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Consequences of developmental exposure to carcinogens
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Scientific evidence of the long term consequences of exposure to carcinogenic agents during developmental life has been well known for decades. The challenge in industrial and environmental carcinogenesis today is no longer the straightforward detection of potential carcinogenic agents, but rather the highly complex identification and quantification of diffuse carcinogenic risks to which almost the entire population of the planet may be exposed. These diffuse carcinogenic risks are represented by: 1) agents that are slightly carcinogenic at any dose; 2) low or extremely low doses of a carcinogenic agents of any kind; or also 3) mixtures of small doses of carcinogenic agents.

Experimental long-term bioassays are fundamental in identifying diffuse risks, but they must be designed and conducted with adequate methodology to be as powerful as possible. In fact, it is not sufficient to follow the standard protocol used in ordinary experiments, but rather it is necessary to conduct studies which may be defined as "mega-experiments." Mega-experiments are those in which: 1) a vast number of animals per sex/per group are used in order to evidence a marked difference in the variation of effects; and 2) animals are exposed in all phases of development to allow the agent to express its full carcinogenic potential.

The European Ramazzini Foundation's program of mega-experiments to identify diffused carcinogenic risks will be discussed, with particular regard to the consequences of exposure beginning during the developmental period. Results from mega-experiments to evaluate the carcinogenic effects in rodents exposed to low doses of ionizing radiation and in rodents exposed to the artificial sweetener aspartame during developmental life will be presented. Study design and the state of the art of mega-experiments on ELFEMF will also be reported.