



Emilie Roncali, Ph.D.

Research/Academic Interests

Dr. Roncali's research involves molecular imaging and therapy, with an emphasis on new technology for positron emission tomography (PET) and quantitative dosimetry for radionuclide therapy. She has a joint Faculty appointment with the Department of Biomedical Engineering at UC Davis. Dr. Roncali has developed optical models for Monte Carlo simulation of PET detectors and applies these models to the optimization of fast and ultra-fast detectors. Her simulation tools are frequently released in opensource software broadly used the field of nuclear medicine technology development. Dr. Roncali currently focuses her research developments on personalized dosimetry for radiopharmaceutical therapy (RPT). She is a member of two focus groups for the National Cancer Institute (NCI), as well as an investigator of the Informatics Technology for Cancer Research (ITCR) initiative to develop new dosimetry methods for RPT with the goal of improving treatment planning and optimizing TRT clinical trials. Specifically, she is developing image-based and simulation-based dosimetry for yttrium-90 radioembolization for advanced liver cancer treatment, and image-based dosimetry for Lu-177 therapy.

Title Associate Professor

Specialty Nuclear Medicine, Radiology Physics, Molecular Imaging

Department [Radiology](#)

Division Medical Physics

Center/Program Affiliation [UC Davis Comprehensive Cancer Center](#)

Address/Phone Genome and Biomedical Sciences Building, Genome & Biomedical Sciences Facility, 451 Health Sciences Dr Davis, CA 95616

Phone: 530-752-2884

Additional Phone Physician Referrals: 800-4-UCDAVIS (800-482-3284)

Languages French

Education Ph.D., Biomedical Engineering, Ecole Centrale de Paris, Paris, France 2008
B.S., Ecole Centrale de Lyon, Lyon, France 2003

Professional Memberships Institute of Electrical and Electronics Engineers (IEEE)
Society for Nuclear Medicine and Molecular Imaging

Select Recent Publications <https://www.ncbi.nlm.nih.gov/myncbi/1BkULgTF8cpku/bibliography/public/>



Emilie Roncali, Ph.D.

Arino-Estrada G, Roncali E, Selfridge AR, Du , Glodo , Shah KS, Cherry SR. Study of erenkov Light Emission in the Semiconductors TlBr and TlCl for TOF-PET. IEEE Transactions on Radiation and Plasma Medical Sciences. 2020 Sep.

Taebi A, Pillai RM, Roudsari BS, Vu CT, Roncali E. Computational Modeling of the Liver Arterial Blood Flow for Microsphere Therapy: Effect of Boundary Conditions. Bioengineering (Basel). 2020 Jun 29;7(3). doi:10.3390/bioengineering7030064. PMID:32610459.

Roncali E, Taebi A, Foster C, Vu CT. Personalized Dosimetry for Liver Cancer Y-90 Radioembolization Using Computational Fluid Dynamics and Monte Carlo Simulation. Ann Biomed Eng. 2020 May;48(5):1499-1510. doi:10.1007/s10439-020-02469-1. Epub 2020 Jan 31. PMID:32006268.

Kwon SI, Roncali E, Gola A, Paternoster G, Piemonte C, Cherry SR. Dual-ended readout of bismuth germanate to improve timing resolution in time-of-flight PET. Phys Med Biol. 2019 May 10;64(10):105007. doi:10.1088/1361-6560/ab18da. PMID:30978713.

Roncali E, Kwon SI, Jan S, Berg E, Cherry SR. Cerenkov light transport in scintillation crystals explained: realistic simulation with GATE. Biomed Phys Eng Express. 2019 Apr;5(3). doi:10.1088/2057-1976/ab0f93. Epub 2019 Apr 17. PMID:33304614.

Roncali E, Mosleh-Shirazi MA, Badano A. Modelling the transport of optical photons in scintillation detectors for diagnostic and radiotherapy imaging. Phys Med Biol. 2017 Oct 4;62(20):R207-R235. doi:10.1088/1361-6560/aa8b31. PMID:28976914.

Roncali E, Stockhoff M, Cherry SR. An integrated model of scintillator-reflector properties for advanced simulations of optical transport. Phys Med Biol. 2017 Jun 21;62(12):4811-4830. doi: 10.1088/1361-6560/aa6ca5. Epub 2017 Apr 11. PMID:28398905.



Emilie Roncali, Ph.D.

Stockhoff M, Jan S, Dubois A, Cherry SR, Roncali E. Advanced optical simulation of scintillation detectors in GATE V8.0: first implementation of a reflectance model based on measured data. *Phys Med Biol*. 2017 Jun 21;62(12):L1-L8. doi:10.1088/1361-6560/aa7007. Epub 2017 Apr 28. PMID: 28452339.

Kwon SI, Ferri A, Gola A, Berg E, Piemonte C, Cherry SR, Roncali E. Reaching 200-ps timing resolution in a time-of-flight and depth-of-interaction positron emission tomography detector using phosphor-coated crystals and high-density silicon photomultipliers. *J Med Imaging (Bellingham)*. 2016 Oct;3(4):043501. doi:10.1117/1.JMI.3.4.043501. Epub 2016 Nov 23. PMID: 27921069.

© 2024 UC Regents