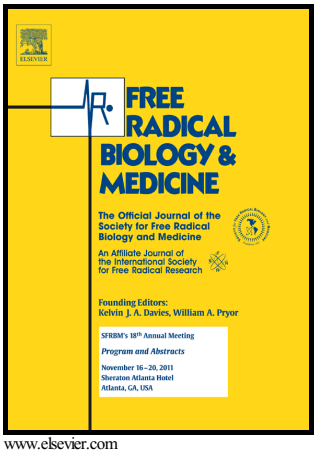
LAURDAN fluorescence and phasor plots reveal the effects of a H_2O_2 bolus in NIH-3T3 fibroblast membranes dynamics and hydration

Leonel Malacrida, Enrico Gratton



www.elsevier.com

PII: S0891-5849(18)31008-6
DOI: https://doi.org/10.1016/j.freeradbiomed.2018.06.004
Reference: FRB13800

To appear in: *Free Radical Biology and Medicine*

Received date: 31 January 2018
Revised date: 1 June 2018
Accepted date: 5 June 2018

Cite this article as: Leonel Malacrida and Enrico Gratton, LAURDAN fluorescence and phasor plots reveal the effects of a H_2O_2 bolus in NIH-3T3 fibroblast membranes dynamics and hydration, *Free Radical Biology and Medicine,* https://doi.org/10.1016/j.freeradbiomed.2018.06.004

LAURDAN fluorescence and phasor plots reveal the effects of a H_2O_2 bolus in NIH-3T3 fibroblast membranes dynamics and hydration.

Leonel Malacrida[a,b,*], Enrico Gratton[a,*]

[a]Laboratory for Fluorescence Dynamics, Department of Biomedical Engineering, University of California., Irvine, USA. 3208 Natural Sciences II. Irvine, CA 92697‑2715, USA

[b]Área de Investigación Respiratoria, Departamento de Fisiopatología, Hospital de Clínicas, Facultad de Medicina, Universidad de la República, Uruguay. Av. Italia s/n, Piso 15, Montevideo, Uruguay. 11600

lmalacri@uci.edu

egratton22@gmail.com

*Corresponding author: Laboratory for Fluorescence Dynamics, Department of Biomedical Engineering, University of California., Irvine, USA. 3208 Natural Sciences II. Irvine, CA 92697‑2715, USA

Abstract

Fluorescence spectroscopy, coupled with microscopy, opens new frontiers for the study of dynamic processes with high spatio-temporal resolution. The application of phasor plots to FLIM and hyperspectral imaging demonstrate unprecedented capabilities to study complex photophysics at the subcellular level. Using these approaches we studied the effects of an H_2O_2 bolus on NIH-3T3 membranes dynamics monitored by LAURDAN fluorescence. Exposure of NIH-3T3 cells to a bolus of H_2O_2 modifies the cell membranes and, in particular, the plasma membrane in a complex manner. The LAURDAN results reveal that the peroxide treatment decreases membrane fluidity but