

European Immunometabolism Network (ImmunoMetEurope): Proposal for an EFIS-IL study group

Summary

The overall research interest of the EFIS-IL study group European Immunometabolism Network (**ImmunoMetEurope**) is to **advance and promote research in the field of Immunometabolism**. By bringing together basic and clinical researchers, we will foster collaborative networks for discovering novel mechanisms linking immune cell metabolism and function, identify new targets for therapy, and explore metabolic pathways in immune cells that determine health vs. disease.

1. Research Area

Cellular metabolism plays a crucial role in regulating the utilization of biomolecules for both catabolic and anabolic processes, leading to the production of cellular energy and structural components as well as to changes in metabolites, redox balance, and signaling. Driven by recent technological breakthroughs, the field of immunometabolism has become an exciting area of biomedical research. State-of-the-art studies in this area indicate that the metabolic interface of immune cells can be a major determinant of an effective immune response and influence immune cell activation, differentiation, and function. Research in immunometabolism enables us to elucidate the underlying mechanisms by which metabolic processes shape immune responses. This knowledge can contribute to the development of novel strategies to modulate immune function, enhance immunotherapy, and maximize therapeutic efficacy while minimizing adverse effects. Immunometabolism bridges the fields of immunology and metabolism, opening up opportunities for interdisciplinary collaborations and discoveries that will need different expertise and a range of techniques. Addressing the complexities of immunometabolism necessitates the adoption of transnational and interdisciplinary collaborative approaches, as it surpasses the capacity and expertise of a single laboratory. Thus, the aim of ImmunoMetEurope is to connect basic and clinical researchers across Europe in the field of immunometabolism fostering collaborations to accelerate breakthrough discoveries in this field.

2. The core group of proponents

The proposing members consist of 18 research groups (including group leaders and postdoctoral researchers) from 12 countries. Since 2018, many members of the proposing consortium have been organizing initiatives to promote collaboration in Immunometabolism. These include the ImmunoMetNet initiative in the Netherlands (coordinated by Jan Van den Bossche), the BSI Immunometabolism affinity group in the U.K. (led by Linda Sinclair and Anna Schurich), the very popular Immunometabolism forum (IMF) based in Ireland (led by David Finlay), the Human Immunometabolism collaborative network in France (coordinated by Rafael Argüello), or the Immunometabolism and Systems Biology graduate program NEXTIMMUNE2 in Luxembourg (coordinated by Dirk Brenner). Thus, there is a demonstrated collaborative work among the core proponents that offer our members opportunities for the exchange of knowledge and the development of collaborative projects. The aim of **ImmunoMetEurope** is to **expand these initiatives over the whole of Europe to provide a “home platform” for Immunometabolism research and exchange**.

3. Organization of study group meetings and financing

The study group will convene on a monthly basis, facilitating the organization of two brief presentations from affiliated groups through an online platform. These meetings will be exclusive to the network and treated as confidential within the network, enabling the discussion of ongoing work. This platform will provide PhD students and postdoctoral researchers with the opportunity to showcase their ongoing work and share emerging data, fostering collaborative efforts on ongoing

projects among the participating groups. In particular, we are committed to promoting the careers of female scientists and will take care to reach gender parity in our meetings, organization structures, and boards.

We will organize an **annual EFIS-IL study group meeting**. There is an existing network structure of national immunometabolism initiatives on which this annual meeting can build on. This includes the annual ImmunoMetNet symposium with more than 100 attendants, the biannual BSI Immunometabolism meeting with 180 attendants, and the current workshop “Metabolism in the Single Cell Era” with more than 100 attendants. These structures allow easy integration of the planned annual EFIS-IL ImmunoMetEurope group meeting, providing an excellent platform for discussing the latest discoveries and novel insights to study cellular metabolism and a great opportunity to exchange expertise between the members of the network. The EFIS-IL study group meeting will take place as a 2-day event in a European city that is well connected by plane/train. We will select a different city each year to have a broad inclusion of several countries. To ensure cost-effectiveness, local ImmunoMetEurope members will host the meeting at their respective research institutions. In addition, we are exploring sponsorship options for the annual meeting by industry together with local sponsors at the site (e.g. companies on metabolism, omics, flow cytometry, etc).

4. Inclusion of new members in ImmunoMetEurope

To foster collaborative work, it is essential to include new members in the ImmunoMetEurope study group. We want to be inclusive for additional members to cover countries and genders not well represented as well as to cover topics that are not yet included or are emerging. We will particularly encourage female as well as junior PIs and postdoctoral researchers working in underrepresented European countries in the field of immunometabolism to submit abstracts to our annual conference and to join our seminar series and the study group. We will announce the annual meeting publicly, e.g. via national immunological societies, EMBO fellow networks, and the EFIS. At each annual meeting, we will also invite 1-2 experts in a particular field (e.g. single-cell RNA-seq, bioinformatics, mass spectrometry, metabolomics, industry) to explore and expand our knowledge on new forefront technologies.

5. Anticipated outcome and commitment of participating PIs

The core proponents will establish monthly and annual meetings and will apply for European funding on the topic (e.g. Marie Skłodowska-Curie Doctoral Networks), demonstrating the importance of regular and open meetings as a seed for new collaborations. We expect that the extension of this core group with other European immunologists working in the field of immunometabolism from a basic, applied, or translational approach will establish **a platform for young immunometabolism researchers to build and expand a European network to open new opportunities for collaborations**. Because of this unique setting, we also expect that this will foster submissions of research proposals within the new EU framework program 9 (FP9). The proponents are also committed to contributing to a special issue of Immunology Letters.

6. List of study group members (in alphabetical order)

Rafael José Argüello (FRA)
Luciana Berod (GER)
Dirk Brenner (LUX)
Mauro Corrado (GER)
Thekla Cordes (GER)
Bart Everts (NLD)

David Finlay (IRE)
Ping-Chih Ho (CHE)
Daniel Ketelhuth (DNK)
Claus Desler Madsen (DNK)
Massimiliano Mazzone (BEL)
Danilo Norata (ITA)

Maxim Nosenko (IRE)
David Sancho (ESP)
Anna Schurich (GBR)
Linda Sinclair (GBR)
Jan Van den Bossche (NLD)
Thomas Weichhart (AUT)

