



I joined the MHRA in 2005 after completing a degree in Biochemistry at the University of East Anglia and gaining experience at a start-up biotechnology company. I have been working on the 3Rs – the Replacement, Reduction and Refinement of animal experiments for almost 20 years, with specific experience of validating serological potency assays and developing antigen ELISAs for consistency testing of diphtheria and tetanus vaccines. I currently lead the Bacterial Vaccine Standards group providing International Standards and in-house standards aimed at ensuring the quality of bacterial vaccine and therapeutic antitoxin products worldwide.