

FLUOROMAX® Multiwavelength Capability: In-Vivo Measurement of Ca²⁺, Na⁺, pH, and Membrane Potential

Introduction

Simultaneously monitoring the levels of relevant metabolites and cell parameters is necessary to properly assess the effectiveness of drugs on living cells. The FLUOROMAX® spectrofluorometer allows the user to monitor up to eight wavelength-pairs of emission and excitation wavelengths. Coupling this capability with the proper probes can produce a real-time analysis of unfolding biological processes.

Results

One research application that used simultaneous observation of multiple wavelength-pairs was performed by M. Kimura, *et al.*, at the University of Medicine and Dentistry of New Jersey.¹ Their evaluation of Thapsigargin, a hypertensive drug, was performed on a FLUOROMAX® spectrofluorometer. The results demonstrated that the effect of the drug in human platelets was not limited to the elevation of the Ca²⁺ but produced substantial changes in the overall ionic balance.

Figure 1 shows a sample screen display taken from DATAMAX® (FLUOROMAX® software for Windows™). Note how DATAMAX® makes the monitoring of up to eight wavelength-pairs a simple matter of selection.

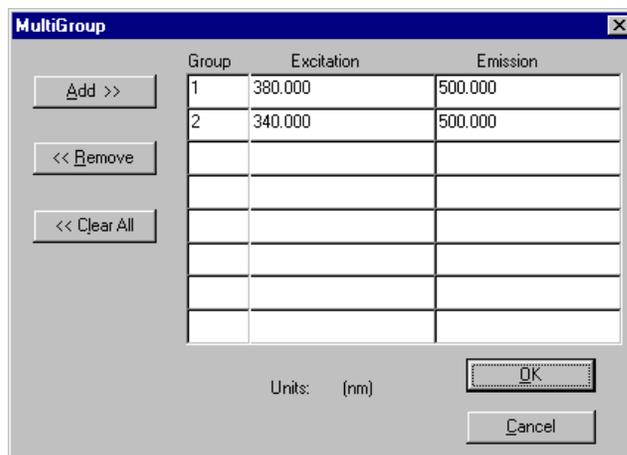


Figure 1. Screen shot from DATAMAX® software.

Conclusion

FLUOROMAX®, with DATAMAX® software, allows the user to monitor wavelength-pairs to characterize processes in living cells and other biological systems. The measurement is feasible in real time because of the FLUOROMAX® spectrofluorometer's ability to scan rapidly (up to 200 nm s⁻¹).

¹ Kimura, M.; *et al. J. Physiol.* **1993**, *494*, 1–13.

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In the USA:

Jobin Yvon Inc.
3880 Park Avenue
Edison, NJ 08820
Tel: 1-732-494-8660
Fax: 1-732-549-5157
E-Mail: fluorescence@jyhoriba.com
1-800-533-5946

In France:

Jobin Yvon S.A.
16-18, rue du Canal
91165 Longjumeau cedex
Tel: (33) 1/64.54.13.00
Fax: (33) 1/69.09.93.19

Germany: 89/46.23.17-0
Italy: 2/57.60.30.50
U.K.: 020/204.81.42



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