

CHOLESTEROL AND PHOSPHOLIPID PATTERNS OF THE ERYTHROCYTE MEMBRANE : A POTENTIAL “MIRROR” OR A “TROYAN HORSE” ACTING WITHIN THE CONTEXT OF METABOLIC DISEASE

Perturbation in carbohydrate and lipid metabolism and transport is an integral part of the pathophysiology of a plethora of diseases.

In this presentation, a novel role of the erythrocyte membrane is postulated, as part of the general processes of lipid and cholesterol exchange between plasma and tissues, featuring the paradigm of Coronary Artery Disease (CAD), where the erythrocyte membrane of patients with acute coronary disease (ACS) were observed to bear a higher cholesterol load versus those of patients with chronic stable angina (CSA) [1] and the quantity of cholesterol in those patients was shown to determine plaque progression [2], linking closely with coronary atherosclerotic burden [3] and suggesting a potential interplay between erythrocyte-derived lipid and the expansion of atheromata. This particular cholesterol pool responds to statin administration, displaying different time-course kinetics regarding either ACS or CSA [4].

An animal model aiding proof of principle [5] is also outlined.

Under this perspective, the erythrocyte emerges both as a collateral lipid transporter that can determine the risk of an acute incident, and as a true reporter/biomarker of the state of affairs at tissue level acting as a “Trojan horse” and a “mirror” of CAD.

Finally, a potential involvement of the erythrocyte membrane in other paradigms of diseases manifesting perturbations in lipid metabolism (Hepatitis C, Non- alcoholic steatohepatitis) is outlined, as spin-off projects that are active at present.

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EDUCATION

From 1980 to 1983 : BSc Biochemistry [Salford University, Biochemistry Department, Manchester, UK].

From 1983 to 1985 : MSc Biochemistry [Salford University, Department of Biological Sciences, Manchester, UK].

From 1985 to 1988 : PhD Biochemistry [Salford University, Department of Biological Sciences, Manchester, UK].

EMPLOYMENT

- **From 1988 to 1990** : National/Military Service (sergeant).
- **From 1990 to 1993** : **Postdoctoral Fellow** [Institute of Molecular Biology and Biotechnology, (IMBB), Heraklion, Crete, Greece].
- **From 1993 to 1998** : **Lecturer** of Biochemistry [Medical School, Democritus University of Thrace, Alexandroupolis, Greece].
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EXPERIENCE IN EVALUATING/REVIEWING :

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1. Expert evaluator in the European Commission, FP7 (<https://cordis.europa.eu/emmfp7>)
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National :

1. Expert Evaluator for the Greek Ministry of Education “HERAKLEITOS”, 2009-2010, and “SOCRATES”.

Reviewer for the journals :

- Archives of Toxicology
- International Journal of Oncology
- British Journal of Cancer
- Cancer Letters
- Oncology Reports
- Biomedical Journals
- International Journal of Molecular Medicine
- International Journal of Oncology
- Crustaceana
- Human Molecular Genetics
- Oncology Letters
- The Open Reproductive Science Journal
- BMC Cancer
- World Journal of Surgical Oncology
- Molecular Medicine Reports
- Current Research : Integrative Medicine
- Oncotarget
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TEACHING EXPERIENCE

- From 1983 till present : Biochemistry

RESEARCH INTERESTS

- Signal transduction and cancer
- Oxidative stress and apoptosis
- Lipid metabolism/kinetics as part of the pathophysiology of diseases with metabolic background

INTERNATIONAL COLLABORATIONS

- Ludwig Institute for Cancer Research [Uppsala, Sweden].
- Medical School, University of Vienna, Austria.
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List of publications

1. Partial purification and properties of (Na⁺+K⁺)-ATPase from *Potamon potamios*.

Tentes I., and Stratakis E. *Comp. Biochem. Physiol.* **100C**, 619-624, 1991.

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- 47. Circulating matrix metalloproteinases and their inhibitors in inguinal hernia and abdominal aortic aneurysm.** Antoniou GA, **Tentes IK**, Antoniou SA, Georgiadis GS, Giannoukas AD, Simopoulos C, Lazarides MK. *Int Angiol*. Apr;30(2):123-9, **2011**.

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