

**Funded by the Innovative Medicines Initiative (IMI), the Fraunhofer Cluster of Excellence Immune-Mediated Diseases (CIMD), together with 25 European partners from research, pharmaceutical companies, SMEs and patient organisations, is researching a poorly understood disease that affects millions of people.**

By looking into the disease mechanisms of psoriatic arthritis, the 26 European partners collaborating in the new research project HIPPOCRATES aim at improving diagnostic and therapeutic options for patients living with this condition. Through gaining a better understanding of the complex interplay between clinical and environmental factors, genotype and molecular pathways, the team aims to enable earlier diagnosis and a more accurate prediction of disease progression. This will revolutionise treatment and deliver profound patient benefits.

Overall, it is increasingly recognised that psoriatic arthritis is associated with multiple comorbidities, particularly those affecting mental health, such as depression, and those which promote the development of accelerated atherosclerosis and contribute to the observed increase in cardiovascular morbidity and mortality. Psoriatic arthritis most commonly develops on a background of established skin and/or nail psoriasis, however it can be difficult to diagnose as there are no diagnostic criteria or laboratory tests available. This can contribute to diagnostic delay and poor outcomes. Psoriatic arthritis is characterised by considerable heterogeneity with regards to clinical features, disease progression and response to targeted therapies. Future treatments will need to focus on earlier disease stages and be selected on the basis of detailed patient molecular profiling so as to limit poor long-term outcomes and possibly prevent the development of psoriatic arthritis altogether.

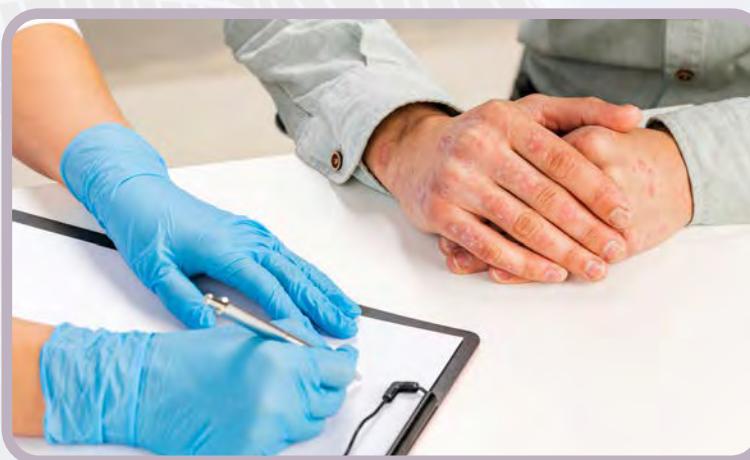
Three Fraunhofer institutes of the Fraunhofer Cluster of Excellence Immune-Mediated Diseases CIMD (Fraunhofer ITMP, IAIS and IGD) participate in the European HIPPOCRATES (Health Initiatives in Psoriasis and Psoriatic arthritis ConsoRTium European States) consortium, which was launched in order to identify patients at risk of developing psoriatic arthritis, and to develop diagnostic methods and personalised approaches to treat patients.

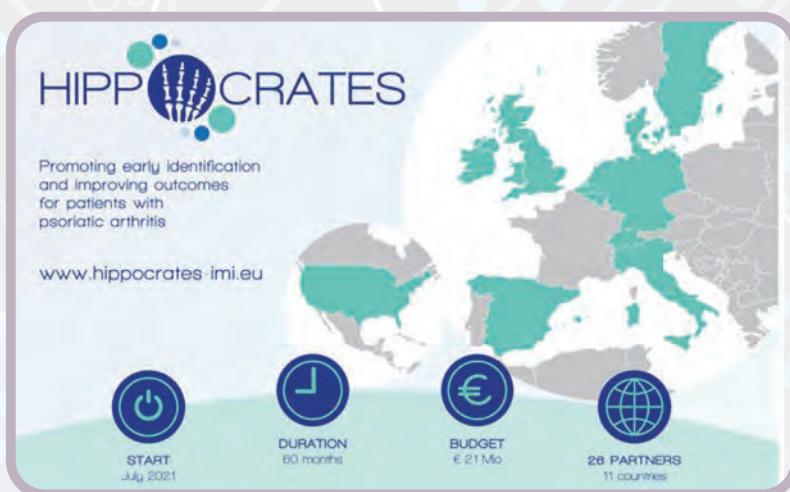
Formed as a transdisciplinary consortium, the project team comprises 26 partner institutions from Belgium, Denmark, Germany, Ireland, Italy, Spain, Sweden, Switzerland, the Netherlands, the United Kingdom and the United States of America. Led by University College Dublin, the partners contribute a diverse range of backgrounds, including clinical, scientific, data analytics, ethics, and patient participation, as well as SME and pharmaceutical industry expertise, in pursuit of the ambitious goals set for the HIPPOCRATES project.

The project will run for a period of five years with a total budget of €21 million provided by IMI 2 JU, a public-private partnership established as a joint undertaking between the European Union and the European Federation of Pharmaceutical Industries and Associations (EFPIA). Of the total budget, 50% is contributed by the EFPIA partners (Novartis [EFPIA lead], UCB [EFPIA Co-lead], Pfizer and BMS) and 50% by the EU.

*“We anticipate that the advances provided by HIPPOCRATES will result in significant new developments that improve patients’ quality of life,”* says Prof Oliver Fitzgerald, Newman clinical research professor at University College Dublin, Conway Institute for Biomedical and Biomolecular Research, Ireland coordinator of the HIPPOCRATES consortium.

Co-coordinator, Prof Stephen Pennington, professor of proteomics at University College Dublin and also in the Conway Institute, notes *“The advances will include the identification of sub-populations and endotypes, the validation of existing and identification of new biomarkers, improved imaging options and the development of a sustainable infrastructure for future PsA research.”*





***"HIPPOCRATES offers the great promise of powerful new tools to advance both early diagnosis and treatment of patients with psoriatic arthritis. Additionally, and to further its effectiveness, HIPPOCRATES retains the focus on the patient, involving patient research partners within all aspects of the project,"*** adds Denis O'Sullivan of the patient representative arm of GRAPPA-EU.

***"This public-private partnership is a great opportunity to decipher this highly heterogeneous disease, and to enable the development of novel PsA therapies and treatment strategies including precision medicine approaches,"*** adds Dr Christine Huppertz, senior principal scientist in the disease areas autoimmunity, transplantation and inflammation at Novartis, and EFPIA lead of the consortium.

In order to achieve its goals, the HIPPOCRATES project will set up a single integrated database combining the cohorts and datasets of the most important European psoriatic arthritis studies and establish a Europe-wide library of relevant clinical biosamples. HIPPOCRATES will also establish a large, prospective, observational study of 25,000 patients with psoriasis who will be recruited and followed online for development of PsA, with patient-centric blood sampling at defined intervals. Furthermore, the team of experts will evaluate and validate newly discovered biomarker signatures for the early diagnosis of PsA, for the identification of psoriasis patients at risk of developing PsA, for the identification of PsA patients at highest risk of damage progression, and for personalised or stratified treatment strategies so as to maximise treatment response. Overall, HIPPOCRATES places particular emphasis on the

involvement of patients, clinicians, primary care practitioners, regulators, SMEs (ATTUROS Limited, Oxford Biodynamics Limited and NEOTERYX Limited) and relevant large industry to meet the needs of all stakeholders and to maximise the project's impact.

Fraunhofer ITMP, in cooperation with University Hospital Frankfurt's department of rheumatology, was involved at an early stage in planning the content and institutional composition of the consortium. Together with its Fraunhofer CIMD partner institutes, Fraunhofer IAIS and IGD, it will lead two of the seven HIPPOCRATES work packages, covering 'Early diagnosis of psoriatic arthritis' and 'Data integration and analysis'. For the early diagnosis of PsA, the Fraunhofer team will determine clinical, imaging, and molecular disease features and capture them in a combined context to derive algorithms for psoriatic arthritis diagnosis. Data integration and analysis will involve the use of machine learning to model an AI-based risk score of progression from psoriasis to psoriatic arthritis, as well as a risk score for rapid bone-damaging disease progression and a response score to predict response to a given treatment.

***"HIPPOCRATES offers us the opportunity to collaborate with leading European experts to gain a deeper understanding of PsA in order to improve the mobility and quality of life of many affected patients,"*** says PD Dr Frank Behrens, head of clinical research at Fraunhofer ITMP and member of the Fraunhofer CIMD board of directors. ***"I am confident that in our project we will discover new markers that will enable early detection of psoriatic arthritis improve treatment response and possibly even open up avenues for disease prevention. With the unique combination of the diverse expertise represented in Fraunhofer Health Research, from medicine to multi-omics, and image processing to data sciences, we can make an important contribution to manage the debilitating psoriatic arthritis disease."***

Source:  
Fraunhofer Institute for Translational Medicine and Pharmacology (ITMP)