CiQUS

Centro Singular de Investigación en Química Biolóxica e Materiais Moleculares

Conferencia:

Polymers for Drug Delivery and Regenerative Medicine. Contributions of R+D Pharma group

Carmen Álvarez-Lorenzo

Facultad de Farmacia, Dpto Farmacia e Tecnología Farmacéutica, Universidad de Santiago de Compostela

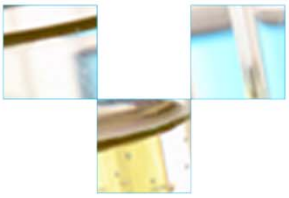
17/12/15

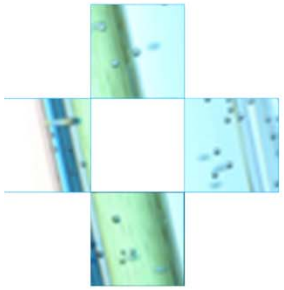
.....

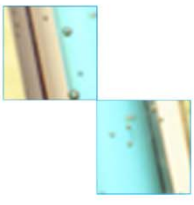
Aula de Seminarios do CIQUS

12:15 h

Más información:
www.usc.es/ciqus







XUNTA DE GALICIA
CONSELLERÍA DE CULTURA, EDUCACIÓN E ORDENACIÓN UNIVERSITARIA

USC UNIVERSIDADE DE SANTIAGO DE COMPOSTELA

CAMPUS VIDA
CAMPUS DE EXCELENCIA INTERNACIONAL

Título: Polymers for Drug Delivery and Regenerative Medicine. Contributions of R+D Pharma group.

Abstract

Medicines are required to be everyday more efficient and safe, while resources to cover drug discovery and development are squeezing. Global ageing of the population, improvements in therapy that transform acute diseases in chronic ones, claims for not only treat but cure the disease, and educated societies that demand personalized treatments are strong challenges. Escalating cost (ca. 1.8 billion US$) and time required for the approval of medicines based in new drugs is behind the shift of pharmaceutical companies towards improvements in formulation and delivery systems for already marketed drugs. Ideally, drug delivery should resemble the delivery of a packet by a courier, protecting the drug from adverse events while it is unequivocally directed to the targeting site and released close to or into precise cells. Not only biopharmaceuticals but also long-time used drugs could benefit greatly from the development of DDS that enable the achievement of therapeutic levels in specific organs, tissues or even cellular structures, where and when they are required. Notable improvement in the chemistry and physics of polymers, together with a better knowledge of the transport and the recognition processes inside the body, makes nowadays feasible to bring to a reality rudimentary “self-delivery” packets. In this context, the R+D Pharma group (GI-1645) develops its research lines covering various stages of drug development using diverse polymers and polymer networks and applying biomimetic or bioinspired strategies that include molecular imprinting and feed-back regulation of the release process. Examples of self-assembling polymers able to overcome problems of instability and solubility of drugs, targeting and cell internalization, supramolecular gels for drug depots and syringeable scaffolds suitable for regenerative medicine, cross-linked networks for affinity- and stimuli-regulated drug release, polymer blends for scaffolding using electrospinning, 3D printing and $scCO_2$ foaming, and polymer grafting for drug-medical device combination products (to prevent the formation of microbial biofilms and other applications) will be provided. Subsidiary applications in analytical field and bioremediation of the developed polymer-based materials are also being explored.

Curriculum Vitae

CARMEN ALVAREZ-LORENZO, Ph.D.
Universidad de Santiago de Compostela
Facultad de Farmacia, Dept. Farmacia y Tecnología Farmacéutica
15782-Santiago de Compostela (Spain)

Born December 18, 1970, Santiago de Compostela, Spain
Education Degree (1993) and Ph.D. (1998) in Pharmacy (with Honors), University of Santiago de Compostela, Spain.

Experience
1998-2001 Visiting scientist in the Department of Physics and Centre of Materials Science and Engineering at Massachusetts Institute of Technology (USA). 2001-2006 Posdoctoral researcher (Ramón y Cajal Program) in the Departamento de Farmacia y Tecnología Farmacéutica at the University of Santiago de Compostela. 2007 to present Profesor Titular at the University of Santiago de Compostela.

Research interest and projects
Research focused on design of new polymeric systems for pharmaceutical and biomedical applications: micelles and particles for solubilization, stabilization and drug vectorization, cyclodextrin-based supramolecular systems, stimuli-responsive and imprinted polymer networks and hydrogels, biomimetic systems, surface modification of medical devices for drug delivery (combination products), and polymeric scaffolds for regenerative medicine. Participation in more than 25 research projects supported by Spanish and international organizations. Main researcher of 11 of them dealing with "Intelligent hydrogels for selective and controlled drug delivery", "Stimuli-sensitive and imprinted polymeric systems for controlled drug release", "Nanoscopic micellar structures made of poloxamines for solubilizing and stabilizing drugs", "Advanced drug delivery systems for intelligent delivery of drugs", "Biomimetic materials for advanced therapeutic systems", "Dynamic engineered multifunctional scaffolds for bone, cartilage and skin regeneration", or "Contact lenses for diabetic eye".

Publications
Author of more than 200 papers in international peer-reviewed journals, 30 book chapters, 13 patents, and 210 contributions to national and international scientific meetings. Co-editor of the books Smart Materials for Drug Delivery of the Royal Society of Chemistry UK (2013), and Molecularly Imprinted Polymers of Smithers Rapra Publishers UK (2013).
h-index (WOS, Core Collection)= 37; h-index (Google Scholar)= 44; h-index (Scopus)= 40.
Total citations (WOS, Core Collection)= 4358.

Supervision of Ph Thesis
13 Doctorate Thesis already defended at the University of Santiago de Compostela, and another one Doctorate Thesis defended at the University of Coimbra. Member of the Doctoral Committee of a Thesis of the University of Iceland, defended in 2012.

Scientific committees
Jorge Heller Journal of Controlled Release Paper Award 2007-2012; Editorial Advisory Board of the Journal of Functional Biomaterials of MDPI since 2010, the ISRN Spectroscopy since 2012, the Recent Patents on Nanomedicine since 2012 (Associate Editor since 2015), the Journal of Pharmaceutical Sciences since 2014, and the Journal of Drug Delivery Science and Technology since 2015. External referee of research projects for National and International Agencies. Reviewer of more than 70 journals.

Awards: THE BEST RESEARCH ARTICLE 2005-2006. Spanish Society of Pharmaceutics and Pharmaceutical Technology (SEFIG). PAPER OF THE YEAR 2010. "Cyclodextrin-functionalized biomaterials loaded with miconazole prevent Candida albicans biofilm formation in vitro" published in Acta Biomaterialia. Latinoamerican Section of the American Nuclear Society. JOURNAL OF DRUG DELIVERY SCIENCE AND TECHNOLOGY HIGHEST CITED ARTICLE 2010 AWARD (Ocular drug delivery from molecularly-imprinted contact lenses), JDDST 2012. RESEARCH AWARD ANTONIO USERO 2015 (Universidad de A Coruña-Ayuntamiento de Ferrol). BIOGA 2015 BEST BUSINESS IDEA awarded to Lentimed Medical Devices S.L. Member of the Royal Academy of Medicine and Surgery of Galicia, and of the Academy of Pharmacy of Galicia.