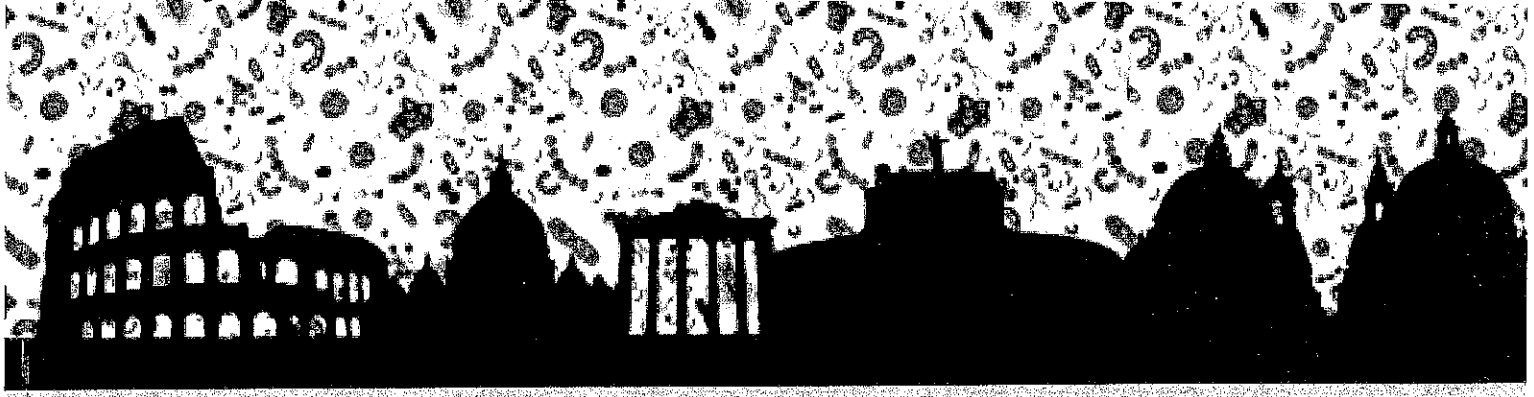

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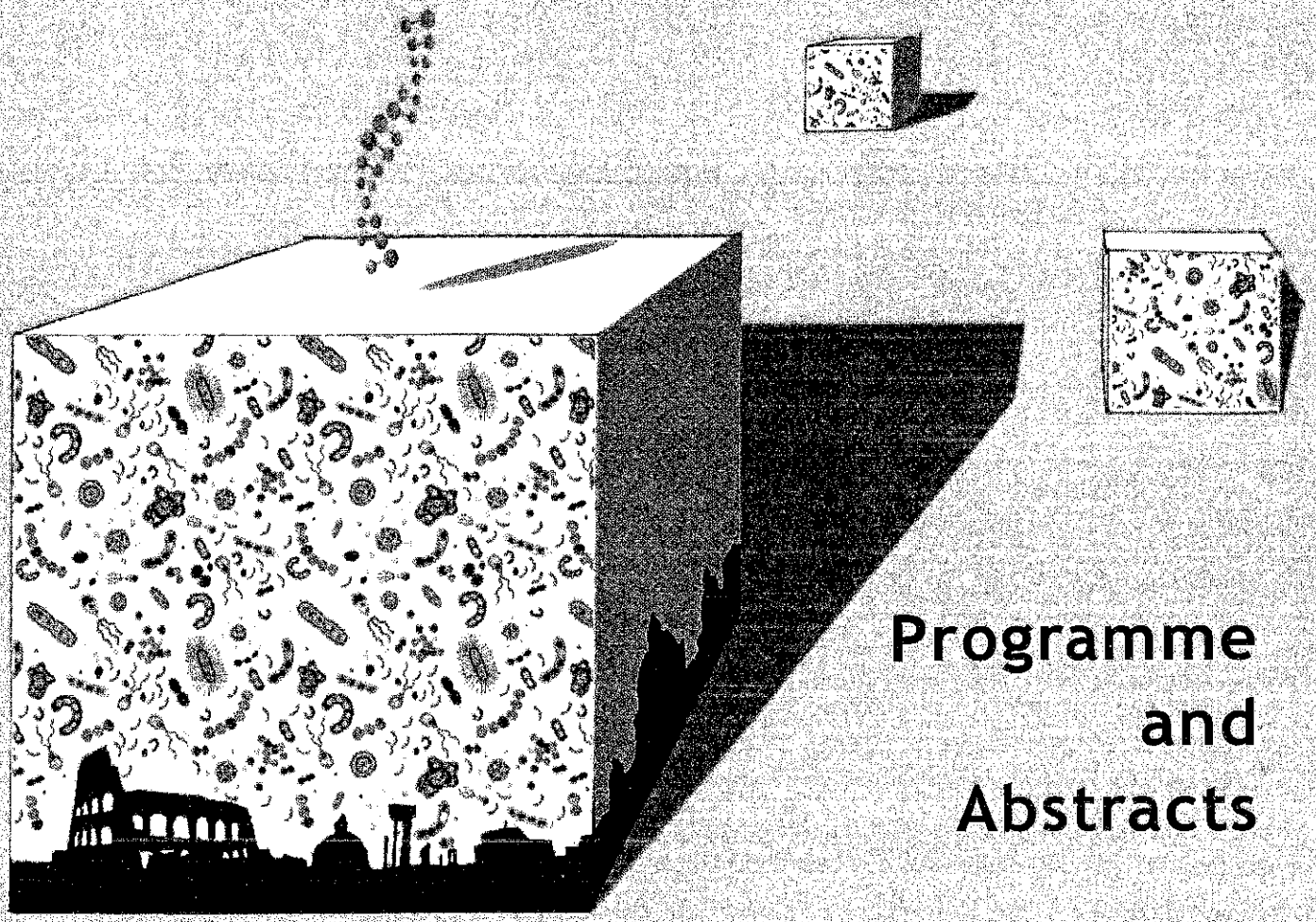

Programme and Abstracts

XIV FISV CONGRESS

Rome, September 20th-23rd, 2016

Sapienza University of Rome

11 - Environmental and Molecular Mutagenesis

P11.1

Exposure to air pollution and lifestyles of children partecipating in the MAPEC_LIFE (Monitoring Air Pollution Effects on Children for supporting public health policy) study

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The MAPEC_LIFE project is a multicentre cohort study that aims to assess the association between concentrations of certain atmospheric pollutants and early biological effects in children aged 6-8 living in five Italian towns (Brescia, Lecce, Perugia, Pisa and Torino). In order to evaluate the confounding role of other factors to which the subject may be exposed, the parents of the children were asked to fill in in two different seasons an ad hoc questionnaire. It was composed of 148 questions to obtain personal, anthropometric and health information on the children, as well as information on their lifestyles and parental characteristics. The definitive cohort was composed of 1164 children (50.9% boys, 95.4% born in Italy). The frequency of some factors were different between the survey season (physical activity, cooking methods) and among the cities (parents' level of education and rate of employment, sport, perceived traffic near the home, type of heating, passive smoking, cooking methods). Information on environmental exposure and the lifestyles of children will be integrated with other information acquired during the study in order to construct a global model of genotoxic risk.

P11.2

Toxic and genotoxic effects of repeated oral exposure to perfluorinated alkyl substances (PFAS) in C57BL/6 mice

E. Marcon[1], P. Leopardi[1], E. Siniscalchi[1], G. De Luca[1], L. Conti[1], S. Caiola[1], M. Sanchez[1], P. Villani[2], G. Lori[2], P. Eleuteri[2],E. Cordelli[2], R. Crebelli[1]

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PFAS represent a class of environmental and water pollutants of high concern, implicated in a variety of adverse effects, including cancer. Studies indicated that PFAS are not genotoxic *per se* in *in vitro* and *in vivo* assays.The consequences on genomic stability of repeated *in vivo* exposure to PFAS, with the ensuing oxidative stress, has not been investigated. In this work perfluorooctanoic acid (PFOA) and perfluorobutanoate (PFBA) were administered for five weeks to C57BL/6 mice. Biochemical and cellular markers of liver toxicity, lipid peroxidation, oxidative stress, genotoxicity in liver, erythropoietic, spleen cells and testis were selected for assessment. A significant increase in liver weight and decrease in epididymis weight was observed at 1 and 5 mg PFOA /kg b.w. Flow cytometry analysis confirmed liver toxicity at the highest PFOA dose, with statistically significant increase of necrosis, S phase cells and polyploidy. A preliminary evaluation of genotoxic biomarkers did not show treatment related effects. Serum biomarkers, gene expression, metabolite profiling in liver, DNA damage in cultured splenocytes will be analysed. This work was partially supported by Regione Veneto

P11.3

A biotechnological approach for the development of new antifungal compounds to protect the environment and the human health

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Aflatoxins are a class of mycotoxins produced principally by *Aspergillus flavus* and *Aspergillus parasiticus* classified in Group 1 by IARC. Aflatoxins can occur naturally in food commodities as a result of fungal contamination in hot and humid environments. Aims of this project are the identification of new compounds that could inhibit *Aspergillus* proliferation and/or aflatoxin production and the set-up of a practical screening procedure to identify the most effective and safe compounds. We have evaluated the biological activity of two different molecules: perillaldehyde thiosemicarbazone and its nickel complex. These molecules once synthesized and characterized, were initially tested on fungal species belonging to the genus *Aspergillus* to determine their effects on fungal germination/growth and aflatoxin biosynthesis. These compounds showed different efficacy on fungal growth and on mycotoxin accumulation. The genotoxicity of these new compounds was assessed through Ames test and Alkaline Comet Assay on normal human cell lines to exclude potential danger to the environment and to human health. Financial support: Fondazione Cariplo-Project N. 2014-0555, http://aflatox.unibs.it/

P11.4

Evaluation of synthetic amorphous silica nanoparticles toxicity on the male reproductive system in rats after sub-chronic oral exposure

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Due to continuous development and widespread use of nanoparticles (NPs), concern has been expressed about their potential harmful effects on human health and their regulatory risk assessment has become mandatory. The potential effects on reproduction and fertility are relevant in this respect. Evidences exist that different types of NPs, after various exposure routes, reach the testis, cross the blood-testis barrier and affect testis cells. Here we report observations on the male reproductive system of rats orally treated for 90 days with low, realistic doses of synthetic amorphous silica, a nanomaterial currently used as a food additive (E551). At sacrifice, testosterone serum levels were evaluated, epididymal sperm were counted, histopathological analyses were conducted on testes, DNA damage was evaluated in testes and sperm, and sperm chromatin alterations were assessed by Sperm Chromatin Structure Assay. Overall results did not show evident induction of toxicity. The results will be presented in relation to literature data about the male reproductive system response to NPs with different physico-chemical characteristics. Supported by EU FP7 project NANoREG, grant 310584