



Profile

Alexandre Loupy: innovation in transplantation science

"We call it *le Vidal*", Alexandre Loupy says. "It's a 4000-page book that my mother had, with all the medications...I said, okay, I'm going to learn it." These days, computers crunch the information for Loupy, Professor of Nephrology and Epidemiology at the Necker Hospital of the Assistance Publique-Hôpitaux de Paris, France, and the Director of the Paris Institute for Transplantation and Organ Regeneration (PITOR). But growing up on Réunion Island, the son of a travel agent and a pharmacist (hence the presence of *le Vidal*), the 12-year-old Alexandre attempted to learn every drug in the book. "I was trying to understand all these medications. I think that that, and seeing patients coming to my mother's pharmacy, was something that pushed me to say, okay, I will try to do something that helps people", he says.

"Usually, when you are born in Réunion, you don't leave", he tells me. "You just stay there. It's kind of a paradise." Yet leave he did, heading first to medical school in Bordeaux, France, with the intention of combining his interests of human health and sport as a sports physician. "I was the only one from Réunion Island", he recalls. Feeling like he had "a lot to prove", Loupy worked "like crazy", attaining grades in his sixth-year examinations that meant he could continue with specialist studies in Paris, gaining an MD in nephrology at Descartes University in 2008. It was in Paris that Loupy began to study foundational science and biostatistics. He completed a PhD in cell biology at Pierre and Marie Curie University in 2011, and a second PhD in epidemiology and biostatistics at Descartes University in 2014. "I started to understand that there were some conceptual misalignments between different approaches", he says. "Basic scientists said 'We are the causal science, and statistics is just not reliable. It's only associations.' And when I was in statistics, they were saying, 'Alex, you know these guys from the basic science, they compare three rats with two mice and they just have a p value of 0.049.'" He smiles. "I thought that probably the truth was in the middle. My two PhDs taught me that I could speak a general language in a practice that I wanted to be multi-dimensional."

Loupy identified renal medicine, and particularly the science of transplantation, as the ideal area in which to pursue his vision of an integrated, multidisciplinary science with the potential to effect significant change. "The kind of diseases which were of interest for me were autoimmune diseases, complex diseases like lupus nephritis. I understood that the kidney is the target of a lot of these diseases. So that brought me to nephrology. And then as part of your journey as a nephrologist, you have to work in kidney transplant." It was here that Loupy finally found the

field in which he could thrive. "I saw that transplant was so well organised. You have the surgery, but you also have the patient care, and it's an amazing model for understanding complex diseases, immune diseases, rejection, and the capability to have well-informed databases of patients."

Loupy's innovation was to pioneer the use of data science to interrogate and, ultimately, revolutionise the practice of transplantation. Merging biomarkers, molecular diagnostics, and artificial intelligence, he explains, "allowed us to have a deeper understanding of rejection and graft injury mechanisms...to get rid of our preconceived ideas about patterns...With the data, we could see different rejection archetypes, which have been implemented in the international Banff classification and led to changes in patient management and treatment. Our first seminal paper in *The Lancet* back in 2013 was the first description of a completely new form of rejection unrecognised by the classification, and we could allow these patients now to have specific treatment."

Although his research has taken him away from the clinical front line, Loupy still puts patient care at the heart of his work. "I see patients through their data, which helps to better take care of them and improve their health conditions", he says, and there is no doubt that his research has been transformative in practice, earning him recognition from the French Foundation for Medical Research, the European Society for Organ Transplantation, the American Society of Transplantation, the French Kidney Foundation, and, in 2025, the French Academy of Sciences in the form of the prestigious Prix Guy Lazorthes.

What's next? Loupy's predictions for the future are guided by his interest in the past, specifically the history of transplantation. "They said that transplant would never be a standard of care. It became a standard of care, step by step...I see xenotransplantation taking the same shape, 70 years after." Loupy is already working to bring this future into being; in 2023, he published a *Lancet* Article with his mentor Professor Robert Montgomery and colleagues, containing the first description and immune characterisation of pig-to-human kidney xenotransplantation. His research in this field continues.

When not working, Loupy enjoys spending time with his wife of over 20 years and their two children and travelling. He particularly favours Mauritius, which is just a short hop by plane from Réunion. Then it is back to PITOR, to mentor a new and diverse generation of scientists. "Rigor, commitment, integrity", is how he describes his team. "But also a very high level of collective ambition."

Niall Boyce



See [Articles Lancet 2013; 381: 313-19](#) and [Lancet 2023; 402: 1158-69](#)