

**CONTACT DETAILS**

Director Centre for BioNano Interactions (CBNI)  
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**CAREER PROFILE (Education and Employment)**

**Education:** (Institution and year of completion): BSc. Chemistry, (QUB) (1980); MSc Mathematics (QUB) (1981); DPhil Chemistry (University of Oxford) (1984)

**Employment position:** Teaching Assistant, Mathematics, Queen’s University Belfast 1980-1981  
Tutor in Mathematical Methods, University College Oxford, 1983-1985 Junior Dean, University College Oxford, 1982-1985 Weir Junior Research Fellow, University College Oxford, 1983-1984  
Research Visitor, Institute Haute Etudes Scientific, Paris, 1983 Visiting Lecturer, Theoretical Chemistry, University of Ulm, West Germany 1984 Lindemann Fellow, 1986-1987 Associate Fellow in Atomic & Solid State Physics, 1986-1987 Materials Science Postdoctoral Fellow Cornell University, 1985-1988 Strategic User at the Cornell National Supercomputer Centre, 1987-1990  
Assistant Professor of Chemistry, University of California, Berkeley 1989-1992 Adjunct Professor of Biophysics, University of California, Berkeley, 1989-present Chair of Physical Chemistry, University College Dublin 1992, 1992-present, Director Centre for BioNano Interactions, University College Dublin.

**DETAILS OF MOST RELEVANT RESEARCH FUNDING AS LEAD/CO-APPLICANT**

Marie Curie Actions— Initial Training Networks (ITN): Multi-Partner ITN, (Coordinator) €3M, 2013-2017, €0.7M UCD. PathChooser: Innovative, mechanistic-based strategies for delivery of therapeutic macromolecules across cellular and biological barriers.

EU FP7 – Coordinator €7M, 2014-2018 – FutureNanoNeeds: €1.2M UCD, Framework to respond to regulatory needs of future nanomaterials and markets.

EU FP7 – Collaborative Project (Coordinator), €7M, 2011-2015, QualityNano: €1.2M UCD, Research Infrastructures for processing, analysis and characterisation (physico-chemical properties, health and environmental impact) of engineered nanomaterials, nanoparticles and nanostructures.

EU FP7 - Small Collaborative Project (Coordinator), €3M, 2011-2015, NanoTransKinetics: €0.3M UCD, modelling of nanoparticle transport across blood brain barrier, using data from live cell microscope

Marie Curie Initial Training Network (Partner), €3.2M, 2011 – 2014, NanoTOES – UCD Budget €0.3M – Grant No. : 264506 – Coordinator: University of Salzburg; focus on uptake of silver nanoparticles, and co operation of Bayer in Marie Curie.

**HISTORY OF MENTORING AND SUPERVISION**

<i>Masters Students Graduated:</i>	4	<i>PhD Students Graduated:</i>	40	<i>Current Post-doctoral Staff:</i>	10
<i>Masters Students currently supervising:</i>	2	<i>PhD Students currently supervising:</i>	12	<i>Previous Post-doctoral Staff:</i>	25
<i>Other Staff Currently Supervising:</i>	7				

**INNOVATION/ COMMERCIALISATION ACTIVITY**

Patent: A method for the selective concentration of a specific low abundance biomolecules; European & preliminary US filings – Priority Date 27/02/09

Industry collaborations: Intel, Glantreo, Biotrin, Thermofisher, DePuy, Cellix, Life Technologies. Also, L’Oreal, Intel, Medtronic, DSM, Umicore, Avanti Cell Science, Grimm Aerosol Technik, Bayer Technology Services, Becton Dickinson, Nikon Instruments, Progenika Biopharma, INNOVA, Selective Antibodies, NanoSight, Radisens Diagnostics, Advanced Accelerator Applications, Esoate, Sadosa.

**OTHER INFORMATION:**

**Boards and Memberships:** Member of EMEA Nanomedicines Expert Group; Member of DG SANCO Scientific Committee on Emerging and Newly Identified Health Risks (SCENIHR); Irish Representative on OECD Working groups on Manufactured Nanomaterials; Board of Review (External), Department of Energy, Board of Review (External), National Institute of Health,

Maryland, U.S.A.; National Committee for Chemistry, Royal Irish Academy; Member of "Colloid Science Journal" advisory Board; Founder Member of Council of Scientists of INTAS; President of the European Colloid and Interface Society (2005-2008), Member RIA, ACS, APS

**Present Research Oriented International Activity:** Chair International Alliance for NanoEHS Harmonisation; Member of The New York Academy of Sciences, 2009; OECD / ISO Nanotechnology standards working group member, Complex Matter; Editorial Boards Current Opinion in Colloid and Interface Science; Editor of Journal of Nanoparticle Research; Editor in chief of Physica A: Member of the Editorial Board of Nanomedicine: Nanotechnology, Biology and Medicine; Member of Editorial Board for Advances in Nano Research.

### **Summary Current Position;**

Founder of modern version of the 'protein corona' hypothesis in which the biological identity of engineered nanoparticles (and other surface-induced effects such as fibrillation) is defined by most slowly exchanged surface biomolecules, now generating validation across a variety of arenas (e.g. Nanobiotechnology:nanoparticle coronas take shape. *Nature Nanotechnol.* **2011**, 6(1), 11-2.) The 2007 paper (289 citations) generated Cozzarelli prize of US National Academy. Leader of several EU major grant programs in field.

Principal PI and Co ordinator of European Infrastructure, QNano for Bionanoscience/Nanosafety. Member of European Commission scientific committees including SCENIHR committee on regulations for new risk in EU, and in European Medicines Agency, Board European Science Foundation. Ad hoc advisor to several governments, and EU, and European Parliament. Represents Ireland in OECD and ISO in field. Editor of several journals, experimental, theoretical, interdisciplinary. Recently conceived, funded, and supported development of National BioNano Centre. Formally recognised as a Foreign Visiting Professor in Brazil (under the Science without Borders mechanism) and recently acknowledged as a Distinguished Foreign Professor of the Chinese Academy China; operating in an Advisory Capacity to organisations such as Technická univerzita v Liberci (Czech-Republic) and chosen as delegate of EU-Brazil Mission representing NanoTechnology researchers on a targeted mission to Brazil (2014).

**Prizes:** Richardson Prize, Harrison Prize (RSC), IBM (two prizes, for chemistry and for distributed processing), Sloan Fellow (U.S.), Dreyfus Fellow (U.S.), Packard Fellow (International), Canon Professor (Japan), and Cozzarelli Prize National Academy Science United States 2008 (U.S.) for the protein corona.

### **Highlights - Conference Contributions**

E-MRS, Lille 2015, (Scientific Committee); NanoSMAT, Turkey, 2015 (Keynote); Chinese Pharmaceuticals Conference, Changsha City, China, September 2014 (Plenary); XXIII International Materials Research Congress, Cancún, Mexico, August 2014 (Scientific Committee); UK Colloids Conference, London, July 2014 (Plenary); CLINAM - The European Foundation for Clinical NanoMedicine, Switzerland, June 2014 (Keynote and Chair of closing discussion session); "The European Summit for Clinical Nanomedicine 2013; Clinical Nanomedicine & Targeted Medicine," Switzerland, June 2013, "EuroNanoForum 2013", Dublin June 2013; "New York Academy of Sciences: Nanotechnologies in Cancer Diagnosis, Therapy, and Prevention", New York, June 2013; Gordon Conference: Environmental Nanotechnology", Vermont, U.S., June 2013.

### **Recent Highlights - Journal Referred Review Publications:**

\*A. Salvati, A. S. Pitek, M. P. Monopoli, K. Prapainop, F. Baldelli Bombelli, D. R. Hristov, P. M. Kelly, C. Åberg, E. Mahon, K. A. Dawson. Transferrin-functionalized nanoparticles lose their targeting capabilities when a biomolecule corona adsorbs on the surface. *Nature Nanotechnol.* **2013**, 8, 137-143. **Cited 172**

\*A. Lesniak, A. Salvati, M. Santos-Martinez, M. Radomski, K. A. Dawson, C. Åberg. Nanoparticle adhesion to the cell membrane and its effect on nanoparticle uptake efficiency. *Journal of the American Chemical Society.* **2013**, 135, 1438-1444. **Cited 71**

M. P. Monopoli, C. Åberg, A. Salvati, K. A. Dawson. Biomolecular coronas provide the biological identity of nanosized materials. *Nat. Nanotechnol.* 7, 779-786 (**2012**). Cover page of 2012 December Issue of *Nature Nanotechnology*. **Cited 278**

\*Monopoli, M.P., Baldelli Bombelli, F., Dawson, K. A., Nanobiotechnology: Nanoparticle coronas take shape. *Nature Nanotechnol.* **2011**, 6, 11-12. **Cited 69**

\*Lynch, I., Salvati, A., Dawson, K. A. Protein-nanoparticle interactions: What does the cell see? *Nature Nanotechnol.* **2009**, 4, 546-547. **Cited 207**

\*Dawson, K. A., Salvati, A., Lynch, I. Nanotoxicology: Nanoparticles reconstruct lipids. *Nature Nanotechnol.* **2009**, 4, 84-85. See also focus; <http://www.nature.com/nano/focus/nanotoxicology/index.html> **Cited 58.**