

Focus on Faculty #103

Bassam Abdulkarim



Dr. Bassam Abdulkarim is a clinician-scientist and radiation oncologist at the Cedars Cancer Centre of the McGill University Health Centre (MUHC) and a Senior Scientist in the Cancer Research Program at the Research Institute of the MUHC. At McGill University he is a Full Professor in the Gerald Bronfman Department of Oncology as well as an Associate Member of the Division of Experimental Medicine (Department of Medicine) and the Department of Pathology.

Dr. Abdulkarim graduated from medical school in 1993 and completed his residency training in radiation oncology at Paris XI University in 1997. He pursued a 2-year fellowship in Neuro-oncology and breast cancer at Gustave Roussy Cancer Institute, while completing his MSc in Molecular Radiation Biology at Paris V University in 1998. He received his PhD in Oncology from Paris XI University in 2002. His findings about the relationship between HPV viral oncoprotein E6/E7 and the tumor suppressor gene *TP53* in cervical cancer have been published in prestigious medical journals, such as *Lancet Oncology* and *Oncogene*.

Dr. Abdulkarim was appointed as a clinician-scientist in the Department of Radiation Oncology, Gustave Roussy Cancer Institute in France. He moved to Canada in 2003 and was appointed as Associate Professor in the Department of Radiation Oncology at the Cross Cancer Institute, and the University of Alberta. For over 8 years, he established his translational research program in radiation biology, designed and led clinical trials integrating the identification of blood-based biomarkers for response to treatment in breast cancer and glioblastoma. He was awarded the Alberta Cancer Foundation team grant (\$2 Million) to compare advanced radiotherapy treatment modality with skin sparing in early breast cancer compared to standard radiotherapy with integration of biomarkers to predict early radiation toxicities. His research on the risk of locoregional tumor recurrence for different molecular subtypes in breast cancer led to several publications in high impact factor journals, including *Cancer Research* Nov 2009, *Breast Cancer Research and Treatment* Nov 2010, and *Journal of Clinical Oncology* April 2010 and July 2011.

In 2011, Dr. Abdulkarim was recruited as Director of the Division of Radiation Oncology at McGill University and Chief of the Division of Radiation Oncology at the MUHC (2011-2017). He led the acquisition of new equipment followed by the move to the Glen Cedars Cancer Centre in June 2015. He obtained a Canada Foundation for Innovation grant and Montreal General Hospital Foundation support to purchase intra-operative radiotherapy equipment « IntraBeam Zeiss » and XRad 225 for in-vitro and in-vivo radiation studies. He established a new translational radiation biology laboratory at the RI-MUHC in which he has been a primary supervisor of 10 lab members (MSc/PhD/Postdoctoral Fellows).

Dr. Abdulkarim's current research program at the RI-MUHC is focused on DNA damage and repair as well as pre-clinical and clinical drug development in combination with radiotherapy. His collaborations with colleagues at the MUHC, the NEURO, Tom Baker Cancer Centre, and the Mayo Clinic Neuro-Oncology Program with access to patient-derived xenograft (PDX) models is exemplified in his recent publication track record (i) the efficacy of a combi-molecule designed to inflict DNA damage and induce irreversible EGFR tyrosine kinase inhibition and EGFR-mediated DNA repair (*Clinical Cancer Research*, 2019), (ii) the identification of Temozolomide-induced hypermutation six-genes signature and validation of this signature in patient-derived brain tumor-initiated cells exposed to TMZ in vivo (*Neurooncology Advances March 2022*) and (iii) Phase II trial of concurrent sunitinib, temozolomide, and radiotherapy with adjuvant temozolomide for newly diagnosed *MGMT* unmethylated glioblastoma (*Neurooncology Advances Sept 2023*). His team is currently exploring the efficacy of radiotherapy in combination with a TrxR1 inhibitor (Auranofin), as a pro-oxidant strategy to overcome resistance of glioblastoma stem cells to radiation therapy.

Dr Abdulkarim served on several national and international grant panels, co-organized the Molecular and Clinical Radiobiology Workshop (MCRW 2015, 2016 and 2017), the International Summit on Biomarkers and Therapeutic Advances in Radiation Oncology in 2016, International Drug Discovery and Development Forum 2016 and 2017, and the Brain Tumor Awareness Symposium in 2019.

Dr. Abdulkarim feels fortunate to practice as a radiation oncologist, while leading productive research collaborations with extraordinary clinicians and scientists across the McGill Hospital Network and abroad. He aspires to dedicating some time for humanitarian medical services. He feels blessed to have the support of his spouse (scientist) and their 3 daughters. He enjoys nature, cycling, skiing, and reading Arabic poetry.