

LETTER TO THE EDITOR

AT THE EDGE OF PATHOLOGY AND THE PROMISE OF SCIENCE: WHERE CANCER GENOMICS MEETS INSPIRATION - A PATHOLOGY RESIDENT'S PERSPECTIVE ON ESHG 2025

The annual European Human Genetics Conference 2025, held in Milan (May 24–27) was a profound professional experience for me as a pathology resident and a PhD student in molecular medicine with a strong interest in cancer biology and gene therapy.

As expected, since its beginning, the program delivered an ample and thoughtfully compiled scientific agenda. As a pathology resident, I was particularly engaged in sessions and workshops devoted to cancer complexity and the ever-evolving landscape of cancer genomics, as well as advancing cancer prevention, detection and individualized cancer treatments utilizing the latest technologies. The lectures within the "Cancer Complexity: Variants, Therapies and AI-Driven Insights" session provided fascinating insights into oncogenesis, immune escape and the integration of machine learning into oncologic diagnostics - areas increasingly relevant to both molecular pathology and clinical decision-making. Furthermore, the masterful lectures in the "Rewriting Cancer Treatment and Resistance" symposium provided a much-needed inspiration and a new way of thinking about cancer treatment options and pathways for overcoming cancer resistance.

The sheer depth of interdisciplinary integration as a concept of the congress, enabled every participant to immerse oneself into different subjects and compile knowledge that can be implemented in everyday practice. Not often can one be a part of a conference that simultaneously showcases the molecular frontier and challenges ethical, clinical and societal frameworks. The sessions and workshops addressing the tools for genetic editing, cancer evolution and ultra personalized medicine reinforced the daily dilemmas we face in diagnostic pathology - when histology alone is no longer enough.

The crowning event of the conference was the final plenary. The lecture by Dr. Katalin Karikó, recipient of the 2023 Nobel Prize in Physiology or Medicine, was nothing short of historic. It was a testament to the persistence and resilience behind world changing science. Her reflections on mRNA technology, from conceptual resistance to global impact, resonated deeply not only with researchers, but with every clinician in the audience. In pathology, where we often witness disease at its most devastating level, her story reinforced that innovation at the molecular level can indeed translate into hope.

ESHG 2025 reminded me and confirmed the reasons why I entered this field. It was an event where science met humanity, where difficult questions were asked, and ambitious answers were encouraged. I returned to the Institute of Pathology with a sharpened sense of purpose,

widened horizons in the possibilities of molecular medicine, and inspired by the global community of students and professionals striving to reimagine medicine at the genetic level.

Sincerely,

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