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Research

Dr. Lacombe's research program focuses on the development of platform technologies to investigate the biochemical and biophysical response of complex cellular environments to ionizing radiation. The research projects involve the elaboration of new experimental models including organ-on-chips or plant-based tissue bioengineered scaffolds to study the effect of space radiation or radiation treatment on human organs. Dr. Lacombe's projects also include molecular biology and the development of point-of-care bioassays, including biosample preparation and biomarker detection, for the processing of radiation dosimetry protein and nucleic acids biomarkers. He is also interested in "omics" technologies and target approaches for discovering cancer and radiation biomarkers and for studying radiobiology.

Selected Publications

- Gu J, Norquist A, Brooks C, Repin M, Mukherjee S, Lacombe J, Yang J, Brenner DJ, Amundson S, Zenhausern F. Development of an integrated fingerstick blood self-collection device for radiation countermeasures. *PLoS One*. 2019 Oct 16;14(10):e0222951.
- Lacombe J, Brengues M, Mangé A, Bourcier C, Gourgou S, Pèlerin A, Ozsahin M, Solassol J, Azria D. Quantitative proteomic analysis reveals AK2 as potential biomarker for late normal tissue radiotoxicity. *Radiat Oncol*. 2019; 14(1):142.
- Taraboletti A, Goudarzi M, Kabir A, Moon BH, Laiakis EC, Lacombe J, Ake P, Shoishiro S, Brenner D, Fornace AJ Jr, Zenhausern F. Fabric Phase Sorptive Extraction-A Metabolomic Preprocessing Approach for Ionizing Radiation Exposure Assessment. *J Proteome Res*. 2019; 18(8):3020-3031.
- Lacombe J, Sima C, Amundson SA, Zenhausern F. 2018. Candidate gene biodosimetry markers of exposure to external ionizing radiation in human blood: A systematic review. *PLoS One*. 7;13(6):e0198851.
- Lacombe J, Brooks C, Hu C, Menashi E, Korn R, Yang F, Zenhausern F. 2017. Analysis of Saliva Gene Expression during Head and Neck Cancer Radiotherapy: A Pilot Study. *Radiat Res*. 188(1):75-81.
- Lacombe J, Zenhausern F. 2017. Emergence of miR-34a in radiation therapy. *Crit Rev Oncol Hematol*. 109:69-78.
- Lacombe J, Phillips SL, Zenhausern F. 2016. Microfluidics as a new tool in radiation biology. *Cancer Lett*. 371(2):292-300.