Project Title: Decipher the pro-atherogenic potential of a novel identified family of lipids in cardiovascular disease patients *in vivo* using zebrafish larvae

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Summary:
Atherosclerosis is the major cause of cardiovascular disease (CVD) in the world. It results from constitutive uptake by macrophages (Mφ) of modified Low Density Lipoproteins (LDL) trapped in the arterial *intima.* One of the modifications that LDL undergo is lipid oxidation. With time, the uptake of modified LDL by Mφ leads to lysosomal dysfunction and irreversible lipid accumulation. We have determined the lipidome of CVD patients which revealed that the concentration of one particular family of previously not investigated oxidized-lipids, Cholesteryl hemiesters (ChE), is higher in the blood plasma of CVD patients than in normal donors. Furthermore, Mφ exposed to a single component of this family of lipids become lipidotic and pro-inflammatory. Thus, the aim of this proposal is to study the molecular mechanisms behind the pro-atherogenic activity of ChE *in vivo* in zebrafish larvae, a model that has recently been shown to be suitable for this purpose. To achieve our aims we will apply molecular cell biology and advanced microscopy techniques among others.

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