

## Sebastiano Sciarretta

### All in the Family

Susan Ince

Sebastiano Sciarretta dreamed of studying in the United States, but after six years there he ended up happily back in the same close-knit Rome neighborhood where he was raised—and where he and his cardiologist wife Valentina Valenti sometimes collaborate on research and are raising five children of their own: Livia, Gabriele, Valerio, Giulio, and Adriano.

After a rigorous secondary education focused on ancient Greek, Latin, and classical literature, Sciarretta obtained his medical degree, cardiology training, and a PhD in experimental medicine at the Sapienza University of Rome. While at the Rutgers New Jersey Medical School as a post doc and assistant professor, he helped clarify the molecular mechanisms regulating autophagy during myocardial ischemia and dissected the role of autophagy and mTOR (mechanistic target of rapamycin) complexes in the regulation of the cardiac adaptation to stress.<sup>1-4</sup>

Sciarretta is currently an associate professor at Sapienza, where he runs an independent laboratory and supervises PhD students and post docs. He also collaborates with IRCCS Neuromed Institution of Pozzilli. As an early career investigator member of the Leducq Foundation Transatlantic Network, he is looking at whether modulating autophagy can treat cardiovascular diseases.

#### Where Were You Raised?

In the Balduina neighborhood in Rome, which is quite close to the city center but like a little town where everybody knows everybody and you feel like you belong. It is a safe place where a mixture of people live—the well-educated, those involved in commercial activities, and workers—so you learn how to relate to all kinds of people. After spending years in the United States, I moved back to the same neighborhood. That's a characteristic of Italian people: We travel around but tend to live in the same place and keep to the old traditions.

As kids, we often went to the small town in the countryside where my mother was born. We played soccer, biked, played around in the fields, and skied. I liked to stay with my

grandparents and uncles because I found old people interesting and was curious about their stories.

#### What Did Your Parents Do?

My father is an oncologist, and I got my first interest in medicine from following him around and trying to read his textbooks. I respect him so much as a traditional medical doctor. I like clinical medicine, too, but was always interested in the mechanisms of diseases and I wanted to do research to find new therapeutic targets. It's a way not to get bored because starting each new research project is like starting a new job.

My mother is a housewife and an extremely smart and traditional woman. She devoted her life to my brother and sister and me. She wanted us to perform extremely well at school, so she took care of everything else so we could study. That was not so good for our independence. When I left to do a post doc in the United States, I had to immediately take care of myself, but I had never cooked or done laundry!

#### How Did You Become Interested in Cardiovascular Disease?

After medical school, I thought about doing oncology like my dad but then decided to become a cardiologist. I did a cardiology fellowship in a busy clinical practice under Professor Massimo Volpe, the chief of cardiology and an internationally recognized researcher studying hypertension and the angiotensin system. He taught me the importance of always asking and trying to answer clinically important questions. He was the first person who taught me how to write a paper and design a study. I also feel grateful to Professor Andrea Ferrucci, who first introduced me to clinical cardiology.

I really wanted to try to understand the molecular mechanisms involved in heart disease, so I started doing basic bench work with another mentor, Professor Speranza Rubattu, looking at the effects of molecular variants of atrial natriuretic peptide



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on endothelial function. After my fellowship, I wanted to study abroad and with the support of Professor Volpe I was interviewed and recruited by Professor Junichi Sadoshima of the Rutgers New Jersey Medical School.

### How Was Your Transition to the United States?

Extremely tough. At age 29, I was taking care of myself for the first time, moving from Europe to the United States, learning English, learning new lab techniques, and adapting to a new academic system. I was married, and my wife Valentina was pregnant with our first child so she didn't join me until after the baby was born. At the beginning, I started many projects, and it was difficult to stay focused. But eventually I understood which projects were important to develop. Surely, Jun Sadoshima helped me a lot in coping with my new life and job. Although we were from different cultures, I became more Japanese and he became more Italian and finally we could perfectly understand each other. I can say that everything I am as a researcher is because of him. He helped me and my family to adapt. He taught me how to understand if a research project is relevant, gave me papers to review to understand how to think properly and identify a hypothesis, and taught me how to write papers and research grants properly. He continues to inspire me so much and although I am back, we do our best to see each other when we can.

### Did You Eventually Fit In?

Yes. After a few years there, my wife found work and did research in the US, and we added two more babies. I felt better after my first publication, and then received a post doctoral fellowship from the Founders Affiliate, American Heart Association and a grant from the New Jersey Commission on Cancer Research. I was very active and got promoted to assistant professor. I started thinking I might want to stay.

### What Drew You Back to Italy?

When you grow up in Italy, you have strong family traditions, and I missed my big family and hated missing all the family celebrations. My own family was enlarging, and although we found a nice area to live it was very expensive. My wife sacrificed everything to come to the US, and I felt like she really wanted to go back.

In my work, one issue was I never had a US medical license and couldn't do clinical work there. While we were thinking about whether to go back, I was recruited as a tenure track assistant professor at the Sapienza University of Rome. I am really grateful that they helped me to bring my research interests back to Italy while also offering clinical work. In particular, I am so grateful to Professor Giacomo Frati, full professor at Sapienza University of Rome, who supported me a lot when I moved back, helping me to develop my laboratory and adapting to the Italian academic system.

### How Was It Having an Independent Laboratory?

At the beginning, it's a lot of fun going from post doc or junior faculty to an independent position. You concentrate on cool things—gestating ideas, writing papers, doing bench work—and then you realize that it's really tough. You have to think about getting money and taking care of administrative things, plus the training aspects are really critical.

### Is Italy Supportive of Physician Scientists?

It is more difficult to do research in Italy. Funding levels are low and you have to get European grants that are really competitive.

The other issue is that teaching, and clinical duties take up a lot of time. But your job here is stable, and that allows you to have time to develop new ambitious projects, even if the pace is slower. After a few months, I was lucky to get a grant from the Italian Ministry of Health to help me set up my lab and hire people.

### What Disappointments Have You Encountered in Your Career, And How Did You Face Them?

The research path has lots of frustration and disappointments, but I am a patient guy and have adapted to that. I remember that the first paper I submitted to a journal while I was at Rutgers was not even reviewed, just rejected without comment. I had worked so hard and I was very sad, but my mentor Professor Sadoshima told me to sit down, be calm, and use my brain to try to understand what can be improved. It's the only way to survive. I also remember when I spent a lot of time preparing a development grant and it was rejected. I had to understand that the topic of the grant was not that different from my research as a fellow. It was a good topic for a grant, but I needed to study something farther away from the topic of my post doc in order to show independence. If you can't cope with disappointment, you can't do this job.

### What Else Do You Tell Trainees It Takes to Succeed?

To succeed you need to be well-organized as well as smart. If you aren't accurate and methodical, your experiments will fail and you will lose money and time. You also have to study and read research papers continuously so you will understand the state of the field

One critical thing I ask from trainees is hard work. Research is not a job like any other. You have to work more and don't get paid as well. Therefore, you really need to love it and be determined to do it. I also try to have empathy with my trainees and understand what they need, giving some close supervision and others more time and space to pursue their projects.

### Do You Encourage Your Students to Study Overseas?

Yes. Going abroad to the United States is like landing on a different planet, but you get paid back. The research labs there are still the best in the world, and I was inspired by the American researchers who were so smart and focused and hard-working and professional. I got my current position because of the good things I did and learned there.

Although I encourage my PhD students to go overseas for a post doc, they often don't want to move so far. We dreamed of the United States, but younger people don't want to leave their families or sacrifice important aspects of their lives here. I also understand that.

### These Days, Is International Collaboration Necessary in Order to Be Successful? What Makes You Function Well in Those Collaborations?

All collaborations can improve the quality of research, since working with more experienced colleagues allows researchers to follow new scientific directions, perform new assays and finally make discoveries that otherwise they would have not been able to do. In addition, international collaborations allow scientists to increase their visibility and provide opportunities to travel, visit new places and meet people, thereby enriching the cultural and scientific background of scientists. In this regard, I am currently

part of a Leducq Network on Autophagy as an Early Career Investigator, and it is an unforgettable experience.

Strong collaborations are helped by good human relationships. I am always available and helpful, and this encourages people to deal with me. Moreover, I am very sociable and I think that people sometimes have fun spending time with me.

### What Do You See for Yourself And Your Lab in the Next Five Years. Any Particular Projects You're Excited About?

I'm still interested in understanding the molecular mechanisms of myocardial injury during stress. I also started new projects on vascular biology, studying new signaling pathways underlying the development of endothelial dysfunction in response to metabolic derangements. Recently, I became interested in the potential efficacy of natural activators of autophagy for the treatment of cardiovascular disorders. In particular, we are studying the therapeutic efficacy of trehalose, a natural disaccharide, which is showing novel beneficial cardiovascular effects.<sup>5</sup> We hope we can translate these findings to patients soon.

### What Do You Do When You Aren't Working?

I have a big family and it is important that I spend enough time with my kids, first of all because it is a pleasure. I relax and that is the best aspect of life. But you also need to educate and provide for your kids, which means working hard. To maintain the work/home balance, you have to give yourself some rules, like on the weekend I will not touch my laptop. (Actually, that's a rule of my wife and I do my best to follow it...).

When I was a child, I remember the time spent with my family and I want my kids to feel the same. We have a country house and do the outdoor things I used to do as a child. The family also watches soccer together, supporting S.S. Lazio, the same team in Rome that my brother and sister and parents and grandparents support.

### Disclosures

None.

### References

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