Method For Detecting Radiation Exposure

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Technology description

Summary

Ionizing radiation has many medical, industrial and military uses. Ionizing radiation is often used in the therapy of diseases such as cancer, however, exposure to biologically significant levels of such radiation can also cause genotoxic stress. In addition, many individuals are potentially exposed to radiation through occupational or accidental exposure. Such radiation can elicit a variety of cellular responses, ranging from cell-cycle arrest to mutation, malignant transformation, or cell death. The present invention describes a method for detecting exposure of organisms to biologically significant or hazardous amounts of ionizing radiation.
This invention describes the identification of a large set of genes that are induced by ionizing radiation. Different patterns of gene induction are produced depending upon dose of radiation and time after treatment. Many of these genes are induced by physiological doses of radiation routinely used for cancer therapy.

Application area

These gene sets may be useful as markers of exposure to hazardous radiation, or as markers to predict the likely response of a particular tumor to radiation therapy, and subsequently to track and access the response of patients to radiotherapy.
In addition, these gene sets may also be useful in toxicological and epidemiological research and studies.

Institution

NIH - National Institutes of Health

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