

In this issue

Audrey Gallud and Bengt Fadeel

Keeping it small: towards a molecular definition of nanotoxicology

DOI 10.1515/ejnm-2015-0020

Eur. J. Nanomed. 2015; 7(3): 143–151

Essay: Engineered nanomaterials can interact with biological systems at the nanoscale and this may give rise to size-dependent toxicities, but could also be exploited for clinical applications.

Keywords: biological mimicry; cellular nanomachineries; engineered nanomaterials; molecular dynamics simulations; nanomedicine; nanotopographies; nanotoxicology.



Dana Westmeier, Chunying Chen, Roland H. Stauber and Dominic Docter

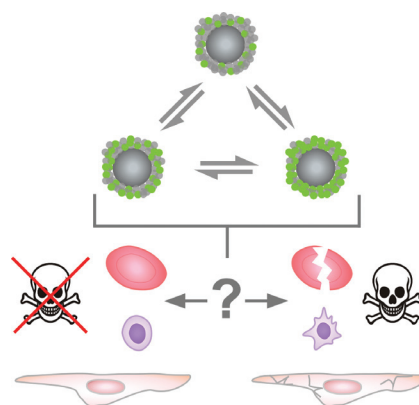
The bio-corona and its impact on nanomaterial toxicity

DOI 10.1515/ejnm-2015-0018

Eur. J. Nanomed. 2015; 7(3): 153–168

Review: Formation, evolution and relevance of the bio-molecule corona for in vitro/in vivo applications and its importance for (possible) toxicological effects.

Keywords: bioinformatics; blood system; label-free quantification; mass spectrometry; nanomedicine; nanoparticles; nanotoxicology; proteomics; systems biology.



Peter Wick, Savvina Chortarea, Olivier T. Guenat, Matthias Roesslein, Janick D. Stucki, Stephanie Hirn, Alke Petri-Fink and Barbara Rothen-Rutishauser

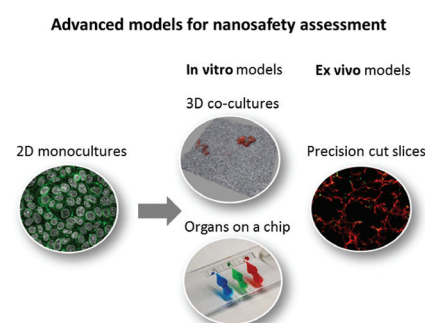
In vitro-ex vivo model systems for nanosafety assessment

DOI 10.1515/ejnm-2014-0049

Eur. J. Nanomed. 2015; 7(3): 169–179

Review: This review highlights the applicability and importance of (human) in vitro and ex vivo 3D models for safety assessment of engineered nanomaterials. Current challenges and perspectives associated with these advanced systems are analysed, especially with regard to their ability to predict potential adverse effects of nanomaterials.

Keywords: alternative models; nanomaterials; risk assessment.



Antonio Pietroiusti, Lang Tran and
Luisa Campagnolo

Nanosafety forum for young scientists: a meeting report

DOI 10.1515/ejnm-2015-0019

Eur. J. Nanomed. 2015; 7(3): 181–189

Meeting Report: Under the auspices of the EU Nanosafety Cluster and the contribution of the Cost Action Modena, a Forum was held in Syracuse (Sicily, Italy, 8/9 October 2014) where young scientists came together to discuss hot topics in nanotoxicology.

Keywords: meeting report; nanosafety; young scientists.

Nanosafety forum for young scientists



Susanne Bremer-Hoffmann, Valeria
Amenta and François Rossi

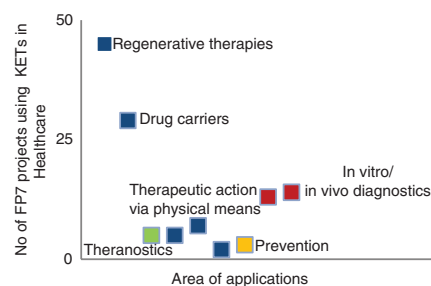
Nanomedicines in the European translational process

DOI 10.1515/ejnm-2015-0027

Eur. J. Nanomed. 2015; 7(3): 191–202

Short Communication: The European Commission has financed projects for about 600 million Euro in the 7th framework programme using nanotechnologies/biomaterial in healthcare. Methods assessing their quality, safety and efficacy must be made available in order to progress these next generation nanomedicines towards clinical applications.

Keywords: authorised nanomedicines; EU clinical trial register; FP7 projects; pharmaceutical gaps; World Health Organisation.



Gergely Milosevits, János Szebeni
and Silke Krol

Exosomes: potential model for complement-stealth delivery systems

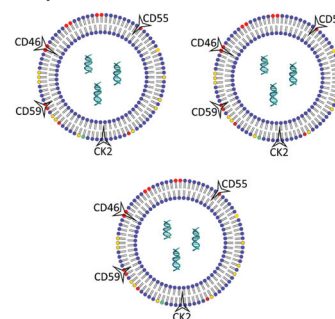
DOI 10.1515/ejnm-2015-0005

Eur. J. Nanomed. 2015; 7(3): 207–218

Review: Exosomes have complement-stealth properties that make them an ideal model for delivery systems. This review focuses on their interaction with the immune system and possibilities for clinical applications.

Keywords: complement; drug delivery; exosome; liposome; nanocarrier.

Complement-stealth exosomes



Rudolf Urbanics, Péter Bedőcs and János Szebeni

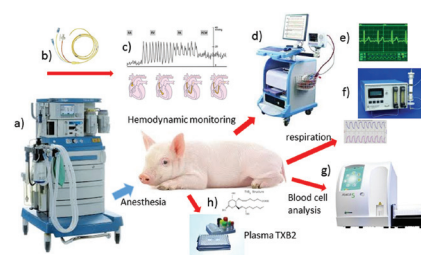
Lessons learned from the porcine CARPA model: constant and variable responses to different nanomedicines and administration protocols

DOI 10.1515/ejnm-2015-0011

Eur. J. Nanomed. 2015; 7(3): 219–231

Review: This contribution deals with the porcine CARPA model - its instrumentation and physiological endpoints.

Keywords: anaphylatoxins; anaphylaxis; animal models; hemodynamic changes; hypersensitivity reactions; pseudoallergy.



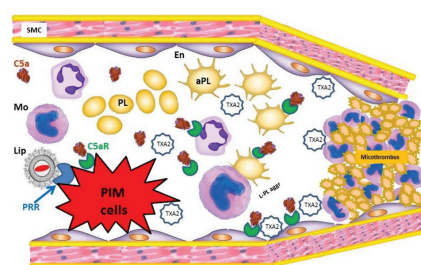
Zsófia Patkó and János Szebeni
Blood cell changes in complement activation-related pseudoallergy

DOI 10.1515/ejnm-2015-0021

Eur. J. Nanomed. 2015; 7(3): 233–244

Mini Review: This contribution deals with cellular and molecular interactions underlying pulmonary hypertension and capillary blockage during CARPA.

Keywords: anaphylatoxins; animal models; hypersensitivity reactions; platelets; pseudoallergy; white blood cells.



Saziye Yorulmaz, Seyed R. Tabaei, Myunghee Kim, Jeongeun Seo, Walter Hunziker, János Szebeni and Nam-Joon Cho

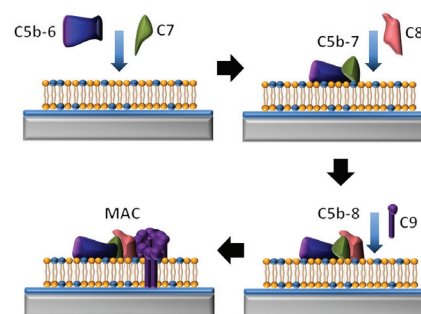
Membrane attack complex formation on a supported lipid bilayer: initial steps towards a CARPA predictor nanodevice

DOI 10.1515/ejnm-2015-0016

Eur. J. Nanomed. 2015; 7(3): 245–255

Short Communication: We present a novel approach to quantitatively measure complement activation on a supported lipid bilayer platform via detection of the membrane attack complex, (MAC). This immediate measure of C activation could find diagnostic utility with a real-time measurement format.

Keywords: bedside diagnosis; complement; ELISA; hypersensitivity reactions; immune toxicity; solvent-assisted lipid bilayer (SALB) formation method; support lipid bilayer.



Tamás Mészáros, Gábor Szénási,
László Rosivall, János Szebeni and
László Dézsi

**Paradoxical rise of hemolytic
complement in the blood of mice
during zymosan- and liposome-
induced CARPA: a pilot study**

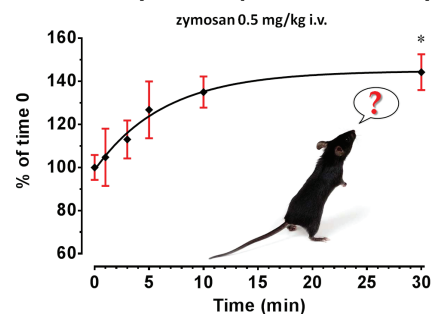
DOI 10.1515/ejnm-2015-0022

Eur. J. Nanomed. 2015; 7(3): 257–262

Short Communication: Complement activation in mice by zymosan and liposomal drugs led to striking “paradoxical” increase in hemolytic complement activity, which could be explained by hemoconcentration and/or increased plasma complement levels.

Keywords: anaphylatoxins; anaphylaxis; ApoE; complement; hypersensitivity reactions.

Hemolytic Complement Activity



S. Moein Moghimi, Peter P. Wibroe,
Linping Wu and

Z. Shadi Farhangrazi

**Insidious pathogen-mimicking
properties of nanoparticles in
triggering lectin pathway of the
complement system**

DOI 10.1515/ejnm-2015-0014

Eur. J. Nanomed. 2015; 7(3): 263–268

Commentary: The surface architecture of polymeric nanoparticles (right panel) may transiently resemble *N*-acetyl-D-glucosamine, thus making them prone to recognition by mannose binding lectin (MBL) and ficolins resulting in activation of lectin pathway of the complement system.

Keywords: drug delivery; infusion-related reactions; innate immunity; nanoparticles; nanomedicine; polymers.

