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Isolation of *Neisseria gonorrhoeae*-specific Antibodies from a Phage Display Library

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ScFv antibodies against *Neisseria gonorrhoeae* were successfully isolated from the Griffin phage display library (kind gift from MRC, UK). The library was panned against *Neisseria gonorrhoeae* NCTC (12700) coated on immunotubes. After 3 rounds of selection, the phagemids were checked against a wide range of microorganisms for cross-reactivity. Phagemids expressing non-specific antibodies were removed by panning against a mixture of microorganisms. The specific antibody-producing phagemids were subjected to two further rounds of selection against *N. gonorrhoeae*. The phagemids were then harvested and used to infect *Escherichia coli* HB2151 to produce soluble antibody. The transfected cells were plated at low density and 22 individual clones selected for monoclonal antibody production and analysis. Three clones were found to produce high-titre *neisseria*-specific antibody and these were selected and used in further experiments. The specificity and titre of these antibodies were determined using Dot blot, Western blot and ELISA. The most avid antibody, prior to purification and concentration, had a titre of 1 in 100. The sizes of the antibody fragments were determined by SDS PAGE and Western blotting. The antibody-encoding insert, ~300bp, was amplified using PCR and sequenced. The size of the detected antigen was analysed using SDS PAGE Western blotting. To the best of our knowledge, this is the first report of *Neisseria*-specific antibodies isolated by phage display technology. The methodology described would be useful for the isolation of antibodies against a wide range of microbes.