Simone Anna Maria Lemmers

ELETTRA Sincrotrone Trieste S.C.p.A.

Città in cui lavori: Trieste
Materia preferita a scuola: History and Biology
Film preferito: La Vita e Bella
Libro preferito: The Island of Missing Trees by Elif Shafak
Hobby: I love marine life, so when I get the chance I go swimming and snorkeling. Being from the Netherlands, I also love cycling and exploring by bike. Now that I moved to Trieste, I am also taking every opportunity to visit the beautiful caves - When you enter an ancient cave, it is like entering another world. In some of them, remains were found from early humans like Neanderthals. It makes it extra special to be in these places were time seems to stand still. I'm also very interested in languages, currently trying to improve my Italian!
La tua vita in 3 parole: nomadic, science-filled, fast-paced

FORMAZIONE PhD in Biological Anthropology, MA and BA in Archaeology

AMBITO DI RICERCA Biological Anthropology and Tomography

POSIZIONE Postdoctoral research fellow

UN OGGETTO DA PORTARE CON TE IN MISSIONE I always take a camera with me to document special moments, architecture, nature - when I go snorkling I always take a go-pro camera with in case I meet some special life under the water

PARLACI DELLA TUA RICERCA As a Biological Anthropologist, I explore the past by examining the microstructure of human bones and teeth in a field known as palaeo-histology. This specialized area focuses on tissues preserved over long periods, primarily within the skeleton. Teeth and bones hold a wealth of information about how people lived, what they ate, their migration patterns, and their health challenges. By analyzing these microscopic details, we can uncover not only individual life stories but also cultural practices and norms from the past. My research delves into these tiny structures to better understand our origins, evolution, and trajectory as a species. Fossils from early humans are particularly powerful in adding to the narrative of our shared human history. One of the central challenges in studying human history is understanding how evolution has shaped who we are today. Neanderthals, our closest relatives on the human evolutionary tree, are key to this understanding. By examining the differences and similarities between Neanderthals and Anatomically Modern Humans (AMH), we can better define our phylogenetic history. Bone palaeohistology—the study of fossilized tissue microstructure—provides a window into the past. Mineralized tissue records an individual's growth and adaptive responses, allowing us to study aspects of life history long after fossilization.

However, Neanderthal fossils are incredibly precious, and traditional methods of studying bone microstructure require cutting the bones to examine them under a microscope. At Elettra Synchrotron, we use a powerful light source that allows us to look inside these bones without damaging them. This technology, known as Synchrotron Radiation micro Tomography, enables us to observe the Neanderthal bones and teeth in stunning three-dimensional detail. This cutting-edge approach allows us to study how Neanderthals grew, developed, and behaved with unprecedented precision—merging the past and present in a truly remarkable way.

RACCONTA UNA TUA GIORNATA TIPO AL LAVORO The beauty about working at a Synchrotron is that there is a LOT of variety in our work. Some days we have 'Beamtime', this means we have dedicated timeslots to use the advanced light source to apply powerful X-rays to the Neanderthal fossils. Those days are very intense - we work around the clock and don't want to loose a minute of time. We start early in the morning with a team of people, were we position the fossils carefully in front of the light source, and from a protected control room we then start the imaging process. After a couple of days of teamwork, we have a mountain of data: a lot of pixels that we translate into virtual data slices of the bones. Afterwards, we have to spend many weeks analysing these pixels to turn them into 3D images, measure the internal bone structure, and compare them with reference data. So, I would say there is not really a 'typical' day at Elettra, as days can be very different: Working around the clock in a fast pace with a group of scientists from all over the world, to days where we interpret our findings, make calculations, and reconstruct the stories of the past.