

SOPRANO

Systems Oriented Prediction of Radiation Risk

TecnaTox Research Team: Montserrat Bellés, Victòria Linares

A systems radiation biology approach must be adopted to understand the complexities of the biological processes that determine individual sensitivity to low doses of radiation. The ultimate goal of a systems approach will be to develop a model of the cellular radiation response that reflects individual differences in age, gender and genetic constitution. The systems model will be able to incorporate known and newly discovered differences between individuals to personalize risk prediction.

The long-term goal for systems radiation biology is to develop a model of the radiation response that reflects the complexity of the underlying biology, and that is capable of predicting outcomes based on differences in the system that arise due to differences between individuals in a population. The **SOPRANO** project is designed to address a fundamental hypothesis:

The contribution of individual differences in sensitivity to radiation risk and detriment can be effectively predicted using a systems biology model.

The SOPRANO consortium of biologists, physicists, mathematicians and bioinformaticians has the goal of taking the first steps towards developing a systems model of the radiation response project. This pilot study will focus on a single cell type exposed to only two low doses of radiation. A systems model of this simplified scenario will provide the basis for developing a full-scale research strategy and for creating a road map that extends the systems approach to different cell types, doses, time points and then on to complex in vivo systems and exposure scenarios.

Financial Support: Commission of the European Communities

