

Highlights in applications of nanotechnology in radiation research

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Translational Cancer Research (Transl Cancer Res; TCR; Print ISSN: 2218-676X; Online ISSN 2219-6803; www.thetcr.org) launched in August 2013 a special issue on Applications of Nanotechnology in Radiation Research inviting Prof. Rao V.L. Papineni from University of Kansas Medical Center, Pataje G.S. Prasanna from National Cancer Institute and Mansoor M. Ahmed, National Cancer Institute to serve as the Guest Editors.

This special issue is a compendium of critical reviews and commentaries in this multi-disciplinary field and provides a forum to learn several features of the integration of two fields between nanotechnology and radiation therapy. Leading experts from both the nanoscience and radiation oncology fields have made precise and timely effort to allow this issue to serve as a valuable reference to researchers, technologists, and clinicians with interest in nanotechnology and its application in radiation therapy.

TCR publishes novel research investigations which bridge the laboratory and clinical settings including risk assessment, cellular and molecular characterization, prevention, detection, diagnosis and treatment of human cancers with the overall goal of improving the clinical care of oncology patients. We hope the launch of this special issue on nanotechnology in radiation research will provide a valuable focused edition for targeted readers.

❖ Preface

Rao V.L. Papineni, Pataje G.S. Prasanna, Mansoor M. Ahmed; University of Kansas Medical Center, Kansas, USA

❖ Third generation gold nanoplatfrom optimized for radiation therapy

Rajiv Kumar, Houari Korideck, Wilfred Ngwa, Ross I. Berbeco, G. Mike Makrigrigorgos, Srinivas Sridhar; Northeastern University, Boston MA 02115, USA

❖ Nanoformulation enhances anti-angiogenic efficacy of

tunicamycin

Aditi Banerjee, Karen T. Johnson, Ipsita A. Banerjee, Dipak K. Banerjee; University of Puerto Rico, Medical Sciences Campus, San Juan, USA

❖ Convergence of nanotechnology with radiation therapy—insights and implications for clinical translation

Dev Kumar Chatterjee, Tatiana Wolfe, Jihyoum Lee, Aaron P Brown, Pankaj Kumar Singh, Shanta Raj Bhattarai, Parmeswaran Diagaradjane, Sunil Krishnan; The University of Texas M. D. Anderson Cancer Center, Houston, Texas 77030, USA

❖ Radiosensitization by gold nanoparticles: effective at megavoltage energies and potential role of oxidative stress

Karl T. Butterworth, Stephen J. McMahon, Laura E. Taggart, Kevin M. Prise; Centre for Cancer Research & Cell Biology, Belfast, BT9 7BL, Northern Ireland, UK

❖ Gold nanoparticles in radiation research: potential applications for imaging and radiosensitization

Jay F. Dorsey, Lova Sun, Daniel Y. Job, Alon Witztum, Ajlan Al Zaki, Gary D. Kao, Michelle Alonso-Basanta, Stephen Avery, Andrew Tsourkas, Stephen M. Hahn; University of Pennsylvania, Philadelphia, PA 19104, USA

❖ Externally modulated theranostic nanoparticles

Cordula Urban, Alexander S. Urban, Heather Charron, Amit Joshi; Baylor College of Medicine, Houston, TX, USA

❖ Tumor microenvironment and nanotherapeutics

Meenakshi Upreti, Amar Jyoti, Pallavi Sethi; University of Kentucky, Lexington, KY, 40536, USA

❖ Improving chemoradiotherapy with nanoparticle therapeutics

Michael Joseph Eblan, Andrew Zhuang Wang; Lineberger

Comprehensive Cancer Center, University of North Carolina-Chapel Hill, Chapel Hill, NC 27599, USA

- ❖ Nanoparticles in radiation therapy: a summary of various approaches to enhance radiosensitization in cancer
Deep Kwatra, Anand Venugopal, Srikant Anant; University of Kansas Cancer Center, University of Kansas Medical Center, Kansas City, KS 66160, USA
- ❖ Harnessing cerium oxide nanoparticles to protect

normal tissue from radiation damage

Cheryl H. Baker; BioCurity

- ❖ Spot light on intestinal microbiota
Rao V. L. Papineni, Shahid Umar; University of Kansas Medical Center, USA

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