

# THE MUSEUM OF ANATOMY AND EMBRYOLOGY LOUIS DEROUBAIX FROM THE UNIVERSITÉ LIBRE DE BRUXELLES (ULB): WET AND OTHER COLLECTIONS

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The Museum of Anatomy and Embryology of the Université Libre de Bruxelles (ULB), part of the Laboratory of Anatomy, Biomechanics, and Organogenesis (LABO), was founded around 1838 by the anatomist and surgeon Louis Deroubaix (1813–1897) shortly after the ULB was established (Kinnaert and Louryan 2009, Louryan et al. 2010). Initially, the Museum of Anatomy and Embryology contained human specimens from the main old hospitals of Brussels. Further anatomical parts were gradually collected and dissected by successive teachers of human anatomy and their team thanks to a legal system of body donation. Since the museum's inception, many bone and soft tissue dissections, preserved in liquid medium, have contributed to the enrichment of the collections for pedagogical purposes. Following the faculty of medicine, the museum's geographical location has changed four times across Brussels, from the Charles de Lorraine's palace in the city center to the present location on the periphery of the city in the university's medical campus. An extensive veterinary bone collection is available for students in a separate building.

Resulting from faculty turnover and successive curators' areas of interest, this museum diversified over time. Figure 1 displays a general overview of the museum, including fluid collections. Various plaster or wax models (e.g., His-Steger models, Tramond's wax castings, and castings from the famous collection created by Seifert and Nicolas) were progressively added, as was teratological material. As an example, Figure 2 shows a three-dimensional CT scan reformation of a newborn (preserved in fluid) with severe aprosopia (complex and rare facial malformation) as well as pathological, anthropological, odontological, and comparative anatomy specimens. New dissections, many of which are plastinated, are regularly added to the collections, while most past acquisitions were made by incorporating other collections or private donations. Plastinated material enhances material conservation and makes transport in the classrooms easier. The museum currently includes about 1,500 specimens, including fluid-preserved and dry material plus the osteological teaching collection.

The Museum of Anatomy and Embryology was founded for pedagogical purposes. Therefore, most of the specimens (fluid-preserved or other) are displayed using a camera during anatomy and embryology lessons. Anatomy and embryology courses take part in a room adjacent to the museum. Moreover, specimens are displayed during anatomical demonstrations and practical sessions, alternatively using medical imaging documents and a virtual anatomy dissection table. During the learning process, switching from a book-size paper illustration to a three-dimensional image is challenging. Using real anatomical specimens helps students and allows them, among other things, to observe the scale and texture of structures to develop deeper and more extensive knowledge. Because usage of specimens can lead to damage, the condition of the specimens must be carefully monitored after each extraction from the jar. Maintaining the specimens requires regularly changing



Figure 1. General overview of the museum displaying dissections in wet medium. (©LABO ULB).

the fluid and replacing damaged material with new dissections. Because they are valuable throughout the teaching process, specimens play a key role in the oral assessment of students in medicine, dentistry, and physiotherapy.

The specimens are also fully exploited for research and scientific purposes, especially relating to congenital malformation studies (Fig. 2). Research is facilitated by the presence of a medical computed tomography scanner in the laboratory (LABO) and vicinity of the

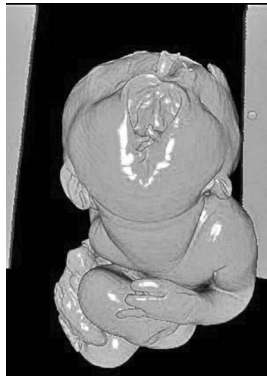


Figure 2. Three-dimensional computed tomography scan reformation of the surface of a rare specimen of aprosopia. Experimental details can be found in Louryan and Vanmuylder (2015). (©LABO ULB).

academic hospital. Thanks to advances in obstetrics and gynecology and prenatal diagnostics, medical conditions seen in the museum's specimens are today exceptionally rare, making the specimens' scientific value even more significant. Thus, we plan to scan the most useful instructional specimens to build an electronic database for educational purposes. We also plan to print three-dimensional models to use for demonstrations outside the laboratory.

Specimens stored in a liquid medium in an anatomical museum are invaluable to teach anatomy realistically, to demonstrate rare malformation patterns, to study abnormalities using new scientific tools, to improve teaching and research, and for medical imaging. Plastinates are durable and dry but rigid, while dissection specimens stored in fluid preservatives are still malleable and more easily handled. Although the management of fluid-preserved specimens is more difficult, these specimens are still highly valuable for educational and teaching purposes. In the Museum of Anatomy and Embryology, dissection specimens are submerged in a liquid medium made up of 40–70% pure isopropanol in distilled water. Because these specimens experience continual use, extracted from their jars daily, their conservation requires constant attention. The liquid medium must be checked regularly (quantity, quality, color, deposition, liquid level) and replaced if needed. Even if the students work under supervision, the specimens are damaged during handling. Mitigating this damage requires dedicated staff. Five technical staff members at the ULB are assigned to body donation, dissection work, and maintenance of the museum. In addition to supervising the practical aspect of body donation, these staff members are responsible for collecting new material and renewing damaged specimens.

The museum is accessible to the public (especially group visits and schools) only by guided tour because these visits require the presence of a member of the scientific staff. For the public, the aim is to provide wide-ranging insight into the anatomy and physiology of the human body, illustrating the position of the organs and explaining how the human body works. For students associated with the medical facilities, visits may provide valuable educational opportunities, especially if their teaching departments do not provide such resources. For research, the existence, maintenance, and accessibility of this museum make it possible to develop exchanges between anatomy museums and similar educational institutions, to publish original research, and to enable collaborations with other institutions. For example, we collaborate with the Royal Institute of Natural History (Brussels), the Natural History Museum of Mons (city of Mons, Hainaut, Belgium), and the University Zoological Museum (located on the main campus of the university) through the exchange of specimens and the dissemination of knowledge.

This museum is part of the network (Réseau des Musées de l'ULB) that connects all the collections and museums of the Université Libre de Bruxelles (<https://musees.ulb.be>) and regularly participates in the regional Heritage Days. This collection and the specimens it contains constitute a valuable didactic and scientific tool that should be protected.

#### RÉSUMÉ

Le Musée d'Anatomie et Embryologie Humaines de l'Université Libre de Bruxelles, lié au Laboratoire d'Anatomie, Biomécanique et Organogenèse de la Faculté de Médecine, existe depuis le XIX<sup>ème</sup> siècle et a connu plusieurs localisations. Au fil des années, les collections se sont étoffées. Celles-ci sont constituées de pièces en milieu liquide et de matériel sec. Certains spécimens font partie du matériel didactique régulièrement exposé aux cours et durant les démonstrations, et sont donc régulièrement extraits de leurs bocal. Ils ont été collectés grâce à un système de legs volontaire de corps. Le fait que ces pièces soient régulièrement montrées en cours impose un soin tout particulier du Musée.

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