

Rafal Fudala, PhD
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Microbiology, Immunology & Genetics
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Area of Expertise

I have a broad background in biology, with specific training in basic and biochemistry (MSc), and microbiology (Ph.D.). Over the last 6 years, I have worked in the field of fluorescence and probe development. In my current ongoing studies, I am using fluorescence-based methods such as laser confocal microscopy, fluorescence resonance energy transfer (FRET), fluorescence lifetime imaging microscopy (FLIM), fluorescence correlation spectroscopy (FCS), and cellular imaging, as well as polarization-based techniques.

Recently, my interests have expanded to include fluorescence-based methods in molecular and cellular imaging, as well as biochemical/biophysical applications of new nanophotonics processes in the biomedical and diagnostic fields. My work at UNTHSC has enabled me to facilitate many collaborative research projects across the university as well as across national and international institutions. The collaborative research is perhaps the most important, and certainly the most enjoyable, part of my research.

Qualifications

PhD in Microbiology & Immunology, University of Łódź

MS in Biochemistry, University of Łódź

Recent Publications

Correction: Systemically administered peptain-1 inhibits retinal ganglion cell death in animal models: implications for neuroprotection in glaucoma (Cell Death Discovery, (2019), 5, 1, (112), 10.1038/s41420-019-0194-2)

Stankowska, D. L., Nam, M. H., Nahomi, R. B., Chaphalkar, R. M., Nandi, S. K., Fudala, R., Krishnamoorthy, R. & Nagaraj, R. H., 1 Dec 2019, In : Cell Death Discovery. 5, 1, 122.

Spectroscopic method for estimation of MMP-9 enzyme concentration and activity

Synak, A., Serdiuk, I. E., Grobelna, B., Fudala, R., Gryczynski, I. & Bojarski, P., 15 Jul 2019, In : Journal of Molecular Liquids. 286, 110936.

AMCA to TAMRA long range resonance energy transfer on a flexible peptide

Synak, A., Fudala, R., Gryczynski, I., Kułak, L., Shah, S., Serdiuk, I. E., Grobelna, B., Arlukowicz, P., Kubicki, A. & Bojarski, P., Nov 2018, In : Dyes and Pigments. 158, p. 60-64 5 p.

Surface plasmon-assisted microscope

Borejdo, J., Gryczynski, Z., Fudala, R., Joshi, C. R., Borgmann, K., Ghorpade, A. & Gryczynski, I., 1 Jun 2018, In : Journal of Biomedical Optics. 23, 6, 060502.

Enhanced emission of Nile Red on plasmonic platforms

Synak, A., Bojarski, P., Grobelna, B., Gryczyński, I., Fudala, R. & Mońska, M., Apr 2018, In : Optical Materials. 78, p. 82-87 6 p.

Differences in the spatial distribution of actin in the left and right ventricles of functioning rabbit hearts

Nagwekar, J., Duggal, D., Rich, R., Fudala, R., Gryczynski, I., Raut, S., Gryczynski, Z. & Borejdo, J., Mar 2018, In : Medical Photonics. 27, p. 1-8 8 p.

Imaging viscosity of intragranular mucin matrix in cystic fibrosis cells

Requena, S., Ponomarchuk, O., Castillo, M., Rebik, J., Brochiero, E., Borejdo, J., Gryczynski, I., Dzyuba, S. V., Gryczynski, Z., Grygorczyk, R. & Fudala, R., 1 Dec 2017, In : Scientific Reports. 7, 1, 16761.

No difference in myosin kinetics and spatial distribution of the lever arm in the left and right ventricles of human hearts
Duggal, D., Requena, S., Nagwekar, J., Raut, S., Rich, R., Das, H., Patel, V., Gryczynski, I., Fudala, R., Gryczynski, Z., Blair, C., Campbell, K. S. & Borejdo, J., 13 Oct 2017, In : *Frontiers in Physiology*. 8, OCT, 732.

Fluorescence properties of doxorubicin in PBS buffer and PVA films

Shah, S., Chandra, A., Kaur, A., Sabnis, N., Lacko, A., Gryczynski, Z., Fudala, R. & Gryczynski, I., 1 May 2017, In : *Journal of Photochemistry and Photobiology B: Biology*. 170, p. 65-69 5 p.

FRET study in oligopeptide-linked donor-acceptor system in PVA matrix

Shah, S., Mandecki, W., Li, J., Gryczynski, Z., Borejdo, J., Gryczynski, I. & Fudala, R., 13 Dec 2016, In : *Methods and Applications in Fluorescence*. 4, 4, 1 p.

Sponsored Projects

Combining the Use of Long-Lived Triangulenium Dyes and Polarization for the Detection of Malignant Melanoma

Fudala, R.

Intramural Research(UNTHSC)

1/04/14 → 31/08/15

Engineering Resonance Energy Transfer for Advanced Immunoassays

Gryczynski, I., Gryczynski, Z. & Fudala, R.

National Science Foundation

1/06/13 → 31/12/17

Interactions between Aquaporin 1 (AQP1) and Actin in Normal and Injured Rat Sciatic Nerve

Fudala, R.

Intramural Research(UNTHSC)

1/05/14 → 31/08/16

Novel Multi-pulse Pumping with Time-gated Detection Technology for Study Dynamics of Molecular Assemblies

Fudala, R. & Stankowska, D.

Intramural Research(UNTHSC)

1/06/17 → 31/05/18

Sequence-Specific Detection of Proteases Using Electronic p-Chips in a Multiplex Format

Fudala, R. & Gryczynski, I.

PharmaSeq, Inc.

1/02/15 → 31/01/17

Ultrasensitive SPCE technology for early detection and prevention of CVD for underserved and minority populations

Fudala, R. & Gryczynski, I.

NIMHD: Natl Institute on Minority Health

23/09/17 → 31/05/22