

Third Laureate Fundamental Research

26th Khwarizmi International Award (KIA)



- **Research Work Title:** Enhancement of the human immune response
- **Researcher:** Dr. Rebecca Emma Asquith
- **Nationality:** UK
- **Date of Birth:** 1971
- **Field:** Mathematical Immunology
- **Position:** Senior Lecturer
- **Scientific Affiliation:** Imperial College London, UK

● Abstract:

For the last 100 years immunity has been investigated in animal models and in vitro. These approaches have yielded great insight. However, to understand human immunity we ultimately need to study humans.

The work that can be performed in humans is limited. I am developing alternative approaches that use mathematics to extrapolate from the experiments we can do -experiments of nature or minimally-invasive experiments- to address central questions about human immunology. My goal is to develop a predictive, quantitative understanding of the human T cell response.

● Biography:

Dr Asquith is Senior Lecturer in within-host dynamics at Imperial College London where she heads the Theoretical Immunology Group. Her contribution includes the identification of the determinants of immune protection in HTLV1- infection; discovery of an enhancing role for innate receptors (KIR) in adaptive immunity; quantification of the role of CD+8T cells in HIV1- and the development of novel techniques to measure CD+8T cell efficiency. These techniques include the only non-invasive method to quantify CD+8T cell pressure in humans in vivo. They have been adopted by the National Centre for Human Retrovirology, applied in clinical trials and adopted by the CHAVI consortia. She has also worked extensively on the use of labelling to quantify in vivo lymphocyte dynamics in health and disease. This includes development of the “kinetic heterogeneity model”. The principle that this model encapsulates is now widely accepted and applied

