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I am following two distinct projects.

### **INTRODUCTION 1**

DNA-DNA crosslinking agents as Diepoxibutane (DEB) can cause inter or intra-strand crosslink and the occurrence of Homologous directed DNA Repair (HR) can be observed by dramatic increase of sister chromatids exchanges in mitosis metaphase.

### **MATERIAL AND METHODS 1**

We use DEB to study the mutation rate at *HPRT* locus of HCT116 cell line and MET5A cell line treated with vehicle alone or DEB in combinations with transfections using control reagent or a mutagenic donor vector with homologies for *HPRT* locus.

### **RESULTS 1**

DEB increases the mutation frequency over the background level and the subsequent administration of the *HPRT*-specific vector can further enhance this frequency. The vector alone does not induced mutation over the background. So we may suppose that the exogenous DNA homologous to *HPRT* could be specifically integrated within undamaged *HPRT* locus, implying that HR could be chemically induced to act globally at genome level.

### **INTRODUCTION 2**

In a study conducted in 2018, a genetically modified rice expressing ApolipoproteinA-IMilano (APOA-IM) was created. Two distinct experimental groups of Apoe <sup>-/-</sup> mice Western Diet-treated were created and fed genetically modified rice-milk (in the form of protein extract of seed proteins) or wild type rice-milk.

### **MATERIAL AND METHODS 2**

WT and APOA-IM rice flour proteins have been analyzed.

The presence and the function of APOA-IM in liver of two experimental groups mentioned above were studied using: ELISA assays, immunohistochemistry and also studies of gene expression through real time PCR were conducted. The creation of a new OGM even more enhanced rice is in progress.

### **RESULTS 2**

From gene expression study we found a different modulation for some groups of genes that will be further investigated. Through ELISA assay the protein APOA-IM was detected in APOA-IM rice flour protein fractions and not in WT rice flour protein fractions according to the expectations and also in the protein extracts of mouse liver tissue treated with APOA-IM rice milk and not in that treated with WT rice. The human APOA-IM was detected also through immunohistochemistry in mouse liver tissue treated with APOA-IM rice.

### **Abstract e partecipazione a corsi e congressi**

Congresso SIGU, Roma 2019 (13-16 Novembre) con Abstract e Poster

“Evaluation of homologous recombination induced by Diepoxibutane.”

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