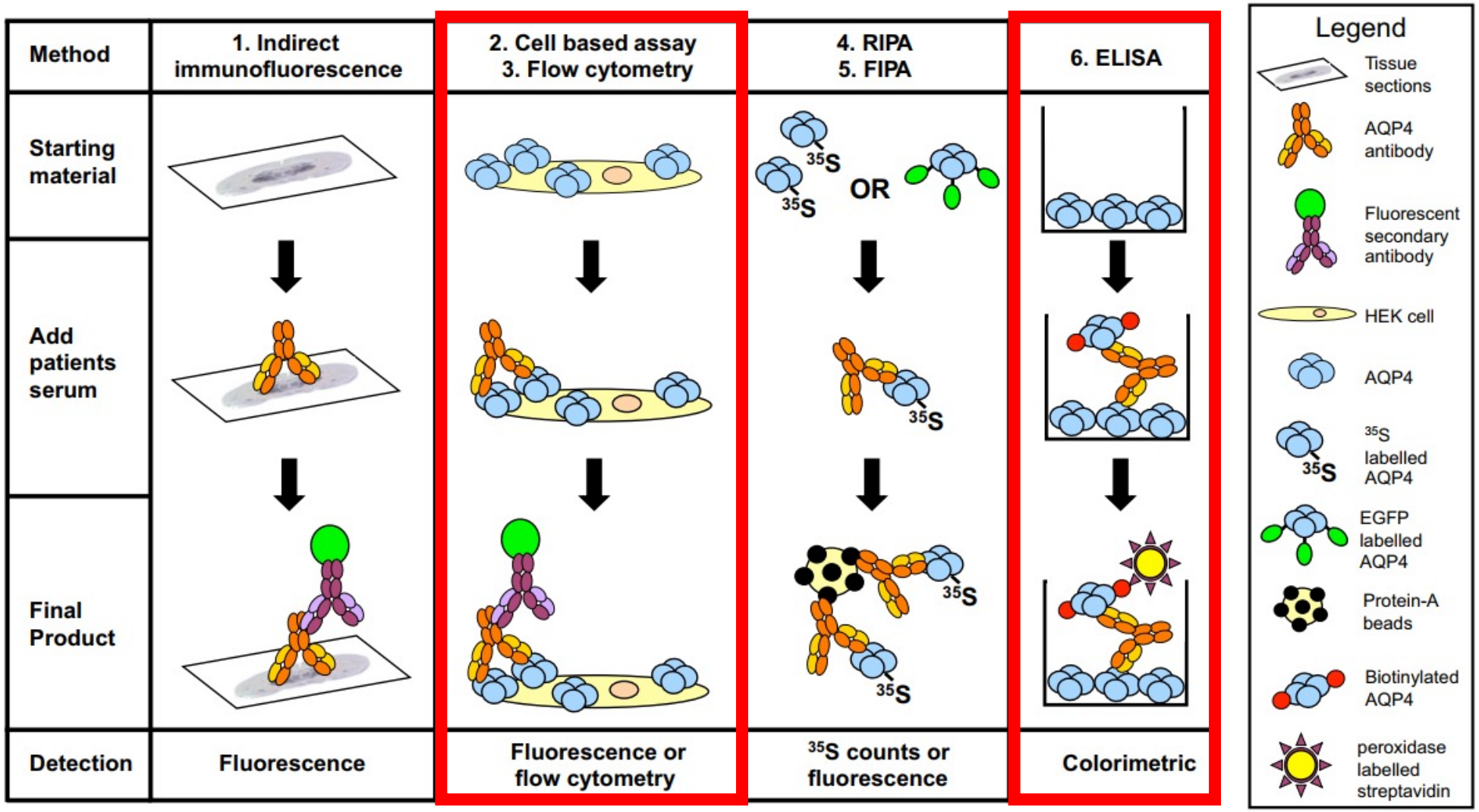
Overview of MOG and AQP4 autoimmunity



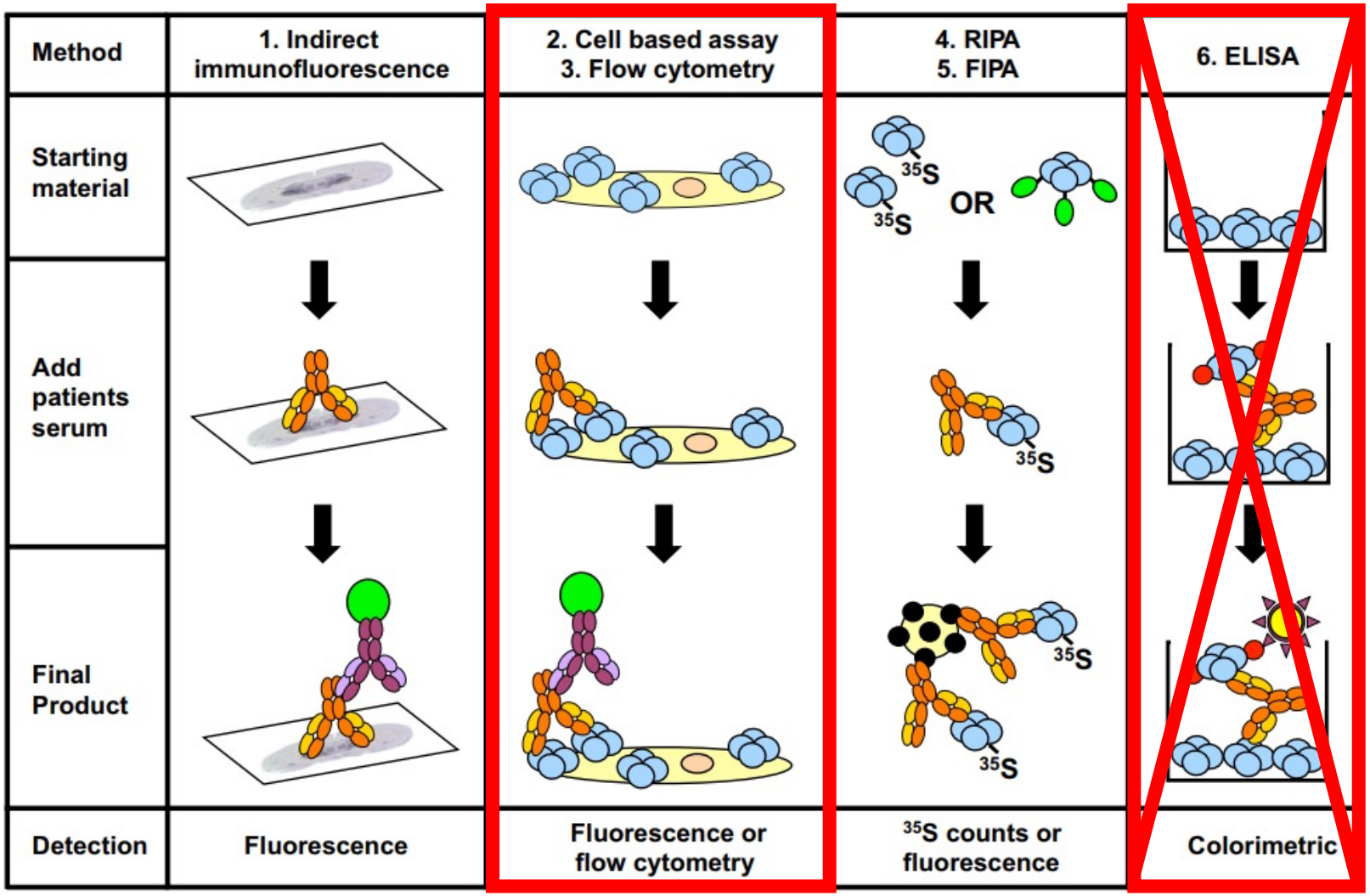
SS Zamvil and AJ Slavin. Neurol Neuroimmunol Neuroinflamm 2015.

Testing methods for AQP4 antibodies



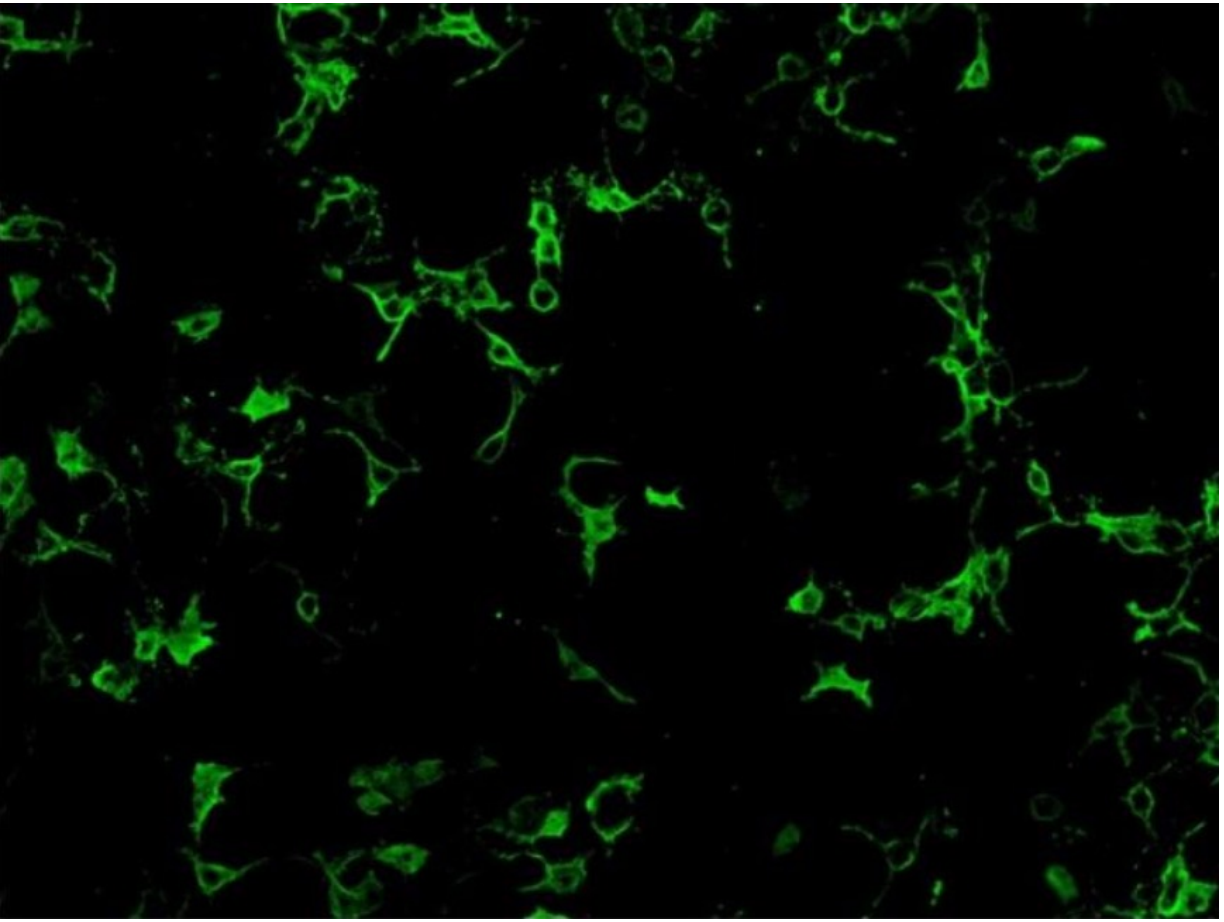
PJ Waters et al. Clinical and Experimental Neuroimmunology 2014.

Testing methods for MOG antibodies



PJ Waters et al. Clinical and Experimental Neuroimmunology 2014.

Cell-based assays (CBAs)



www.hkcpath.org/tags/anti-nmo

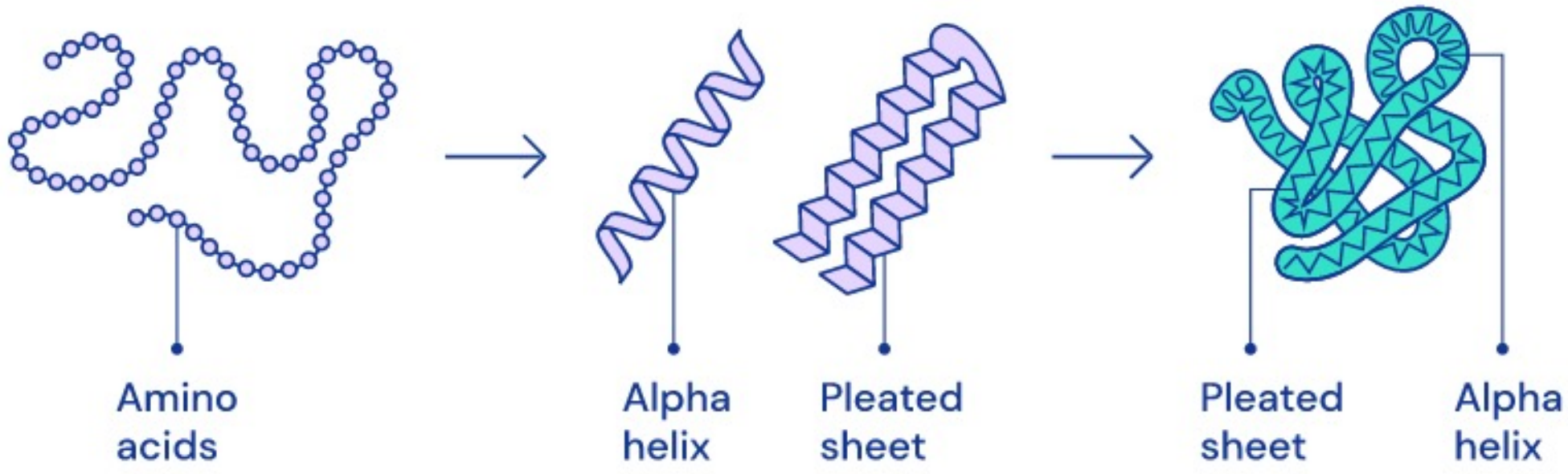
- Detection of AQP4 or MOG antibodies can be done by flow cytometry or fluorescence microscopy
- CBAs are more sensitive (less false-negatives) and more specific (less false-positives) than ELISA testing for AQP4 antibodies
- ELISA is not useful for detection of MOG antibodies!
- Cells can be live or fixed with formalin
  - Performance appears to be near-identical for AQP4 antibody testing
  - Live CBAs for MOG antibody appear to have better performance

Protein Structure

Every protein is made up of a sequence of amino acids bonded together

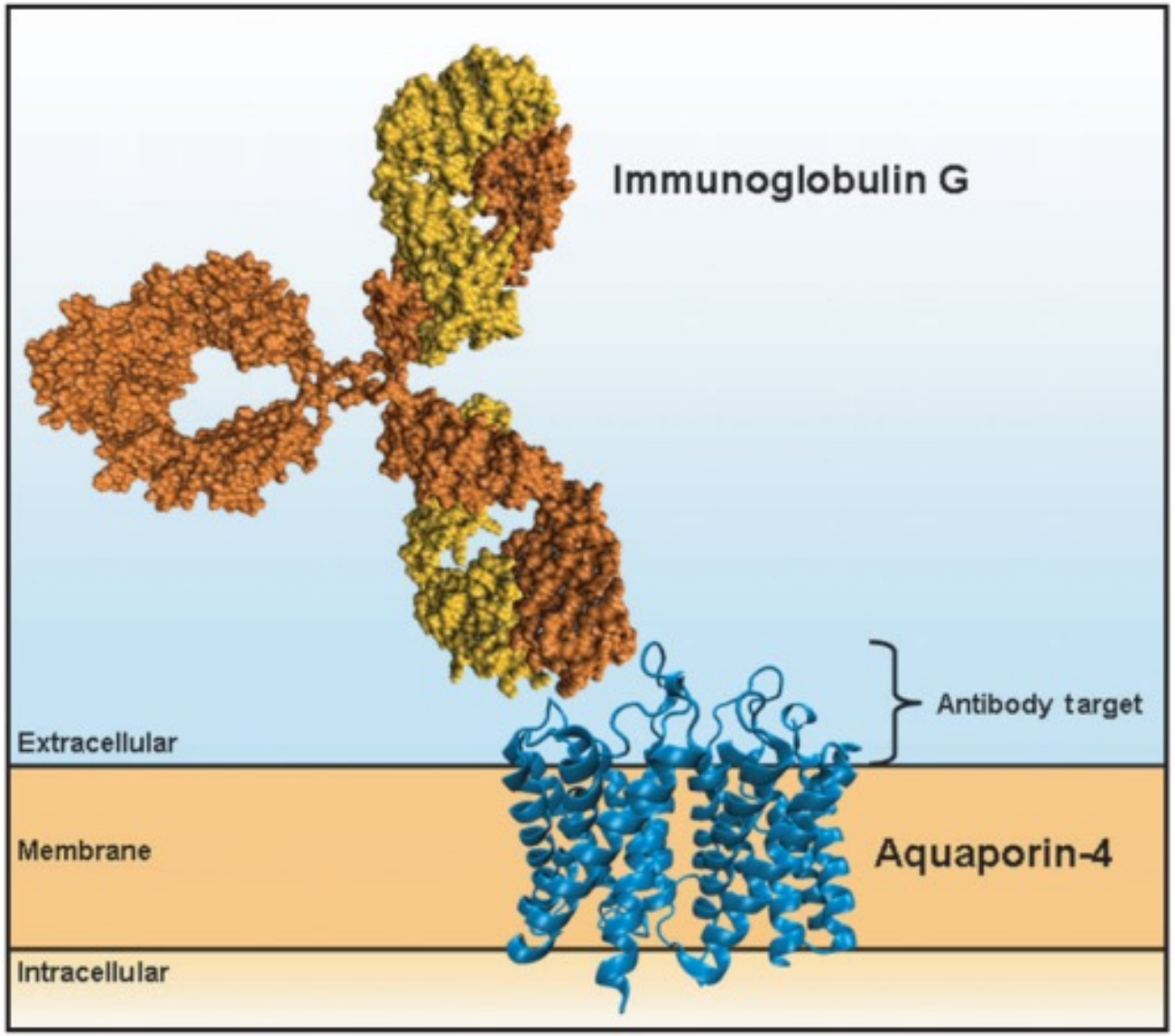
These amino acids interact locally to form shapes like helices and sheets

These shapes fold up on larger scales to form the full three-dimensional protein structure



www.deepmind.com

Protein Structure



PJ Waters et al. Clinical and Experimental Neuroimmunology 2014.

Antibody levels and serial testing in NMOSD and MOGAD

- NMOSD
  - AQP4 antibody levels do not appear to be useful in order to assess treatment response or risk of relapse in patients with NMOSD
- MOGAD
  - Higher levels of MOG antibodies at the time of the first attack have been associated with a higher risk of relapse
  - Persistent positivity for MOG antibodies after an initial attack also associated with a higher risk of future attacks
  - Utility of serial testing to assess risk of relapse and response to therapy is unclear

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Questions?