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DNA damage biomarkers: How do they predict susceptibility, exposition and effects? From in vitro evaluations to human bio-monitoring and health promotion**Raquel Alves dos Santos**
University of Franca, Brazil

There are a great number of genetic biomarkers to evaluate the effects of a single or multiple compounds. While OECD (Organization for Economic Cooperation Development) predicts genotoxicity assessment as part of toxicological evaluation of natural compounds, drugs, pesticides, nanomaterials, etc. Great progress has also been made to assess the effects of exposition in human populations at cellular and molecular levels. The search for the correct genetic biomarker results in the understanding of how exposure affects the genomic stability as well as how the genetic background modulates the cellular responses to exposure. This presentation will discuss the use of chromosomal aberration, micronuclei, comet assay, genetic polymorphisms and gene expression as part of in vitro genotoxicological evaluation of natural compounds (kaurenoic acid, hinokinin), pesticides (rotenone), biomaterials (poly-lactic acid, nanocellulose-collagen-apatite composite), nanomaterials (carbon nanotubes, PLGA) and metals (aluminum), as well as the use of these biomarkers to assess genomic instability in pesticide-exposed populations, breast cancer diagnosed women and type-2 diabetes patients. The presentation will also discuss how all this knowledge can be translated into practice via exposure/disease prevention and health promotion strategies based on early genome instability detection.

Recent Publications

1. Nepomuceno R, Villela B S, Corbi SCT, Bastos A S, Santos R A, Takahashi C S, Orrico S, Scarel-Caminaga R M (2017) Dyslipidemia rather than diabetes mellitus or chronic periodontitis affects the systemic expression of pro-and anti-inflammatory genes. *Mediators Inflamm*: 1491405.
2. Saska S, Teixeira L N, de Castro Raucci L M S, Scarel-Caminaga R M, Franchi L P, Dos Santos R A, Santagneli S H, Capela M V, de Oliveira P T, Takahashi C S, Gaspar A M M, Messaddeq Y, Ribeiro S J L, Marchetto R (2017) Nanocellulose-collagen-apatite composite associated with osteogenic growth peptide for bone regeneration. *Int J Biol Macromol*; 103: 467-476.

Biography

Raquel Alves dos Santos has her expertise in DNA damage and genomic instability related to occupational exposure, non-transmissible chronic diseases and cancer.

rasantosgen@yahoo.com.br
raquel.santos@unifran.edu.br**Notes:**