

Engineering Smart Nanoparticles for Targeted Cancer Therapy

Wafa T Al-Jamal*
Queen's University Belfast, UK

Most cancer chemotherapeutics lack tissue specificity, resulting in many undesirable side effects. Selective drug delivery to the tumour tissues could ultimately increase local drug concentrations at the tumor without the need to escalate the administered doses in patients. A wide range of drug delivery systems has been developed to alter the pharmacokinetics of drug molecules, and enhance their tumour targeting. Furthermore, several approaches have been explored to increase the bioavailability of drugs at the site of action, utilising the unique characteristics of the tumour microenvironment, such as overexpressed enzymes, acidic pH, and hypoxia, or using external triggers, such as heat, ultrasound, and light. In this talk will describe the latest delivery systems that we have developed in our laboratory to enhance the tumour accumulation of anticancer drugs, utilising internal and external triggers.

Biography:

Dr Al-Jamal is an overseas and a UK-registered pharmacist. She completed her PhD in Drug Delivery and Nanomedicine in 2008 at UCL School of Pharmacy, London. She is currently a Reader in Drug Delivery and Nanomedicine at The School of Pharmacy, Queen's University Belfast, UK. She is also a Prostate Cancer Research Fellow working on developing novel nanomedicine to treat advanced prostate cancer in men. She worked at the University of East Anglia, Norwich, as a Lecturer in Drug Delivery and Nanomedicine (2013-2017), after working as a Senior Research Fellow at University College London and King's College London (2009-2013).

Dr Al-Jamal's main research interests focus on engineering novel nanomaterials for biomedical applications. Her current research, in Cancer Nanomedicine, aims to design smart vectors to deliver a wide range of therapeutic agents and targeting moieties, and to fabricate multifunctional nanoparticles for combinatory therapy and theranostic applications. Her long-term research career is to facilitate the translation of nanoparticle-based therapeutics from the lab to the clinic. Wafa is the GSK Emerging Scientist Award winner for 2015, and Gro Brundtland Award winner for 2017. She has published over 40 papers in high impact journals. Currently, she is a Visiting Professor at Guizhou Medical School, China.