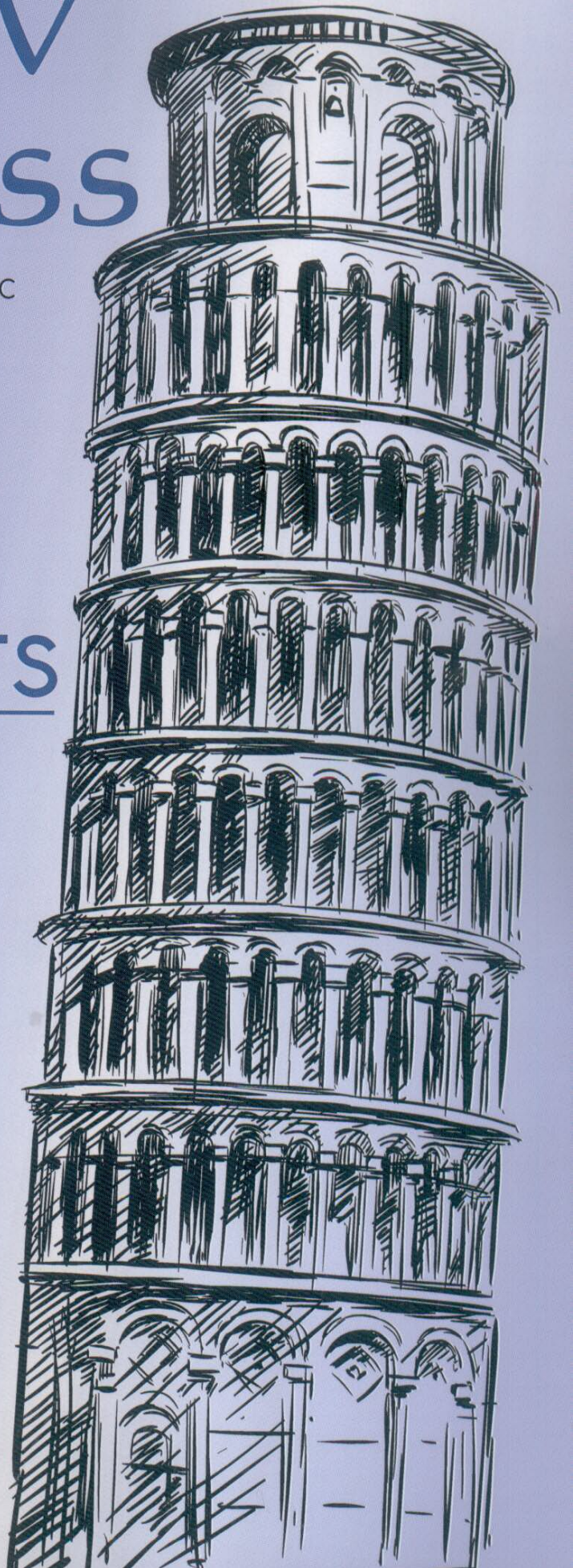


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PROGRAM and ABSTRACTS

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$\mu\text{g}/\text{cm}^2$ of flours for 4 and 24 h. VS showed no cyto- and genotoxicity effects in the two cell lines used; quartz induced increased cell death and DNA damage in RAW264.7 but not in A549 cells. Results show crystal habit as crucial for biological hazard of silica particles.

P22.6

Characterisation of RNA-editing deficient DNA-editing proficient mutants of the RNA editing enzyme APOBEC1

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The AID/APOBECs are cytosine deaminases acting in the context of nucleic acids. APOBEC1 is the catalytic subunit of a complex that edits the C6666 in the human Apolipoprotein B transcript. APOBEC1 has been linked to cancer development in mice and rabbits. Its oncogenic mechanisms have been ascribed to its ability to target RNA, but recent observations show that APOBEC1 can induce a mutator phenotype in mammalian cells. To understand whether the oncogenic potential of APOBEC1 is mediated by DNA or RNA editing, we present a bacterial screen to isolate RNA-editing defective mutants of APOBEC1 proficient in DNA editing. We have characterized the selected mutants for their ability to edit the physiological transcript - through an assay that visualizes RNA editing in live cells - and for their ability to induce a mutator phenotype - through their ability to restrict lentiviral replication or through a mutation assay. All selected mutants lost their ability to edit mRNA, however some of them are able to induce tumorigenic features in human cells (transformation assay, soft-agar). This suggests that the ability to target DNA plays a central role in the oncogenic potential of APOBEC1.

P22.7

In vitro risk assessment of pure trans-anethole and of a herbal extract from *Foeniculum vulgare* (fennel), containing trans-anethole

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Herbal products such as herbal teas and plant food supplements (PFS) are widely used in Western diets. Although many consumers equal 'natural' with 'safe', botanical preparations may contain ingredients known to be toxic and even genotoxic or carcinogenic. One of the categories of plant metabolites of concern are the alkenylbenzenes, flavourings regulated by EU Regulation 1334/2008, used to improve or modify the odour and/or taste of several foods. trans-Anethole is a non-EU regulated flavouring substance present in the essential oils of a variety of plants, notably *Foeniculum vulgare* (fennel), *Magnoliaceae* (star anise) and *Pimpinella anisum* L. (anise). This study describes the *in vitro* cytotoxic, genotoxic, and apoptotic activities of trans-anethole in the HepG2 cell line. The HepG2 cell line was treated both with pure trans-anethole and with the extract of camomile and fennel infusion. To achieve this goal, trans-anethole in a food matrix was determined by GC-MS and double-staining (acridine orange and DAPI) viability assay, single-cell microgel-electrophoresis (comet) assay, mitochondrial membrane potential ($\Delta\psi_m$) assay and DNA fragmentation analyses were conducted.

P22.8

The MAPEC_LIFE study (LIFE12 ENV/IT/000614): monitoring air pollution effects in children for supporting public health policy

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The use of genetic biomarkers has been studied largely in adult population exposed to air pollution, but few studies have investigated genetic damage in children. The aim of the project is to evaluate the associations between the concentration of urban air pollutants and early biological effects in children. The study will be carried out on 1000 children 6-8 years old living in five Italian towns in two different seasons by analyzing two biomarkers of early biological effects: DNA damage detected with the comet assay and frequency of micronuclei in buccal cells. A questionnaire will be used to collect the details of children diseases, socio-economic status, exposures to other pollutants and life-style. Ultra-fine particulate samples (PM 0.5) collected in the school areas will be analyzed for PAHs and nitro-PAHs concentrations, lung toxicity and *in vitro* genotoxicity on bacterial and human cells. All data will be statistically tested to investigate the possible associations between levels of air pollutants, air mutagenicity and early effect biomarkers. The final purpose of the project will be to elaborate a model for calculating the global absolute risk of early biological effects.

P22.9

Genotoxicity detection and flow cytometric evaluation of TiO₂ nanoparticles in human PBMC

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Nano and microparticles of TiO₂, characterized by TEM and SEM, were tested in PBMC for capability to interact with DNA. Single and double strand breaks, 8-oxodG and micronucleus levels were measured. Furthermore, ability of different forms of TiO₂ to cross cell membranes as well as ROS production and cell viability was investigated at 0° and 37°C by flow cytometry (FCM). For Comet assay and 8-oxodG induction, cells were treated for 6 or 24hs (10-200 $\mu\text{g}/\text{ml}$). Results indicated a slight increase of DNA damage and a significant dose-related increase in oxidated Guanine. The InVitMn assay was performed on proliferating lymphocytes and Cyt B was added simultaneously or subsequently to treatments (50-200 $\mu\text{g}/\text{ml}$). Marginal and not reproducible increases of Mn were observed only for microparticles. FCM SSC data show that only monocytes are prone to take up TiO₂ particles in dose-dependent trends at 37°C. Lower uptake was observed at 0°C. The results of cell viability and ROS production agreed with those from uptake. These results suggest that all forms of TiO₂ were able to induce oxidative damage in PBMC independently by their size. That damage was not converted in frank chromosome breaks in lymphocytes possibly because it was mainly induced on monocytes or repaired in lymphocytes after stimulation and reactivation of cell cycle.

O22.1

The RNA editing enzyme APOBEC1 induces somatic mutations and its mutational signature is present in esophageal adenocarcinomas

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The AID/APOBECs are deaminases that act on cytosines in a diverse set of pathways, and some of them have been linked to the onset of genetic alterations in cancer. Among them, APOBEC1 is the only family member to physiologically target RNA, as the catalytic subunit in the