

# Novel biomarkers reveal evidence of radiation exposure

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Researchers at the Medical College of Wisconsin have identified novel biomarkers that could be used to confirm exposure to damaging radiation in large groups of people potentially exposed to unknown and variable doses for the purpose of triage and treatment.

The findings are published in the May 1 issue of [Radiation Research](#). John E. Baker, Ph.D., professor of surgery, biochemistry, [pharmacology](#) and [toxicology](#) at the Medical College of Wisconsin, is the lead author of the study.

There is an urgent need for rapid, accurate and sensitive diagnostic platforms to confirm exposure to [radiation](#) and estimate the dose absorbed by individuals—whether that exposure is a result of radiological terrorism, nuclear power plant accident, or nuclear warfare. Clinical symptoms do not provide adequate diagnostic information to triage and treat life-threatening radiation injuries; furthermore, the United States has been found to be ill-suited to evaluate and triage large groups of patients with potential radiation exposure.

In this study, researchers examined the microbes found in rat feces before and after exposure to radiation. Changes were identified in the levels of 212 genomically distinct bacteria, of which 59 are found in humans. Those changes persisted at least 21 days following the exposure to radiation. One particular type of microbe, Proteobacteria, increased almost one-thousand fold four days following irradiation.

"If there were to be a radiological terrorism scenario, there could be hundreds of thousands of people that would be present around the ground zero area, and limited medical resources available to evaluate their exposure levels," explained Dr. Baker. "Analyzing microbial signatures in those patients would be a non-invasive way to obtain results in a timely fashion, and allow us to commit resources to patients in need of intervention."

Provided by Medical College of Wisconsin

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