Contribution ID: **65** Type: **not specified**

Contribution to nanomaterials safety assessment: the need of integrating in vitro, in vivo and in silico strategies

Tuesday, 10 March 2015 15:04 (24 minutes)

Fundamental and application-driven research in nanotechnology is expected to boost nanoscience and innovation towards development of safe-by-design nanomaterials (NM). In this scenario, adding vast societal benefits, a multi-disciplinary approach to responsible innovation must be undertaken. Although the widespread use of NM, it is not clear whether they impact on environment and human health, on the long-term. Potential deleterious effects, e.g., genotoxicity that is intimately associated with carcinogenicity, have to be assessed using complementary in vitro and in vivo assays, nested within the conventional risk assessment paradigm and considering specific physicochemical properties of NM. In this study we present the testing strategy that was recently applied to the genotoxicity characterization of titanium dioxide nanomaterials in human cells and in an integrative in vivo model. The results supported the view that a thorough understanding of the relationship between the physicochemical properties, the behaviour of NM in biological systems and their mechanism of action is of utmost importance to predict their biological activity. In conclusion, the knowledge gap between nanoscience and hazard assessment has to be filled within a multi-disciplinary approach including experimental and computational components in an iterative process, towards an improved strategy for the safety evaluation of nanomaterials.

Primary author: SILVA, Maria Joao (National Institute of Health Doutor Ricardo Jorge)

Co-authors: LOURO, Henriqueta (National Institute of Health Doutor Ricardo Jorge); ALBUQUERQUE, José Maria (National Institute of Health Doutor Ricardo Jorge)

Presenter: SILVA, Maria Joao (National Institute of Health Doutor Ricardo Jorge)

Session Classification: 4B Toxicology and human health risks

Track Classification: Parallel session 4B: Toxicology and human health risks