



Mario Poljak – Central Europe’s pioneer in diagnostics



Born in Croatia, the young Mario Poljak loved mountaineering, and climbed Kilimanjaro aged just 15 years old, despite being told he was too young. “I realised then that if I invested a lot of energy in something, I could achieve anything”, Poljak told *The Lancet Infectious Diseases*. Today, he is Professor of Microbiology and Immunology at the Faculty of Medicine, University of Ljubljana, Slovenia, and Head of the Laboratory for Molecular Microbiology and Slovenian HIV/AIDS Reference Center, which he has led since 1993.

Taking up mountaineering aged just 10 years allowed Poljak to become self-confident early. He excelled at chemistry at high-school and attained a place at Zagreb Medical School, Zagreb, Croatia. Yet despite being a top medical student, his lack of family connections in medicine in a then very unfair system prevented him from choosing his desired medical specialty. “Instead of feeling sorry for myself, I went out and created my own opportunities”, he explains. During student exchange, he was offered a MD scientist position at the Institute of Pathology at the University of Ljubljana, where he established a molecular pathology laboratory. This was the early PCR era, and in 1990 only primers for HIV and human papillomavirus (HPV) were available, leading Poljak to begin research in these areas.

His really big break came when Miha Likar, also at the University of Ljubljana, offered him the chance to set up what should have been the “best HIV reference laboratory in the region”. “I was offered unlimited resources and given six months to get it all up and running”, Poljak recalls. And he did it, not only achieving excellence in HIV but expanding the laboratory’s remit to include hepatitis B and C and HPV. He also made knowledge sharing a key pillar of his work ethic, sharing his lab’s best practice with colleagues in the region. “Many colleagues spent significant time in my lab and adopted our protocols and approaches to their labs”, he explains. “For some labs I offered a complimentary reference HIV service and organised regular conferences to discuss challenging diagnostic problems.”

Poljak’s laboratory was among the first to evaluate and adopt several HIV tests, including qualitative HIV PCR in 1992, viral load assay in 1995, and resistance testing in 2000. Since the start, his team has offered free anonymous HIV testing for the most vulnerable populations, and he was pivotal in establishing the first community-based HIV testing for men who have sex with men. His laboratory also generated the first HIV and hepatitis B and C molecular epidemiological data in the region, and helped to establish a molecular epidemiology network of excellence. “We sequenced HIV isolates from over 70% HIV/AIDS individuals diagnosed in Slovenia from 1996-2021”, he explains. “Not many countries have such a representative data set for such a long time period.” He has been a key contributor in multiple HIV guidelines and led on the 2008 European guideline on

HIV testing. His team also proved the first HIV transmission from a human bite, published in *The Lancet* in 1996.

His achievements in the HPV field are also extensive, with 12 HPV types originally isolated and fully characterised in his lab. He led the pre-adoptive evaluations of several major HPV assays, and more recently the VALGENT-3 study, the largest head-to-head comparison of HPV assays. Poljak has also positioned himself as a leading advocate for implementing HPV-based cervical cancer prevention in central and eastern Europe (CEE). He was the lead author of the first CEE-tailored recommendations for cervical cancer prevention.

Like many others, Poljak had to drop all ongoing projects and rapidly reorganise when the COVID-19 pandemic hit. He led scale up of his institute’s molecular testing capacity to more than 5,000 samples per day operating 24/7. He also led the first evaluation of any high-throughput diagnostic PCR-based platform for SARS-CoV-2 RNA.

Poljak is also well known for being the first ever person from CEE to become President of the European Society for Clinical Microbiology and Infectious Diseases (ESCMID), in 2016-18. He also served on many other ESCMID’s committees, and is most proud of his work to address the speakers’ geographical and gender imbalances, and also reorganising the secretariat, boosting membership and abstract submissions, forging partnerships with other societies, and forming various study groups. “They were the 10 busiest years of my life! But I am very proud of what the society has achieved”, he explains.

“If you ever need a motto to describe Mario’s perfectionist professional behaviour it would be ‘the devil is in the detail’”, says Murat Akova, Professor of Medicine at the Hacettepe University School of Medicine, Ankara, Turkey. “When we worked together in the ESCMID Executive Committee, I observed that he is one of the most meticulous persons I have ever met in my life. That Mario is an excellent scientist, a well-organised, solution-oriented executive, and an undaunting defender and motivator of his juniors and peers simply explains how his lab excelled in molecular microbiology including HPV, HIV and recently SARS-CoV-2 research.”

In the future, Poljak would like to see all HIV patients globally receiving antiretroviral therapy, and be monitored with viral load and resistance tests when needed. In HPV, he would like to see all girls and boys vaccinated and all women screened twice in their lifetime. He also believes that hope and opportunity could come from the COVID-19 pandemic, explaining that “COVID-19 has made scientists and manufacturers very creative and innovative. We have this unique opportunity to use this momentum to target many infectious diseases – whether using cutting-edge or recycling old technologies”.

Tony Kirby