

Chapter 13

BERLIN: The Veterinary Collection of the Institute of Veterinary Anatomy, Department of Veterinary Medicine, Freie Universität Berlin

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Abstract The Institute of Veterinary Anatomy at the Department of Veterinary Medicine, Freie Universität Berlin, houses several veterinary collections, ranging from various sections with a historical background to sections showcasing veterinary plastinates, which have only been produced in recent years. For example, the Gurlt collection of the institute, which was founded by the veterinary anatomist Ernst Friedrich Gurlt (1794–1882), showcases unique preserved skeletons as well as wet specimens of malformations of domestic animals. The Ziegler collection comprises more than 160 wax models, which were used for teaching during the nineteenth and twentieth centuries and are mainly based on drawings of the anatomist Wilhelm His (1831–1904). The collection of wax models consists of 48 models, mainly heads of dogs, horses, and cattle, which were produced between 1975 and 1995. Moreover, the institute houses 42 corrosion cast specimens, which for a large part have been produced from the mid-1970s until today. Also, approximately 40 anatomical models that can be taken apart and are made of gypsum and wood, originating from various epochs of twentieth-century Germany, are on display. The institute also houses a comprehensive collection of large-format wall charts, originating from the years before 1945 and from the years between 1949 and 1985, which were almost exclusively custom-made.

Keywords Veterinary medicine • Gurlt • Ziegler • Wax models • Anatomical models • Corrosion casting • Comparative anatomy • Plastination • Wall charts

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13.1 Introduction

The collections of the Institute of Veterinary Anatomy at the Department of Veterinary Medicine, Freie Universität Berlin, reflect a history that is steeped in tradition, shaped by losses during the Second World War, by relocations due to Germany's separation, and finally by merging the respective departments of the Humboldt and the Freie Universität.

The different sections are largely located in the anatomical museum of the institute, as well as in glass cabinets in the dissecting room and other rooms of the institute. Most of the exhibits are used as visual aids for teaching the degree courses of veterinary medicine, agricultural sciences, and equine sciences. The methods of preparation used range from the fixation of organs and body parts in various liquids, such as formalin, to the impregnation with paraffin, polyethylene glycol, and other types of wax and to the method of plastination according to Dr. Gunther von Hagens (1979).

In recent years, there has been a reduction in practical, anatomical dissection courses in favor of virtual simulations and teaching concepts based on e-learning. Because of this development, anatomical models have become increasingly important due to their durable and reusable nature. The use of realistic, three-dimensional models allows for a tactile experience and underlines their significance in the history of science as well as the history of developing anatomical specimens.

13.2 The Gurlt Collection

The Gurlt collection of the institute showcases unique preserved skeletons as well as wet specimens of malformations of domestic animals. It has its roots in the collection of preserved specimens of the “Berliner Tierarzneischule”, which was founded by the veterinary anatomist Ernst Friedrich Gurlt (1794–1882) and was focused on malformations. In 1841, the collection comprised 3358 specimens (Smollich 1988), most of which Gurlt described in his textbook “Lehrbuch der pathologischen Anatomie der Haus-Säugethiere” (Fig. 13.1) (Gurlt 1832). The part that survived World War II consists of 143 skeletons and skulls as well as 105 wet specimens displaying a range of malformations of the head (Fig. 13.2), torso, entire body (Fig. 13.3), limbs, and various organs. To this day, the collection is an important part of the curriculum of veterinary embryology and teratology, which are both taught at the institute. The specimens are stored in historical cabinets in the anatomical museum of the institute. The website of the Institute of Veterinary Anatomy displays most of them in close-up photographs with captions giving further information on the individual exhibit (http://www.vetmed.fu-berlin.de/einrichtungen/institute/we01/gurltsche_sammlung_startseite/index.html).

Part of this historical collection is “Conde”. According to the enamel board that belongs to the exhibit, it is the skeleton of Prussian king Frederik the Great's



Fig. 13.1 This picture has been taken from the “Magazin für die gesamte Thierheilkunde,” 1846, which Gurlt published along with Prof. Carl Heinrich Hertwig. Pictured is the entire janus-shaped, deformed body of a goat (Octopus janus G.)



Fig. 13.2 Dry specimens of the Gurlt collection: Head of a calf with separated double face (Diprosopus sejunctus). Head of a foal, cyclopia, brachynathia superior. Distorted spine of a foal (Campygnathia, Kyphosis und Skoliosis cervicalis). Bovine hydrocephalus

(1712–1786) personal riding horse, which died in 1804 at the age of 38. After its death, the skeleton of the horse was exhibited at the Anatomical Museum of the Langhansscher Kuppelbau (Königliche Thierarzneischule). In the wake of the relocation of the Anatomical Theater in 1902, “Conde’s” skeleton was moved to the newly built Veterinary Anatomy, only a few meters away from the Langhansscher Kuppelbau. After the merge of the two educational institutions, the skeleton was moved to the Veterinary Anatomy of the Freie Universität Berlin in Dahlem, where it is exhibited in the entrance area (Budras and Berg 1998).

13.3 The Ziegler Collection

The Ziegler collection of the institute comprises more than 160 wax models (Fig. 13.4), which were used for teaching during the nineteenth and twentieth centuries and are mainly based on drawings of anatomist Wilhelm His (1831–1904), who set up the collection to be able to compare the embryology of

Fig. 13.3 Wet specimen from the Gurlt collection: Immature fetus of the horse without front legs (*Peromelus achirus*), ca. 1846



the skull as well as facial and brain development of vertebrates. For the most part, these wax models were built in A. Ziegler's (1820–1889) Freiburger Atelier für wissenschaftliche Praxis and in a few other workshops. The highlights are two series of models, one demonstrating the development of the lancelet (*Amphioxus lanceolatus* Y., *Branchiostoma lanceolatum*) in 25 parts (Fig. 13.5) and the other one showing “the development of the chicken in the egg,” as well as models on the “anatomy of human embryos.” The models are often presented in embryology courses as historic visual aids and are also useful to investigate preparation techniques of wax models.

13.4 Collection of Wax Models Focusing on Comparative Anatomy

This collection consists of 48 models, which were produced between 1975 and 1995 by Berlin preparator Dietrich Seifert (Witte 2010), who was working at the Institute of Veterinary Anatomy at the time. The models are mainly heads of dogs, horses, and cattle cut in the median into halves to present various levels of preparation with

Fig. 13.4 Wax model from the Ziegler collection showing the embryo of a pig



a focus on vascular structures such as veins and arteries as well as nerves against the backdrop of bone structure and muscular system. The original material was fixated and prepared heads and their anatomical structures, which were dehydrated and impregnated in a vacuum using a mixture of paraffin and wax. In order to present these models in an elaborate and artistic but also realistic way, each anatomical structure of the respective specimen was remodeled using colorful wax mixtures (Fig. 13.6). These exhibits are displayed in the cabinets of the anatomical museum and the dissecting room of the institute and are still used for teaching as visual aids to demonstrate comparative anatomical structures.

13.5 Anatomical Models That Can Be Taken Apart

A part of the collection consists of approximately 40 anatomical models made of gypsum and wood, originating from various epochs of twentieth-century Germany. These anatomical large models of the cow, horse, sheep, and chicken, as well as anatomical models of body parts and organs, can be taken apart. For example, one specimen from 1943 that is approximately 50 cm in height shows the midsagittal



Fig. 13.5 Wax models from the Ziegler collection showing the development of the lancelet (*Branchiostoma lanceolatum*) in 25 parts

section of the pelvis of the cow without an embryo, with a removable uterus. These models are still very popular among students, as their tactile nature makes them ideally suited for comprehending anatomical structures (Fig. 13.7).

Fig. 13.6 Specimen from the collection of wax models focusing on comparative anatomy: This is the combination of an original specimen and the wax modeling technique focussing on the vessels and nerves of the head of a horse



Fig. 13.7 Anatomical model of a pig that can be taken apart



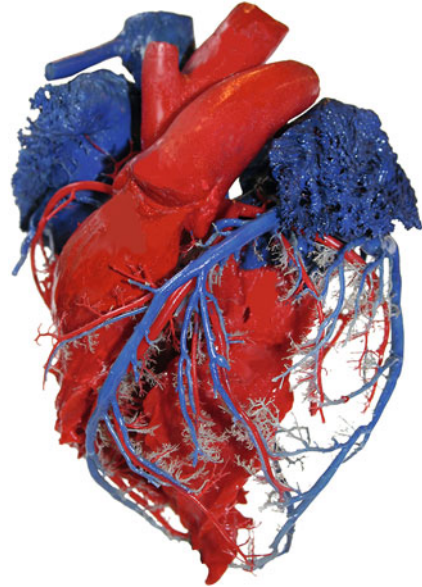
13.6 Cast Specimens

The anatomical collection of the institute houses approximately 42 corrosion cast specimens, which for a large part have been produced from the mid 1970s until today. These display anatomical cavity systems which were filled with a corrosion-resistant mixture (e.g., synthetics) and subsequently cleaned from remaining tissue (maceration). The specimens are mainly three-dimensional, bronchial casts of the lung as well as vascular casts of the kidneys, cephalic arteries, and heart cavities (Fig. 13.8) as well as casts of the cerebral ventricles and the paranasal sinuses.

13.7 Comparative Collection Used for Teaching

The institute also has a comprehensive collection on the comparative anatomy of domestic and farm animals, in particular dog, cat, pig, small and large ruminants, and horse, which is continuously expanded and updated. Among these exhibits are a number of specimens of domestic and exotic wild animals, including birds and reptiles, at various ages. Most skeletons, dry and wet specimens have been produced from 1960 after the construction of the Institute of Veterinary Anatomy at the

Fig. 13.8 Corrosion cast specimen showing the cavities and vessels of the heart of a sheep



Freie Universität Berlin had been finished and are still extensively used during practical anatomical courses to demonstrate issues related to comparative anatomy and developmental biology. The collection consists of 6500 individual bones; 500 mounted parts of skeletons; 115 whole, mounted skeletons as well as 700 skulls; and 100 dry specimens. A part of the collection is exhibited in glass cabinets in the anatomical museum and constantly updated. The specimens are arranged according to which organ system they belong to. Last but not least, 650 wet specimens, which are partly exhibited in specimen jars (ca. 250), also belong to the collection although the biggest part of them is stored in closed specimen tubs.

13.8 Plastinates

Plastination, the preservation method invented by Dr. Gunther von Hagens (1979), was introduced at the institute in order to give students the possibility of studying multidimensional specimens outside the dissection courses and be flexible with regard to time and space. The method allows for creating specimens that are very similar to their natural models, durable in light and at room temperature, harmless in contact with the skin, odor-free, and non-hazardous, for example, for pregnant students. The collection, which is continuously expanded, currently consists of 360 whole-body plastinates (Fig. 13.9) as well as plastinates of body parts and organs of all domestic animals. Apart from those, the collection comprises 25 series of plastinates (e.g., the head of a horse sliced into 25 disks), which are produced using various methods based on silicon or epoxy resin. Plastinates of wild animals

Fig. 13.9 Whole-body plastinate of a rooster



are also among the collection, such as disks of an elephant's trunk or reptiles and fish. Most plastinates are stored in glass cabinets in the dissection hall and are accessible to students at all times.

13.9 Collection of Wall Charts

The institute also houses a comprehensive collection of large-format wall charts in different sizes (most of them are around 2 m wide and between 2 and 3 m long). According to the three subjects taught at the institute, the collection comprises approximately 500 registered wall charts made specifically to be used in the lecture hall, among those around 370 charts on veterinary anatomy (Fig. 13.10), around 110 charts on veterinary histology, and around 20 charts on comparative embryology. These wall charts originate from the years before 1945 and from the years between 1949 and 1985 and are almost exclusively custom-made. Most charts are

Fig. 13.10 Wall chart from 1935 showing the ventral view of the dorsal abdominal cavity of the pig



made of primed linen that was hand painted in different colors (tempera paint, watercolor, the later ones also with airbrush painting) and annotated. The charts are rolled up, stored in a safe place, and only rarely used for teaching these days.

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References

- Budras K-D, Berg R (1998) Einmal quer durch den runden Salon von Sanssouci. Condé – das letzte Leibreitpferd Friedrich II von Preußen als Zeitzeuge der Geschichte Preußens und der Veterinärmedizin in Berlin. *Reiten Zucht Brandenburg* 1:20–22
- Gurlt EF (1832) *Lehrbuch der pathologischen Anatomie der Haus-Säugethiere*, vol 2. Reimer, Berlin
- Smollich A (1988) Ernst Friedrich Gurlt. *Gegenbaurs morphol Jahrb* 134(4):575–583
- von Hagens G (1979) Impregnation of soft biological specimens with thermosetting resins and elastomers. *Anat Rec* 194(2):247–255
- Witte W (2010) Vom Diener zum Meister. Zur Geschichte des Anatomischen Präparators in Berlin 1852–1959. In: Kunst B, Schnalke T, Bogusch G (Hrsg) *Der zweite Blick: Besondere Objekte aus den historischen Sammlungen der Charité*. De Gruyter Berlin, New York, pp 185–217