We would like to draw your attention to an opening for a PhD position in Grenoble, France, between the Institut de Biologie Structurale (IBS) and the Institut Laue Langevin (ILL).

The selected candidate will perform modelling by Alphafold, cryo-EM on a challenging biological
target (see detailed project below) in the MICA group at IBS, as well as undergo neutron scattering experiments at the ILL.

The candidates are expected to have a solid background in biophysics, biochemistry and structural
biology. Previous experience in cryo-EM and/or neutron scattering would be a plus, but not required.

Please send a CV, a motivation letter, your academic records and the contact details of at
least two referees to the two co-supervisors of this position :

Dr. Ambroise Desfosses (IBS) : ambroise.desfosses@ibs.fr

Prof. Judith Peters (ILL) : jpeters@ill.fr

The position has to start before end of March, applications will be accepted until mid-February.

Project description :
The natural nanoparticle "low density lipoprotein" (LDL) is responsible for the transport of cholesterol in the blood. Dysfunction of this functionality can lead to serious diseases. It contains a unique protein, apoB-100, which has a molar mass of 500 kDa. While the whole particle and its protein have been studied for a long time, it has still not been possible to determine their structures at the atomic level.
To obtain new models of LDL and apo B-100 with an unprecedented level of detail we will pursue three individual paths that will converge: LDL will be investigated, and independently its sole protein moiety apo B-100 in a lipid-free detergent-stabilized form. To access their structures we will combine modelling by Alphafold and simulations,
state-of-the-art cryo-EM techniques, SAXS, and neutron
scattering methods. All methods will be applied not only on LDL and/or its subfractions, but also on triglyceride-rich and oxidized LDL to mimic pathologic conditions as found in hyperlipidaemia or in atherosclerotic plaques.

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