

## BACKGROUND

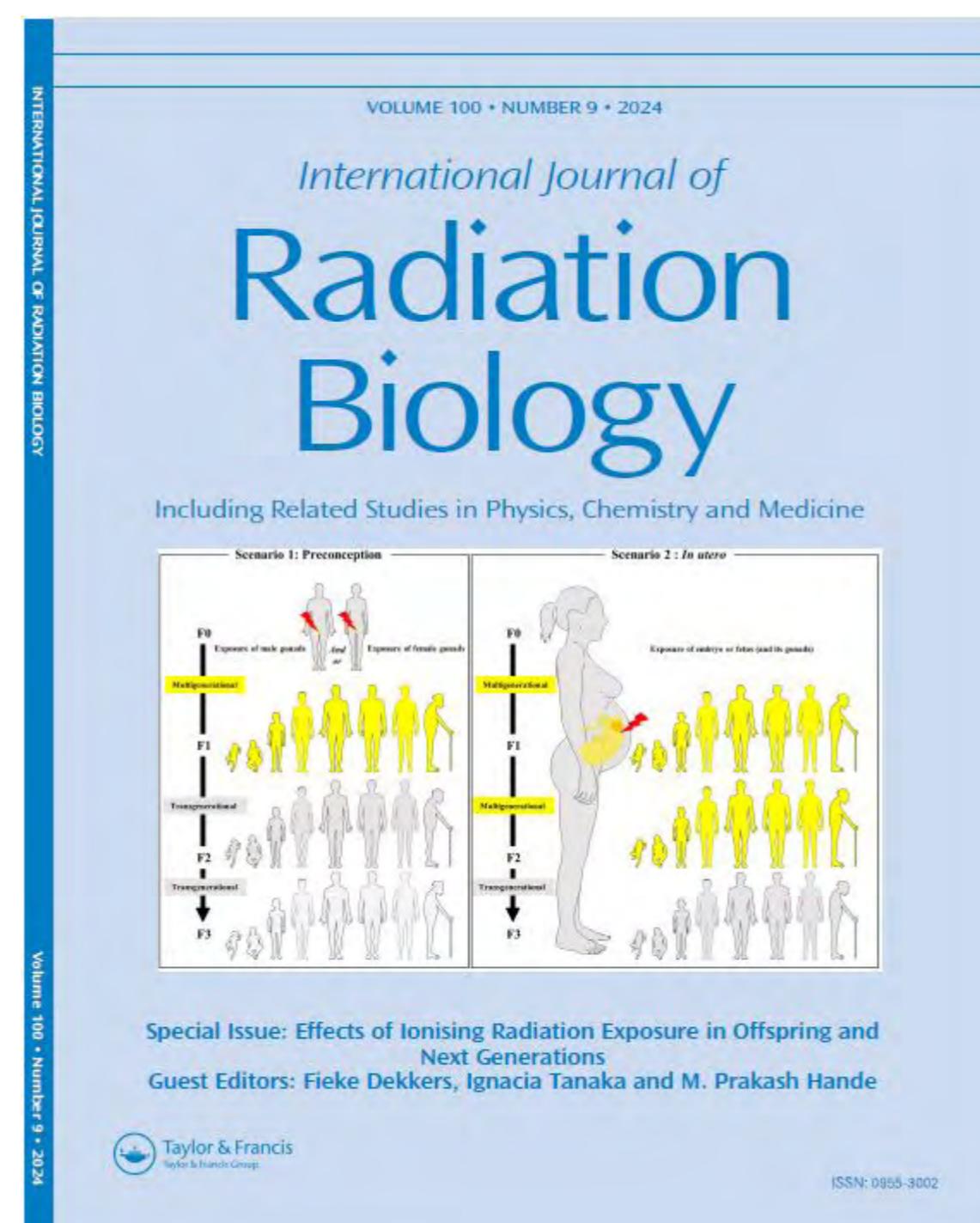
- The potential for radiation-related deleterious effects in offspring is a recurrent issue for the general public and a major concern for parents exposed to ionizing radiation from occupational, medical or environmental sources.
- There is a lack of knowledge (and subsequent uncertainties in risk estimates) about
  - the fundamental mechanisms underlying potential radiation-induced genetic diseases
  - the contribution of epigenetic processes to adverse outcomes if any
  - the potential contributory role of lifestyle, physiological, and maternal vs paternal factors
- This uncertainty is reinforced by a number of studies at variance
  - Laboratory vs field studies
  - For various fauna and flora species
  - Between humans and non-human species

## OBJECTIVE

- To update the review of the scientific literature related to radiation-induced effects for the offspring of individuals exposed to ionizing radiation, for both human and non-human species.
- To provide advice about the level of evidence and consideration of these effects in the system of radiological protection for humans and non-human biota.

## UPDATE

Papers presented at the Budapest 2022 workshop were published in a special issue of the International Journal of Radiation Biology titled Effects of Ionising Radiation in Offspring and Next Generations (Edited by Fieke Dekker, Ignacia Tanaka, and M. Prakash Hande). The issue was released in September 2024 and includes eight review articles, two original research papers, one meeting report, and an editorial.



## PUBLICATIONS

## International Journal of Radiation Biology

Volume 100 Number 9 2024

## CONTENTS

Special Issue: Effects of Ionising Radiation Exposure in Offspring and Next Generations  
Guest Editors: Fieke Dekkers, Ignacia Tanaka and M. Prakash Hande

## Editorial

1237 Effects of ionizing radiation exposure in offspring and next generations  
Christian Streffer and M. Prakash Hande

## Reviews

1240 Consideration of hereditary effects in the radiological protection system: evolution and current status  
A. Amrenova, E. Ainsbury, C. Baudin, A. Giussani, J. Lochard, W. Rühm, P. Scholz-Kreisel, K. Trott, L. Vaillant, R. Wakeford, F. Zölzer, and D. Laurier

1253 Intergenerational effects of ionizing radiation: review of recent studies from human data (2018–2021)  
A. Amrenova, C. Baudin, E. Ostroumova, J. Stephens, R. Anderson, and D. Laurier

1264 Epidemiological and experimental evidence for radiation-induced health effects in the progeny after exposure in utero  
Mohammed Abderraifi Benotmane and Klaus Ruediger Trott

1276 Effects of ionising radiation exposure in offspring and next generations: dosimetric aspects and uncertainties  
Ämilie Degenhardt, Sara Dumit, and Augusto Giussani

1283 *In utero* exposure to ionizing radiation and metabolic regulation: perspectives for future multi- and trans-generation effects studies  
Stéphane Grison, Ignacia Iñaki Braga-Tanaka, Sarah Baatout, and Dmitry Klokov

1297 Three major reasons why transgenerational effects of radiation are difficult to detect in humans  
Nori Nakamura, Noriaki Yoshida, and Tatsuya Suwa

1312 Ionizing radiation exposure effects across multiple generations: evidence and lessons from non-human biota  
Shayenthiran Seetharan, Sandrine Frelon, Nele Horemans, Patrick Laloi, Sisko Salomaa, and Christelle Adam-Guillermin

1330 A systematic review of human evidence for the intergenerational effects of exposure to ionizing radiation  
Jade Stephens, Alexander J. Moorhouse, Kai Craenen, Ewald Schroeder, Fotios Drenos, and Rhona Anderson

## Original Articles

1364 Association between radiation dose, thyroid hormone, and IQ levels in children exposed to radiation in utero after the Chernobyl accident  
Liudmila Liutsko, Sergey Igumnov, Vladimir Drozdovitch, and Elisabeth Cardis

1371 Ethical and societal aspects of radiological protection for offspring and next generations  
F. Zölzer, T. Schneider, E. Ainsbury, A. Goto, L. Liutsko, G. O'Reilly, and J. Lochard

## Meeting Report

1382 The ICRP, MELODI, and ALLIANCE workshop on effects of ionizing radiation exposure in offspring and next generations: a summary of discussions  
Ämilie Degenhardt, Shayenthiran Seetharan, Aidana Amrenova, Christelle Adam-Guillermin, Fieke Dekkers, Sara Dumit, Sandrine Frelon, Nele Horemans, Dominique Laurier, Liudmila Liutsko, Sisko Salomaa, Thierry Schneider, Manoer P. Hande, Richard Wakeford, and Kimberly E. Applegate

## TG121 TIMELINE

## 2022

- TG 121 established with Terms of Reference
- Budapest Workshop in collaboration with MELODI and ALLIANCE
- Sub-groups formed and tasked with development of manuscripts for Special Issue in IJRB
- A review of existing literature continues
- TG sub-groups continue with the development of manuscripts
- TG 121 presentation to CI in Vancouver, Canada

## 2023

- Manuscript review and conclusion
- Special Issue preparation commences
- Dissemination activities gradually begin with IsoRED 2023 and ICRR 2023
- Q3/Q4
  - TG 121 session at ICRP 2023 symposium
  - TG 121 presentation to CI in Tokyo, Japan
  - Harmonisation of manuscripts for Special Issue

## 2024

- TG 121 presentation to CI in Vienna, Austria
- Publication of Special Issue (with Editorial)
- TG 121 presentation to CI (November 2024)

## 2025

- TG meetings (Feb/May-June)
- Face-to-face meeting of TG prior to CI/ICRP 2025 symposium
- Assignment of chapters & lead writers of chapters
- Preparation of Final Report

## 2026

- Draft submitted to CI, C3, and C4 for review
- Draft to Main Commission for Approval for Consultation
- Q2/Q3
  - Public Consultation
  - TG Workshop
  - Feedback & corrections
- Q4
  - CI Review of feedback & corrections
  - MC review of feedback & corrections

## 2027

- MC Approval for Publication
- Publication of report
- Publication Webinar
- TG 121 task complete

## TG121 FINAL REPORT PREPARATION

- Quarterly meetings have been held virtually throughout 2024 and 2025.
- The Task Group continued its discussions on the glossary, which is intended for inclusion in the final report and subsequent integration into ICRPaedia.
- A tentative structure for the final report was developed based on these discussions.
- Task assignments were also finalised, with lead writers identified for each section.
- Chapter drafting is currently in progress, led by the Task Group members and their collaborators.

## TASK GROUP 121 MEMBERS

Manoer Prakash Hande (Co-Chair), Singapore  
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Sisko Salomaa, Finland

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