

# Gunther von Hagens: 80 Years of the Anatomist Who Defied Death and Revolutionized Anatomy Since Vesalius

Nicolás E. Ottone<sup>1,2,3,4</sup>, Víctor Hugo Rodríguez-Torrez<sup>5</sup>, Ana Belén Toaquiza<sup>6</sup>, María Revelo-Cueva<sup>7</sup>

<sup>1</sup> Laboratory of Plastination and Anatomical Techniques, Universidad de La Frontera, Temuco, Chile.

<sup>2</sup> Center of Excellence in Morphological and Surgical Studies (CEMyQ), Universidad de La Frontera, Temuco, Chile.

<sup>3</sup> Adults Integral Dentistry Department, Center for Research in Dental Sciences (CICO), Faculty of Dentistry, Universidad de La Frontera, Temuco, Chile.

<sup>4</sup> Doctoral Program in Morphological Sciences, Universidad de La Frontera, Temuco, Chile.

<sup>5</sup> Chair of Human Anatomy and Neuroanatomy, Medicine and Dentistry Department, Universidad Privada del Valle, La Paz, Bolivia.

<sup>6</sup> Carrera de Imagenología y Radiología, Facultad de Ciencias Médicas, Universidad Central del Ecuador, Quito, Ecuador.

<sup>7</sup> Laboratorio de Anatomía Animal de la Facultad de Medicina Veterinaria y Zootecnia de la Universidad Central del Ecuador, Quito, Ecuador.

## Correspondence

Nicolás E. Ottone  
Laboratory of Plastination and Anatomical Techniques  
Universidad de La Frontera  
Temuco  
Chile

Email: nicolas.ottone@ufrontera.cl

**OTTONE NE, RODRÍGUEZ-TORRES VH, TOAQUIZA AB, REVELO-CUEVA M.** Gunther von Hagens: 80 years of the anatomist who defied death and revolutionized anatomy since Vesalius. *Anat. Morphol.*, 1(3):80-82, 2025.

**ABSTRACT:** This communication commemorates the 80th birthday of Prof. Dr. Gunther von Hagens, situating his work within the long trajectory of transformations that have reshaped anatomy from the Renaissance to the present day. The invention of plastination in 1977 marked a decisive turning point in the preservation, study, and teaching of the human body by introducing curable polymers that enabled durable, biosecure specimens of high scientific value, thereby substantially expanding the scope of modern anatomical analysis. The text links von Hagens' personal trajectory, shaped by adversity, resistance, and innovation, to his scientific impact, emphasizing plastination not as a replacement for classical dissection but as a complementary approach that enhances clinical, surgical, and topographical anatomical study with unprecedented precision. It also examines the academic and cultural reach of Body Worlds as an extension of anatomical discourse into society, reopening ethical and epistemological debates on the human body. Finally, the manuscript underscores von Hagens' enduring legacy, understood as part of a continuous anatomical revolution in which the discipline renews itself without abandoning its historical foundations, reaffirming its scientific, educational, and humanistic relevance.

**KEY WORDS:** Plastination, Anatomy, Gunther von Hagens, Renaissance, Andreas Vesalius.

## INTRODUCTION

This year we celebrate the 80th birthday of Gunther von Hagens, a visionary whose work profoundly transformed modern anatomy and permanently reshaped the relationship between science, art, and death. His invention of plastination in 1977, developed during his time at the Institute of Anatomy and Cell Biology at the University of Heidelberg, represents one of the most significant methodological breakthroughs in anatomical science of the late twentieth century (von Hagens, 1979; von Hagens, 1986). By replacing tissue water and lipids with curable polymers, primarily silicone rubber, polyester, and epoxy resins, plastination allowed biological specimens to become dry, durable, odorless, and biologically safe, while

preserving microscopic and macroscopic anatomical detail with remarkable fidelity (Ottone, 2023).

The magnitude of this contribution invites an explicit historical comparison. Since Andreas Vesalius published *De humani corporis fabrica* in 1543, no single anatomist has so profoundly altered both the practical foundations and the epistemological framework of anatomy, a transformation grounded in the replacement of authority-based knowledge with direct observation of the human body (O'Malley, 1964; Cunningham, 1997). Vesalius revolutionized anatomical science by restoring the cadaver as the primary source of anatomical truth and by fixing that knowledge through systematic dissection and visual

representation, thereby dismantling centuries of Galenic doctrine transmitted through texts rather than bodies (O'Malley, 1964; Cunningham, 1997; Kemp, 2010). In a parallel manner, Gunther von Hagens extended this revolution by ensuring that anatomical knowledge could persist beyond the transient moment of dissection through the development of plastination, a technique that fundamentally transformed how anatomical structures are preserved, handled, and transmitted (von Hagens *et al.*, 1987; Sora *et al.*, 2019). Where Vesalius fixed anatomy through the printed image, von Hagens fixed the body itself, three-dimensionally, permanently, and reproducibly, thereby marking the most consequential methodological transformation in anatomy since the Renaissance and redefining the relationship between anatomical science, pedagogy, and society (von Hagens *et al.*, 1987; Jones, 2005; Sora *et al.*, 2019).

This innovation addressed long-standing limitations of traditional formaldehyde-based preservation, including toxicity, tissue shrinkage, limited handling time, and restricted pedagogical versatility. Plastination enabled the long-term conservation of specimens that could be handled directly, repeatedly examined, and used across generations of students, without significant degradation (von Hagens, 2002). As such, it rapidly became an essential complement to classical dissection, rather than a replacement, expanding the anatomical toolkit available for teaching, research, and museum curation (Ottone, 2023; Toaquiza *et al.*, 2024).

Von Hagens was born in 1945, in the immediate aftermath of World War II, into a Europe marked by displacement, political division, and reconstruction. Only days after his birth, his family fled westward as refugees. Raised in the German Democratic Republic, he later experienced the realities of political repression firsthand and was imprisoned in the 1960s for attempting to escape East Germany. His release in 1970, through the West German program for the liberation of political prisoners, allowed him to resume his academic training and ultimately pursue medical studies in the Federal Republic of Germany (Whalley, 2014). These formative experiences of confinement, resistance, and resilience would later resonate strongly in his scientific career, characterized by an enduring willingness to challenge conventions and institutional boundaries.

Anatomy offered von Hagens a unique intellectual space in which to unite scientific rigor with philosophical inquiry. Situated at the threshold between life and death, structure and meaning, anatomy became the medium through which he articulated a deeply material yet humanistic vision of the body. Plastination did not merely preserve tissues; it transformed bodies into stable, enduring sources of knowledge. Through this technique, anatomists gained access to ultra-thin serial sections, whole-body dissections preserved in functional and expressive poses, and exceptionally refined preparations of complex systems such as the central nervous system, peripheral nerves, and vascular networks. These preparations enabled spatial and topographical understanding that is difficult to achieve with conventional wet specimens alone, particularly in neuroanatomy and clinically oriented teaching (von Hagens *et al.*, 1987; Sora *et al.*, 2019; Ottone, 2023; Rodríguez & Ottone, 2023).

In 1995, von Hagens brought anatomy beyond the walls of the medical school with the launch of Body Worlds (Körperwelten), first presented in Tokyo. This exhibition marked an unprecedented moment in the history of anatomy, as plastinated human bodies and organs were displayed to the general public on a large scale, explicitly framed as educational rather than artistic or sensationalist objects (Whalley, 2014). Over the following decades, Body Worlds toured internationally, reaching tens of millions of visitors worldwide and becoming one of the most widely attended scientific exhibitions in history. In doing so, it catalyzed intense ethical, cultural, and philosophical debates regarding consent, dignity, the public display of the dead, and the boundaries between science and art (Jones, 2005).

von Hagens consistently defended the exhibition as a form of public anatomy education, grounded in voluntary body donation and transparency. His often-quoted assertion that “the human body is the last remaining nature in a man-made environment” reflects a central tenet of his philosophy: that anatomy offers a universal language through which modern societies can reconnect with biological reality, mortality, and embodiment (von Hagens, 2002; Whalley, 2014). In 2025, Body Worlds reaches its 30th anniversary, marking three decades of sustained global influence on public engagement with anatomy and on discourse surrounding body donation. Within the academic community, von Hagens' influence has been equally enduring.

Plastination is now a globally established technique, incorporated into anatomical curricula, research laboratories, and medical museums across continents. Its methodological principles have been refined, diversified, and adapted by multiple generations of anatomists, giving rise to sheet plastination, brain plastination, corrosion-plastination hybrids, and region-specific educational applications (Latorre *et al.*, 2016; Ottone, 2023).

In recognition of this extraordinary legacy, the International Society for Plastination awarded Gunther von Hagens its "Maximum Distinction" in 2022, during the 20th International Conference on Plastination held at Universidad de La Frontera in Temuco, Chile (20th International Conference on Plastination, 2022; Ottone, 2023). This honor acknowledged not only his foundational technical contributions, but also his broader humanistic vision, in which anatomy functions as a bridge between scientific knowledge and societal reflection.

That tribute will continue in December, when the 13th International Interim Meeting on Plastination, to be held at Universidad de La Frontera in Temuco, Chile, will include a special homage to Gunther von Hagens in celebration of his 80 years of life. This commemoration will coincide symbolically with the 30th anniversary of Body Worlds, uniting two milestones that together define his legacy: the transformation of anatomical preservation and the opening of anatomy to the wider public.

Today, at 80 years old, Gunther von Hagens remains a defining figure in contemporary anatomy. Seen through the long arc of anatomical history, from Vesalius' sixteenth-century return to the cadaver to von Hagens' twentieth-century conquest of decay, his work stands as the most profound anatomical revolution of the modern era. His life and work remind us that science is not solely a matter of technique and protocol, but also of imagination, courage, and conviction. Through plastination, bodies continue to teach long after death, inviting students, professionals, and the public alike to reflect on structure, function, and the profound meaning of human embodiment.

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