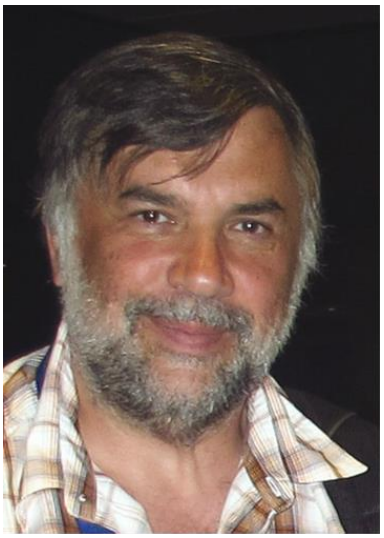
Frank Reidy Research Center for Bioelectrics

Seminar Series

Selective cell killing by nanosecond pulsed electric field



Speaker: Andrei Pakhomov, Ph.D.

Frank Reidy Research Center for Bioelectrics

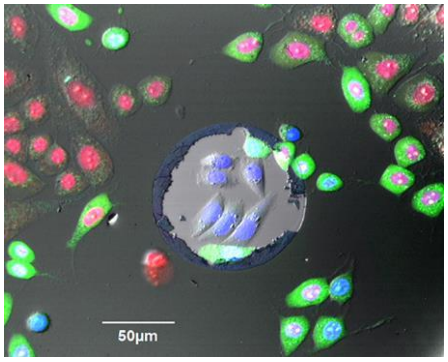
Old Dominion University

When: 9:00 AM, Tuesday, November 1, 2016

Where: 1st floor conference room, IRP II

Abstract:

Tumor ablation by nanosecond pulsed electric fields (nsPEF) is an emerging therapeutic modality. Killing cells by nsPEF has been extensively explored in vitro, followed by successful tumor ablation trials in animals and in humans. Several studies suggested that nsPEF might selectively target tumors while sparing healthy tissues. We have introduced a novel high-throughput in vitro nsPEF exposure technique and compared nsPEF susceptibility in diverse cell types under strict and uniform experimental conditions. We revealed nearly 80-fold difference between the most and the least sensitive cell lines. However nsPEF was not selective against cancer cells, and its efficacy showed no apparent correlation with cell size, morphology, or tested physiological variables.



Biosketch:

Andrei Pakhomov received his M.S. degree in physiology from Moscow State University in 1982, and a Ph.D. in radiation biology from Medical Radiology Research Center in Obninsk, Russia, in 1989. He is a Research Professor with the Frank Reidy Research Center for Bioelectrics. His work is focused on cell permeabilization by nanosecond electric pulses, mechanisms of pore formation and resealing, nanopore properties, physiological consequences and applications of nanoelectroporation. This research is supported by a DOD MURI grant, RO1 and R21 grants form NIH.