**PUFA and their Biological Effect**

**Ass. Professor Dr Marios Pantzaris**
*The Cyprus Institute of Neurology and Genetics-Cyprus School of Molecular Medicine, Cyprus*

In our recent research and clinical activity, with the development and the use of new technologies like lipidomics, we have started understanding better and better the mechanisms responsible for the physiological and pathological lipid metabolism. Especially the study of Omega 3 and 6 (ω3 and ω6) polyunsaturated fatty acids- PUFAs (like EPA -eicosapentaenoic acid, 20:5n-3 and DHA – docosahexaenoic acid, 22:6n-3 but also ARA -arachidonic acid, 20:4n-6) and their transformation to bioactive lipid mediators like resolvins, protectins and maresins! All these new molecules are lipid metabolism products that contribute substantially in the “return to homeostasis” process and resolution of inflammation. Increased and special synthesis and analogy dietary intake of omega 3and omega 6 PUFAs can contribute significantly in almost preventing from the progression of various neoplastic diseases, like breast, prostate, colon and renal cancers. Omega 3 and 6 PUFAs can also slow down the evolution and progression of neurodegenerative diseases like Alzheimer, Parkinson, Amyotrophic Lateral Sclerosis, Multiple Sclerosis as well as severe Depression and Bipolar disorder. Probably in some autoimmune disorders too. Finally, taking into account the anti-aggregation activity in platelets’ function they can offer cardiovascular ischemic protection (Myocardial Ischemia and Ischemic Stroke). The current knowledge and experience from the use of these molecules urge us to study in more detail to understand more deeply their mode of action and the way they prevent us from various pathological processes.