



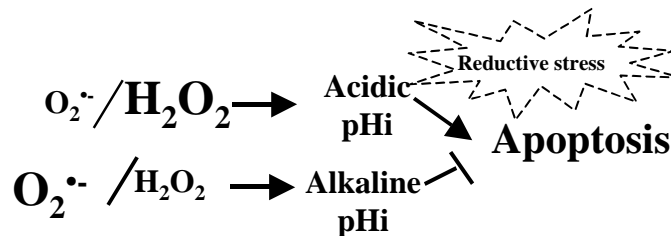
**Marie-Véronique CLEMENT, Ph.D. (Paris VI, France)**  
**Associate Professor**  
**Assistant Dean Education (preclinical)**  
**Yong Loo Lin School of Medicine**  
 Office: MD7  
 Room 01-05  
 Tel: +65 65167985  
 FAX: +65 67791453  
 Email: [bchmvc@nus.edu.sg](mailto:bchmvc@nus.edu.sg)

## Reactive Oxygen Species signaling laboratory

### Major interests:

- **Reactive oxygen species and regulation of apoptosis**

The first interest of our research group is to understand the role of intracellular reactive oxygen species such as superoxide ( $O_2^{\cdot-}$ ) and hydrogen peroxide ( $H_2O_2$ ) in the mechanism of apoptosis and the regulation of cell response to



Clément M-V, and Pervaiz S. Intracellular superoxide and hydrogen peroxide concentration: a critical balance for cell response to apoptosis. (2001) *Redox Report*

apoptotic triggers.

- **Superoxide dependent survival pathways in tumor cells**

We have shown that tumor cell resistance to apoptosis is associated with an increase in intracellular  $O_2^{\cdot-}$ . Moreover, we have demonstrated that increase intracellular  $O_2^{\cdot-}$  in tumor cells could be due to the activation of the small GTP-binding protein Rac1, one of the downstream effector targets of the oncoprotein Ras. Hence, our second interest is to assess if intracellular production of  $O_2^{\cdot-}$  could be a common denominator to oncogene associated survival pathways in tumor cell. A better understanding of these  $O_2^{\cdot-}$ -producing pathway(s) may be of critical importance to improve our understanding of cancer development, and most importantly may help to design new approaches to cancer therapy.

### Selected publications:

Clément M-V and Stamenkovic I. Superoxide anion is a natural inhibitor of Fas-mediated cell death. *EMBO. J.*, Vol 15, 216-225, 1996

Clément M-V, Ponton A and Pervaiz S. Apoptosis Induced by  $H_2O_2$  is mediated by Decreased  $O_2^{\cdot-}$  Concentration and Reduction of Intracellular Milieu. *FEBS Letters*, 440, 13-18, 1998

Pervaiz S., Cao J., Chao OSP, Chin YY. Clément M-V. Activation of the RacGTPase inhibits apoptosis in human tumor cells. (2001) *Oncogene* 20: 6263-6268, 2001

Hirpara JL, Clément M-V, and Pervaiz S. Intracellular acidification triggered by mitochondrial-derived hydrogen peroxide is an effector mechanism for drug-induced apoptosis in tumor cells. *J. Biol. Chem* 276:514-521, 2001.

Pervaiz, S and Clément, MV. Tumor Intracellular Redox Status and Drug Resistance-Serendipity or a Causal Relationship? *Current Pharmaceutical Design* 10, 1969-77, 2004

Geoffrey Koh, Huey Fern Teong, Marie-Véronique Clément, David Hsu, P.S. Thiagarajan a "A Decompositional Approach to Parameter Estimation in Pathway Modeling: A Case Study of the Akt and MAPK pathways and Their Crosstalk" *Bioinformatics*. 2006 Jul 15;22(14):e271-80.

Chao SP and Clément MV. Epidermal growth factor and serum activate distinct survival pathways in LNCaP prostate carcinoma cells. *Oncogene*. 2006 Jul 27;25 (32):4458-69. Epub 2006 Jun 12.

Akram S, Teong HFC, Fliegel L, Pervaiz S and Clément MV. Reactive oxygen species-mediated regulation of the Na<sup>+</sup>/H<sup>+</sup> exchanger 1 expression connects intracellular redox status with cells' sensitivity to death triggers. *Cell Death and Differentiation* 13, 628-641, 2006

Lim S and Clément MV. Phosphorylation of the survival kinase AKT by superoxide is dependent on an ascorbate reversible oxidation of PTEN 2007 *Free Radic Biol Med*. 2007 Apr 15;42(8):1178-92