ÉLISABETH GÉNOT
THE MYSTERY OF PODOSOMES

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She wanted to become an astrophysicist in order to confront String Theory, but *"I was useless in math"*, confesses Elisabeth Génot. However, in light of the thoughts she shared during the interview, she surely could have gotten into philosophy: *"scientific disciplines produce very distinctive visions and relationships to reality. For instance, biologists tend to think they can have the upper hand over nature, while physicists feel overwhelmed when they measure the extent of their task"*. In the course of her PhD studies at the Institut Curie in Paris, Elisabeth Génot investigated a particular type of leukaemia which is treated by introducing a substance that the organism normally produces. As a post-doctoral fellow in the labs of Ed Clark and Edwin Krebs at the University of Washington, Seattle (US), she acquired significant experience in signal transduction and was able to explain why the substance she previously studied had a positive effect on patients. Two years later, she was appointed in London, at Cancer Research UK and then at the Imperial College. There, she kept on enquiring about various key molecules which, in the cell, encrypt and decode the information that comes from the outside, thus determining the reaction of the cell. It is as a connoisseur of the highways and byways of intracellular information transfer that she was recruited in 2001 at the Institut Européen de Chimie et Biologie (IECB).

"I have ventured in uncharted waters, but the IECB allows taking some risks" tells Elisabeth Génot, now Inserm research director. It is true that the path the scientist has chosen is rather unusual. Why is it special? *"Generally, at the Inserm, we start from an* in vivo *situation and we then seek* in vitro *what's going on. For instance, we start from a disease such Alzheimer's and then we investigate in vitro the underlying mecanisms related to the pathology."* In contrast, the Génot team has first evidenced *in vitro* some particular structures in the endothelial cells of the aorta: podosomes, also called actin micro-domains. Since then, Elisabeth Génot has endeavoured to demonstrate the role of such structures in pathologies that affect blood vessels. With the view of producing data on the relationship between podosomes and cardio-vascular diseases, she maintains collaborations with surgeons from the Haut-Lévèque Hospital in Bordeaux: Professor Roques and Doctor Madonna.

Elisabeth Génot adds: *"We are searching for the biological meaning of podosomes."* It is known that these structures contain enzymes which can digest the extracellular matrix, but the reason for this process is still mysterious. Elisabeth Génot puts forward two hypotheses: *"Either the activity of podosomes causes pathologies, or it is the opposite! We are maybe coming across a phenomenon of vessel reparation"*. Whatever it is, explaining the function of podosomes in endothelial cells remains critical to understand vascular physiopathology. In fact, the European Commission has funded the creation of T3NET, a network of 8 laboratories (Italy, UK, Switzerland, Germany, Israel, Netherlands and France) to uncover the mystery of actin micro-domains.

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