

Dr Liptrott and Professor Owen are contributing to the assessment of nanoparticle interaction with human immunological and haematological systems as part of the EUNCL project. Dr Liptrott's research interests lie in investigating the in vitro/ex vivo compatibility of engineered nanomaterials with components of the human immunological and haematological systems. This work extends to how these systems may be dysregulated in chronic infection (e.g. HIV) and how this may impact on nanomaterial compatibility in patient populations. Dr Liptrott also worked as a guest researcher at the NIH-funded Nanotechnology Characterization Laboratory (NCL) in Frederick, Maryland, USA, and it is envisaged that additional time will be spent in Frederick during the course of this fellowship. Professor Owen is Chair of the British Society for Nanomedicine, a fellow of the Royal Society of Biology, a fellow of the British Pharmacological Society and a member of the steering committee for the Academy of Pharmaceutical Sciences Nanomedicines Focus Group. His clinical and basic research focuses on understanding the mechanisms that underpin inter-patient variability in pharmacokinetics and pharmacodynamics for drugs used in the management of infectious diseases, predominantly HIV infection. In recent years a major emphasis has been to employ knowledge of these mechanisms to accelerate the translation of nanomedicine candidates to clinical applications. Local facilities available to the project include, but are not limited to; immunological characterisation (MACSQuant flow cytometer, FACS Canto II Bioplex 200, Monochromatic plate reader with atmospheric control unit, automated cell separation equipment), haematological characterisation (Merlin MC4+ coagulometer) and physico-chemical characterisation of nanoparticles e.g. dynamic light scattering (DLS), NMR spectroscopy, field flow fractionation and isothermal titration calorimetry (ITC). Additionally Dr Liptrott and Professor Owen are leading the trend analysis work package for EUNCL specifically examining relationships between nanoparticle physico-chemical characteristics and biological impact. The University of Liverpool is currently expanding its portfolio of research activity in nanotechnology with >£13M internal and external investment in nanomedicine, the creation of a start-up company (Tandem Nano Ltd.), and new appointments to bridge between the faculty of Health and life sciences and the faculty of science and engineering. There are also a number of internationally leading centres on campus (e.g. the Nano Investigation Centre at Liverpool, the MRC Centre for Drug Safety Science and the Centre for Materials Discovery).