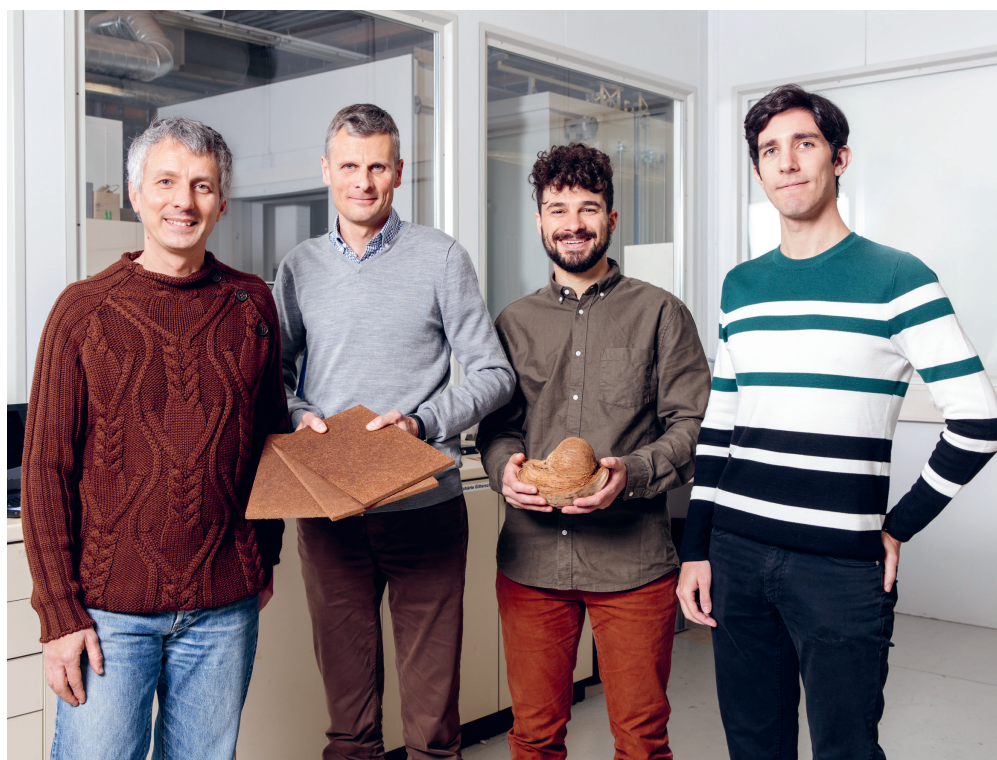


From the lab to the world – with a good business plan

In addition to advice and money, anyone who plans to set up their own company on the springboard of a research project will need boundless enthusiasm. The following three examples of SNSF grantees illustrate this.



Cocoboards: Sauro Bianchi (scientific adviser, Berner Fachhochschule, BFH), Frédéric Pichelin (technical adviser, professor at the BFH), Michail Kyriazopoulos (project manager/inventor, BFH) and Matias Cavero Herrera (product developer, BFH) present their new building material made from coconut fibre.

To begin with, the subject was just one of many I was interested in," says Michail Kyriazopoulos. "But when it became clear what the real-world social benefits of our research could be, I got really fired up." For several years, Michail Kyriazopoulos has been researching a novel, coconut fibre-based building material. He started out as a Master's student working on a project sup-

ported by the r4d programme of the SNSF and the Swiss Agency for Development and Cooperation (SDC). The programme promotes scientific cooperation with developing and emerging countries. The research at Bern University of Applied Sciences produced good results, and there seemed to be practical applications for it. "The material we have developed is perfect for building affordable housing in countries in the

South," explains Michail Kyriazopoulos. "In the Philippines, for example, it can be manufactured locally and at very low cost using agricultural waste."

BRIDGE grant to fund next steps

Making the transition to real-world use is not that straightforward though. No discovery makes its way from the lab to real life by itself. That takes people who can create awareness of the discovery and adapt it for very specific purposes. Manufacturing and distribution also have to be organised. In short, the scientific basis has to be augmented by entrepreneurial action.

This is why Michail Kyriazopoulos is currently working on a business plan, setting up a production facility in the Philippines with local partners and presenting the idea to potential Swiss industry partners, while at the same time optimising the building boards, which have been launched under the name of Cocoboards. He is being supported by funding from the BRIDGE programme run by the SNSF and Innosuisse, the Swiss Innovation Agency. BRIDGE enables young scientists to test their idea for a limited period of time and develop it for the market.

Angelika Kalt, Director of the SNSF says: "If researchers use their findings to set up their own company, they are transferring scientific results direct to the economy and society. In this respect university start-ups and spin-offs play an important bridging role." But the road is a challenging one, and navigating it successfully needs more than the money that safeguards the fledgling enterprise's survival for a while. "That's why coaching sessions and courses on business-related issues are a fixed part of BRIDGE



Ophthorobotics: Franziska Mathis-Ullrich (adviser, professor at Karlsruhe Institute of Technology) and Roland Dreyfus (CEO) with a prototype of the fully automated device for giving eye injections.

funding,” explains Angelika Kalt. “This is where Innosuisse’s expertise and experience are essential.”

The pivotal question

Jagdish Achara knows exactly how important this real-world expertise is. He and his company Gridsteer have reached the point that Michail Kyriazopoulos is trying to get to – that of founding a company. Gridsteer combines software and hardware in intelligent systems that regulate electricity flow in regional distribution grids. The need arose from the growing number of new renewable energy sources – such as wind or solar – being integrated into local grids. Gridsteer’s technology is derived from two projects carried out at EPF Lausanne as part of the SNSF’s National Research Programme “Energy Turnaround” (NRP 70). Jagdish Achara was involved as a postdoc. “We’d never even considered using the technology commercially until a company contacted us one day,” he says. “They told us they were interested in our system and asked if they could use it.”

But even with this basis, a functional business model was not immediately apparent.

“The problem for which you have the solution generally doesn’t exist in that form.”

Jagdish Achara, Gridsteer



“As a scientist, I found that gearing our technology to the market forced me to look at it from a completely new perspective,” says Jagdish Achara. “Because the most important question in business is ‘how will our product generate money?’ And not just once, but time and time again.”

Focus, focus, focus

Just like Michail Kyriazopoulos, Jagdish Achara asked himself this question during the start-up training provided by Innosuisse. He found that it was less than straightforward to answer. “Because the problem for which you have the solution generally doesn’t exist in that form,” he explains. Instead, clarity on how to configure the solution for real-life use is only obtained after market needs have been analysed in detail. Franziska Mathis-Ullrich had the opposite experience. She is a co-founder of Ophthorobotics, a start-up that is creating a fully automated system for performing medical injections in eyes. The robotics scientist, who was working at ETH Zurich at the time, first developed the idea in discussions with ophthalmologists. The specialists approached her with a very clearly defined real-world

problem. Since patient numbers are growing as a result of an ageing population, they were looking for a way to automate the procedure which guaranteed at least the same level of quality as at present. “So we – the robotics engineers and the doctors – worked together to find a solution.”

Promise on the horizon

Ophthorobotics also found that entering the market successfully required a lot of time and effort. “The questions we had to deal with ranged from our business plan and intellectual property to logistics and taxes,” says Franziska Mathis-Ullrich. “Fortunately, since we were supported by BRIDGE funding from the SNSF and Innosuisse, we were able to gain a better understanding of the business side and avoid mistakes further down the line at the same time as working on technical development.”

Programmes such as BRIDGE are an important helping hand for many research-based start-ups and spin-offs. Nevertheless, the boundless commitment and enthusiasm of the company founders will always be the factor determining success on both the scientific and business sides. Michail Kyriazopoulos,



“The questions you have to deal with range from your business plan and intellectual property to logistics and taxes.”

Franziska Mathis-Ullrich, Ophthorobotics

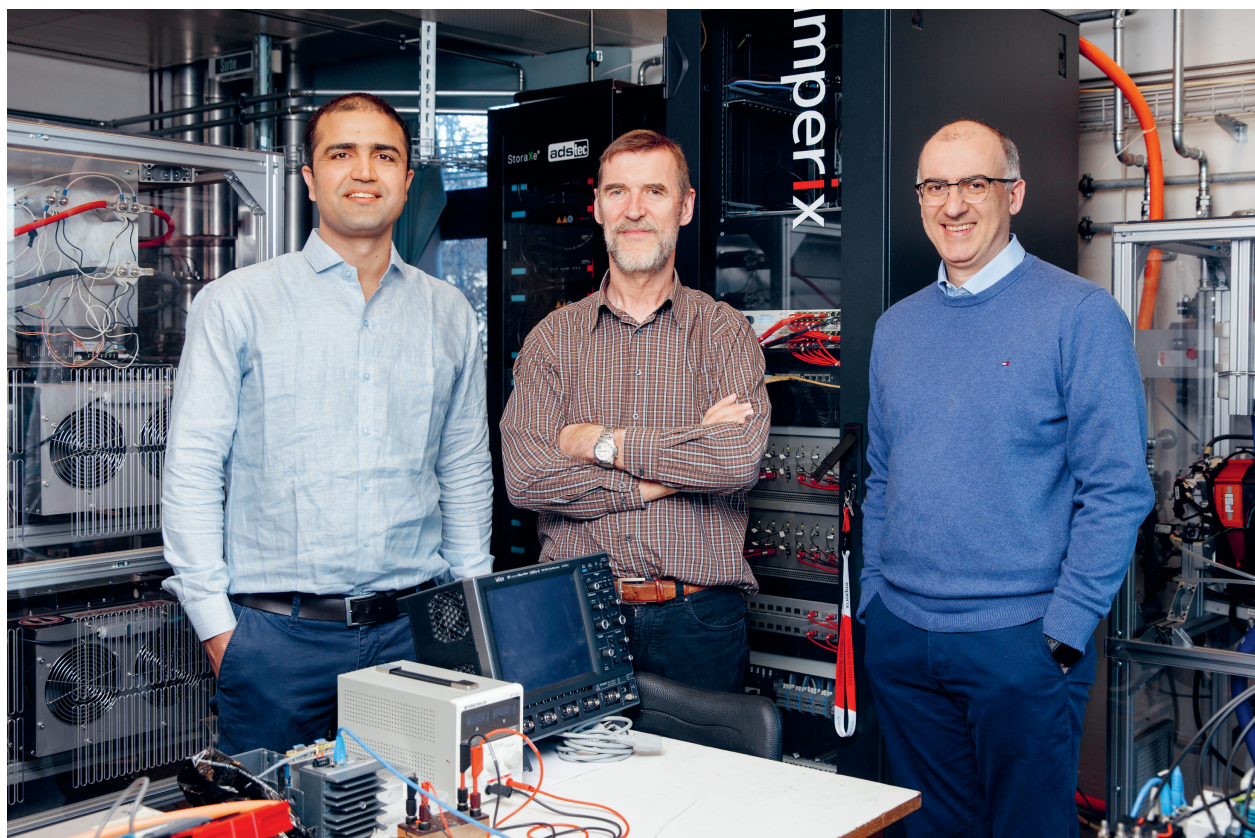
Jagdish Achara and Franziska Mathis-Ullrich know full well how much work is involved in getting a start-up off the ground. They are all too familiar with the intensive periods when it is necessary to keep countless strands together while playing many different roles simultaneously and looking ahead to an un-

certain future. But they are also aware just how fulfilling the adventure is. “The workload is huge,” says Michail Kyriazopoulos. “You have to devote yourself 100 per cent to your project. But if we can get our product onto the market, our research will have helped build a better world.”

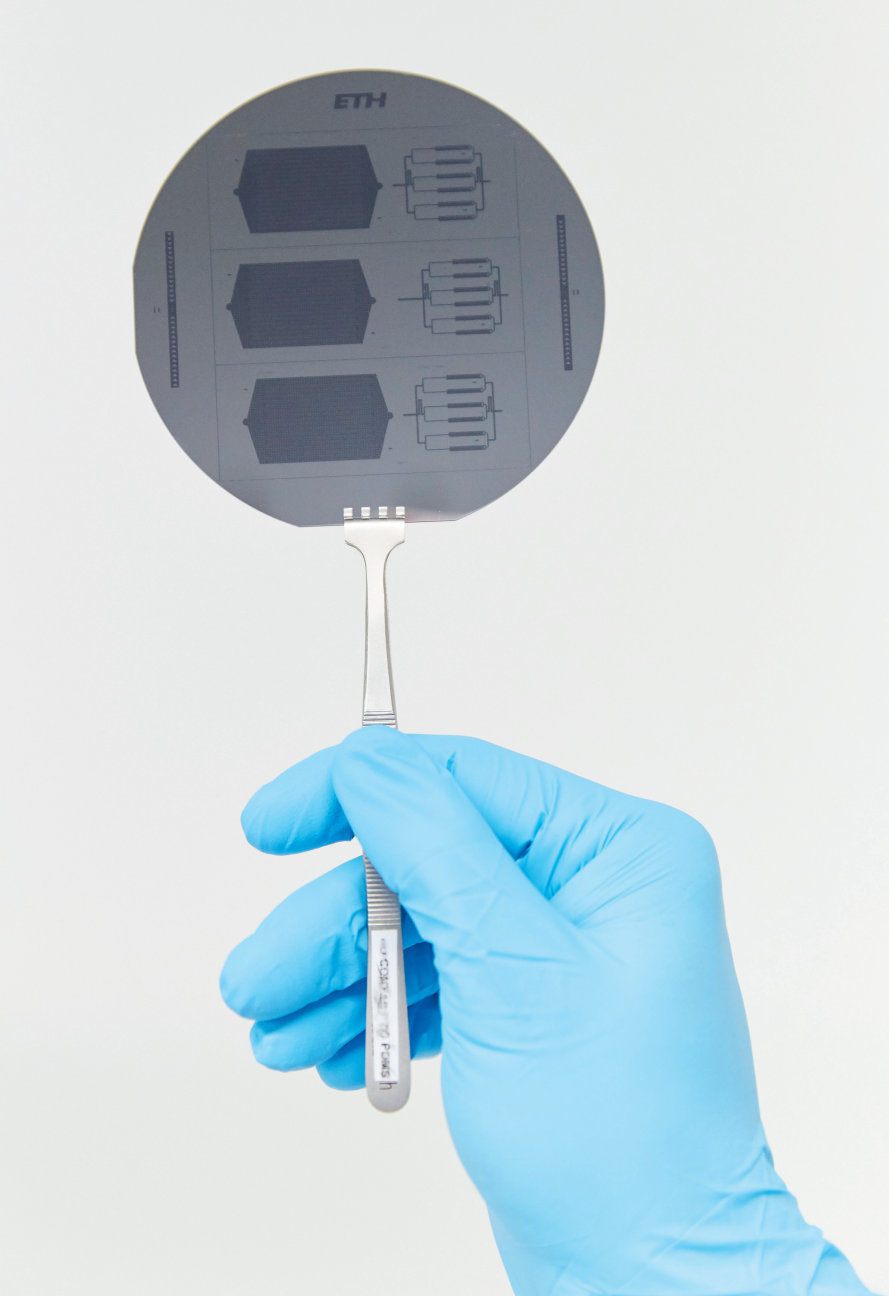


“If we can get our product onto the market, we’re helping build a better world.”

Michail Kyriazopoulos, Cocobboards



Gridsteer: Jagdish Achara (CEO), Jean Yves Le Boudec (researcher, professor EPF Lausanne) and Mario Paolone (researcher, professor EPF Lausanne). The Gridsteer system regulates electricity flow in regional distribution grids.

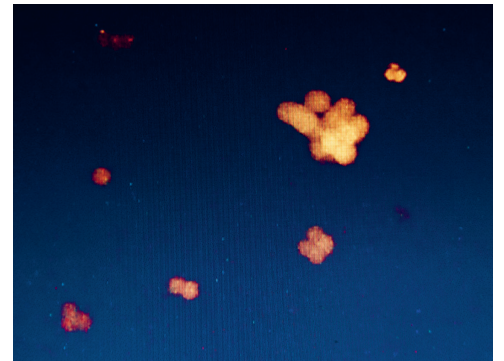
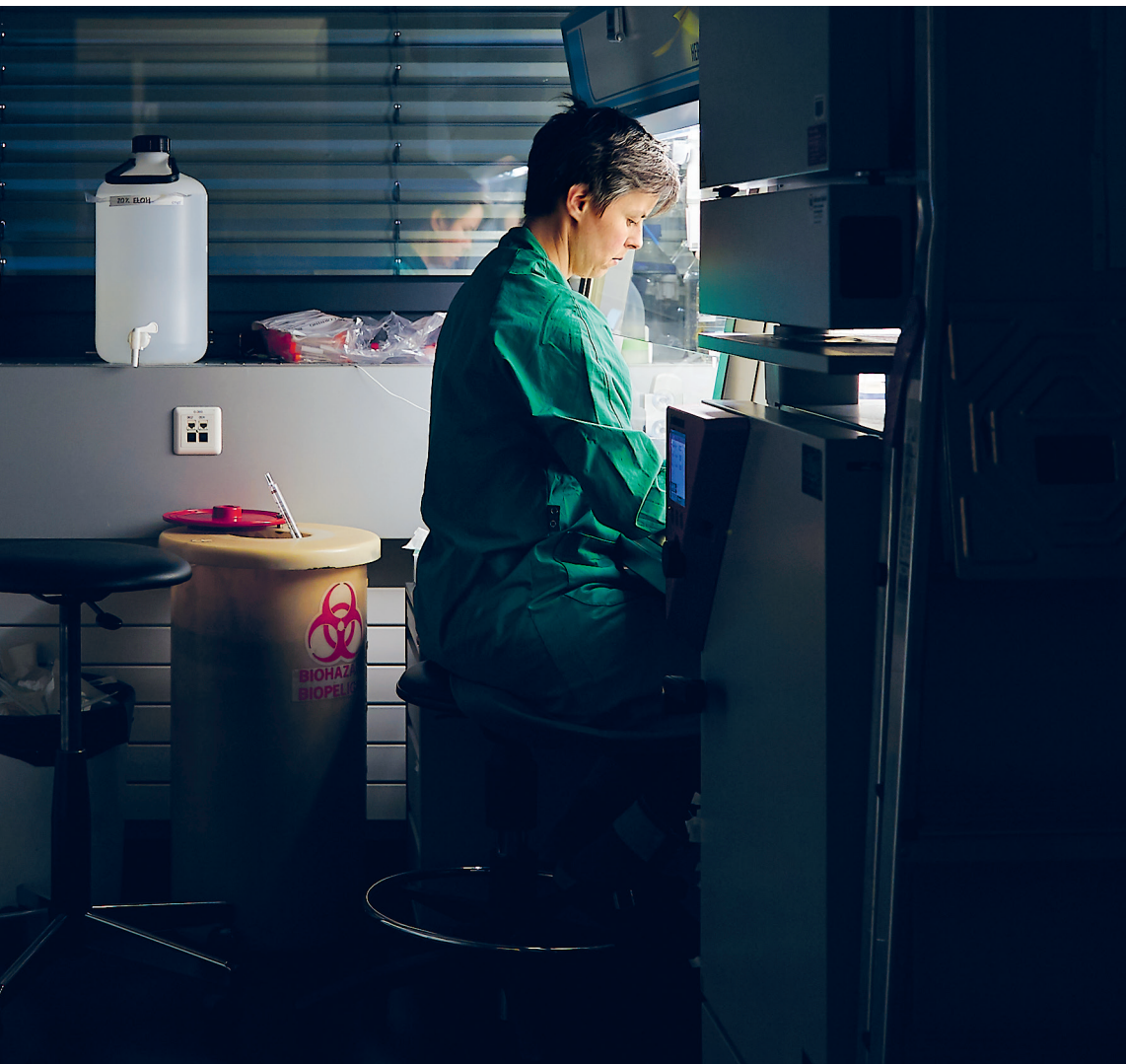


→ Stop metastases

“With the aim of deepening our understanding of cancer biology, I combine molecular biology, bioinformatics and genetics in my research. This has enabled us to show that clusters of cancer cells circulating in the blood play an important part in the development of metastases. We are now looking for new treatments for metastasising types of cancer. One approach is to identify drugs that exploit the vulnerabilities of cell clusters.”

Nicola Aceto, biomedical scientist,
University of Basel

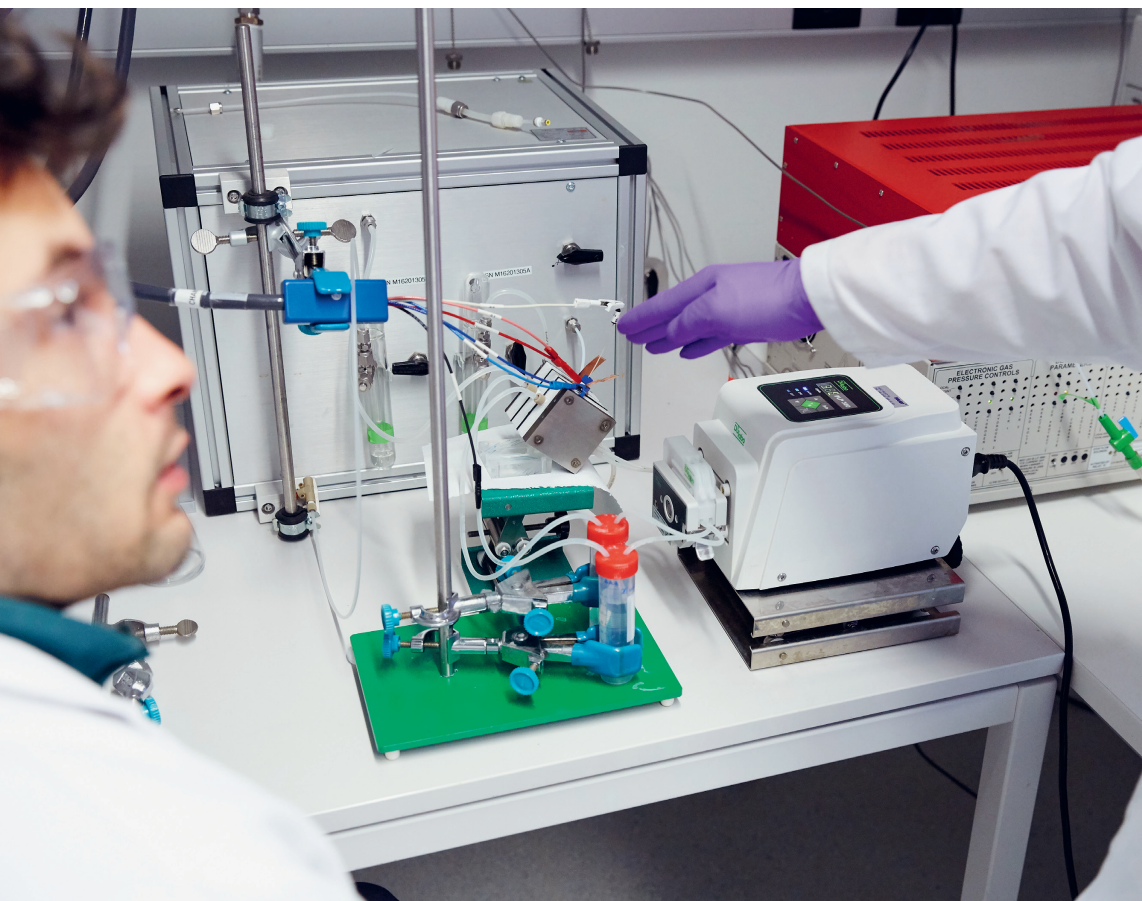
Recipient of several SNSF grants and a fellowship from
the European Research Council (ERC)



Using special microchips, it is possible to isolate metastasising tumour cells in blood samples. The chips were developed by the team of Nicola Aceto in collaboration with the Department of Biosystems Science and Engineering of ETH Zurich in Basel (top left). Microscope image of circulating clusters of tumour cells in the blood of a cancer patient (top). Karin Strittmatter, technical employee, analyses cultures of such cells in the lab (left).



Solar light illuminates quantum dots in a solution; depending on their size, the dots glow in different colours, which means they absorb different components of the light (right). Gian Luca De Gregorio working on an electrochemical cell: here copper nanoparticles degrade the CO₂ with the aid of electricity (below). In such reaction flasks, the particles are carefully synthesised using solution chemistry (bottom right).



→ Just like plants

“A sustainable society needs to produce and stock renewable energy while also reducing CO₂ in the atmosphere. As researchers, we want to contribute to this goal. We synthesise tiny nanoparticles, including metallic and non-metallic elements. Like plants, these particles can store sunlight and electricity into chemical bonds while converting CO₂ into useful compounds.”

Raffaella Buonsanti, chemist, EPFL Valais Wallis

Recipient of an Assistant Professor Energy Grant from the SNSF and of a European Research Council (ERC) Starting Grant

