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# The Anatomical School of Padua

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## Abstract

The University of Padua is one of the most ancient in the world, being founded in 1222, and the most important anatomists of the XVI, XVII, and XVIII centuries studied and taught here. Probably, the first professor of anatomy and surgery was Bruno da Longobucco (c. 1200–c. 1286), who had previously studied at the Salerno School of Medicine. While professor in Padua, Andreas Vesalius (1514–1564) published *De Humani Corporis Fabrica* (1543), which is considered as the birth of the modern anatomy. Following professors were Realdo Colombo (c. 1516–1559), Gabriel Fallopius (1523–1562), Hieronymus Fabricius ab Aquapendente (1533–1619), Iulius Casserius (1552–1616), Johann Wesling (1598–1649), and Johann Georg Wirsung (1589–1643). Many other foreign scholars studied in the University of Padua, such as Thomas Linacre (c. 1460–1524), the founder of the Royal College of Physicians, Werner Rolfinck (1599–1673), and Olof Rudbeck (1630–1702), who created anatomical theatres in Germany and Sweden, respectively, on the basis of the Paduan model. The anatomy of the XVII century characteristically widened the scope of its enquiry to function, as in the *Exercitatio Anatomica De Motu Cordis et Sanguinis in Animalibus* (1628) by William Harvey (1578–1657). Further evolution was then given by the anatomy in the XVIII century, which tried to correlate alterations of structure with clinical symptoms. The most important anatomist of this century is Giovanni Battista Morgagni (1682–1771), whose masterpiece *De Sedibus et Causis Morborum per Anatomen Indagatis* (1761) is a landmark contribution that is viewed as the beginning of modern pathologic anatomy. This year falls the 300th anniversary of Morgagni's inaugural lecture on medical education, *Nova Institutionum Medicarum Idea* (1712), which is still relevant in its effort to stress the importance of a deep knowledge of all the preclinical and clinical aspects of medical science.

### The Foundation of the University of Padua and the Beginning of its Anatomical School

The traditionally accepted date of foundation of the University of Padua is 1222, as recorded in the ancient compilations of the 13th-century Annals of Padua. At the beginning of its history, the University of Padua was mainly known for Law. All the physicians in Padua had already organized themselves into an association named *fraglia* (Tosoni, 1844). Bernardino Scardeone, an historian born in Padua in 1478, claimed that Padua had always been known for its famous physicians and, in his book *De antiquitate Urbis Patavii*, he states, "*ex quo philosophia et res medica hic in Italia laudi et gloriae haberi coepta est, ita semper excelluit, ut facultas medica ubi a Graecia profecta ad Latinos pertransiit, hic primum in hac urbe constitisse, ac domicilium suum posuisse videatur*." However, suggestion has been made that the teaching of medicine at the University of Padua began around 1250, with the Collegium of medical and arts doctors (Ongaro, 2001a).

The long series of professors of Anatomy and Surgery at the University of Padua may be considered to begin with **Bruno da Longobucco (or Longoburgo) (c. 1200–c. 1286)**. Little is known about his life, except that he had studied at the Salerno School of Medicine and then in Bologna, at the School of Ugo Borgognoni da Lucca. According to what he wrote in his main work *Chirurgia magna* (1253), we know that he came from Calabria and was in Padua in the middle of the 13th century ("*Anno ab incar. Dom. MCCLII mense januarii ind.x, apud civitatem Paduae, in loco s. Pauli, ego Brunus, gente calaber, patria longoburgensis, sub spe divini favoris per omnia vestigia veterum sapientium perscrutans, huic operi debitum finem imposui*"). A suggestion is that Longobucco may have been one of the founders of the University of Padua (Pluchinotta, 1986). Bruno da Longobucco also wrote a compendium of the *Chirurgia magna* entitled *Chirurgia parva*. He probably died in 1286 (Tosoni, 1844; Selmi, 1966; Tabanelli, 1970; Focà, 2004). Guy de Chauliac, one of the most famous surgeons of the 14th century, considered Bruno da Longobucco one of the best physicians of the previous century.

Three professors of Medicine were reported to be in Padua in 1262 (i.e., "***Magister Agnus, magister Johannes, magister Zamboninus***, *profundi et periti doctores in physica et scientia naturali*"). Other 13th-century professors of medicine were **Albertino degli Anselmi da Palazzolo**, *physicalis scientiae professor*, and **Matteo Roncalitro**, who died in 1303 and was called *Galieni interpres* in his sepulchral inscription (Tosoni, 1844).

**Pietro d'Abano** (or Petrus de Apono or Aponensis) **(c. 1250–c. 1315)** was also professor of medicine in Padua from 1306 to 1315. Apart from medicine, he studied philosophy, mathematics, and astrology. He was also appointed to the chair of philosophy in Paris. Among his works are the *Compilatio physonomiae* and *Lucidator dubitabilium astronomiae*. In the *Conciliator*, he attempted to reconcile philosophy and medicine and showed a specific interest in anatomy. Pietro d'Abano seems to have carried out the first autopsy for which records exist in Padua (Ongaro, 2001a). He is considered the initiator of Paduan Aristotelism. He was acquainted with Marco Polo and lived for a long period in Costantinopoli, to study Greek to study the classics directly. He probably inspired Giotto to create the cycle of astrological paintings in the Palazzo della Ragione in Padua. Some influences from Pietro d'Abano have also been suggested to occur in the works of Dante (Ongaro, 2001a). Pietro d'Abano was accused of heresy and atheism by the Inquisition, but he died in prison before the end of his trial. He is represented in one of the sculptures in Prato della Valle, the largest square in Padua and one of the largest in Europe (Fig. 1; Tosoni, 1844; Federici Vescovini, 1986; Ongaro, 2001a; Tsoucalas et al., 2011).

At the beginning of the 14th century, **Mondino da Cividale (c. 1275–c. 1340)** (not to be confused with Mondino de' Liuzzi) is reported to be professor of medicine in Padua. He rewrote the *Synonyma medicinae*, a dictionary of medical terms by Simone

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di Genova (Ongaro, 2001a). **Nicolò Santa Sofia** taught in Padua from 1311 to 1350, the year he died. He was the founder of a famous family of physicians and professors at the University of Padua. **Aldobrandino del Garbo (c. 1280–1327)** from Florence taught in Bologna and Siena before he was appointed professor in Padua in 1312, del Garbo is reported to have been in Florence in 1319, where he died in 1327.

**Jacopo Dondi (1293–1359)** practiced medicine in Chioggia, near Venice, and in about 1326 was appointed professor of medicine in Padua. In 1344, he built one of the first mechanical clocks, which was placed in the tower of the Signori in the Palace of the Capitaniato in Padua, so that his surname was changed to "Dondi dall'Orologio." He died in 1359, his most important work is a text on pharmacology, *Aggregator medicamentorum, seu de medicinis simplicibus* (1355) (Porter, 1985; Ongaro, 2001a). **Giovanni Dondi (c. 1330–1388)**, son of Jacopo, born in Chioggia in 1318, moved in 1356 from the chair of astronomy at the University of Padua to that of medicine. In 1367, Giovanni moved to the chair of logic. He probably also moved to Pavia later. He was friend of the poet Francesco Petrarca and the politician and reformer Cola di Rienzo. Dondi's fame is mainly due to his constructing an astronomic clock, an *astrarium*, which reproduced the movements of the sun, the moon, and the five then known planets. This clock was placed in the Ducal Library of the Castle of Visconti in Pavia. The clock is described in his *Tractatus astrarii*. He also wrote *De fontibus calidis agri Patavini*, a text of thermal medicine (Maddison, 1970–1980; Porter, 1985; Ongaro, 2001a). One of the statues in Prato della Valle is dedicated to Dondi (Fig. 2). **Giovanni († c. 1389)** and **Marsilio († c. 1403) Santa Sofia**, sons of Nicolò, also taught medicine in Padua before moving to Bologna. Giovanni and Marsilio wrote, respectively, *Commentarium universum*, on the works of Hippocrates, Galen, and Avicenna, and the *Tractatus de febribus*. **Galeazzo Santa Sofia († 1427)**, son of Giovanni, taught medicine in Vienna from 1398 to 1405 and then theoretical medicine in Padua from 1407 until his death. As regards his role in the history of anatomy, he is considered to have undertaken the first public dissection in Vienna in 1404 (Ongaro, 2001a). **Pietro da Tossignano († c. 1407)** also taught medicine in Padua between 1390 and 1396, before moving to Bologna. The best-known work of Pietro da Tossignano is *Consilium pro peste evitanda* (1398), a medical treatise on the plague of 1397.

Until this time, little information is available on the organization of the University of Padua. Because professors of medicine were not so numerous as to be assigned to separate chairs identifying which professors taught anatomy and which did not is difficult. From the end of the 14th century, a specific chair of anatomy and surgery is reported to have been made. A second chair of anatomy and surgery was made stipulated in 1392. The chair of anatomy and surgery was not subdivided into separate chairs until 1609.

**Nicolò da Monselice** took his degree in medicine in 1371 and taught surgery in Padua. He was the first to be appointed to the second chair of anatomy and surgery in 1392. His ashes are contained in a funeral urn in the cloister of St Anthony's Basilica. **Leonardo Buffi da Bertipaglia** taught in Padua from 1402 to 1429. Two of his works were *Recollectae habitae super quarto Canonis Avicennae*, containing references to dissections, and *De aquis conficiendis ad pellendas aegritudines*. He also refers to two anatomical dissections, personally performed in 1430, in his work *De antidotis*, then added to *Chirurgia*. Thus, by the first half of the 15th century, the practice of dissection was well established in Padua (Ongaro, 2001a). The text that was mainly used to teach anatomy was Mondino de' Liuzzi's *Anothomia* (1316) (Crivellato and Ribatti, 2006).

**Alessandro Benedetti** from Legnago **(c. 1450–1512)** obtained his degree in Padua in 1475. He stayed for many years on the island of Crete, where he practiced medicine and, in 1490, began to teach medicine in Padua. He was not only a physician but also a humanist author of many nonmedical works. He constructed the first wooden anatomical theatre, which could be dismantled. In 1495, he was military physician during the war against Charles VIII of France and described this experience in *Diaria de bello Carolino* (1496). He also published *Historia corporis humani sive anatomice* (1493) and *Ejusd. Opera medica omnia, sive de singulis corporis humani morbis a capite ad pedes* (Tosoni, 1844; Ferrari, 1996). The *Historia* was the first work after the *Anothomia*, by Mondino de' Liuzzi, to be entirely devoted to anatomy, but while the *Anothomia* was similar to a dissection manual, the *Historia* was mainly a compendium of descriptive anatomy. *Historia* was widely published in Europe.

Apart from the above physicians, who were appointed to the chair of anatomy of the local University of Padua, many other foreign scholars studied in Padua who then played a pivotal role in the history of medicine and anatomy. For instance, **Thomas Linacre (c. 1460–1524)** was one of the first men linking the University of Padua with England. In 1496, Linacre was awarded the degree of medical doctor from the University of Padua and soon after he returned to Oxford, where his degree was confirmed by an act of incorporation. He became domestic physician to Henry VII (1457–1509) and Henry VIII (1491–1547). Linacre translated works by classic authors, first of all Galen, from Greek into Latin, giving new impulse also to the study of anatomy in England. It is significant that, in the frontispiece of a translation from Galen, a dissection in an anatomical theatre is represented. Linacre also played an essential role in the foundation in 1518 of the Royal College of Physicians, which was organized on the basis of the Paduan model of the *Collegium* of doctors and arts (e.g., Osler, 1908; Himsworth, 1955; Porzionato et al., 2010).

### The Birth of Modern Anatomy

In 1537, **Andreas Vesalius (1514–1564)** (Fig. 3A) came to Padua, obtained his degree as a medical doctor, and was appointed lecturer in surgery, with responsibility for giving anatomical demonstrations. Vesalius was born in Brussels on December 31, 1514. His great-grandfather, grandfather, and father were all court physicians. Vesalius first studied at the University of Louvain from 1529 to 1533, and then at the University of Paris from 1533 to 1536, where his professors were Jacobus Sylvius and John Guinter of Andernacht (Norwich, 1967; Simeone, 1984; Sherzoi, 1999; Vallejo-Manzur et al., 2003; Dunn, 2003). During his stay in Padua, he taught many future famous anatomists and physicians, such as Realdo Colombo, Gabriel Fallopius, and Borgaruccio, who were to succeed him in Padua. In 1540, Vesalius was invited to Bologna, where he carried out some anatomical demonstrations and proved that Galen's anatomy was based on animals by comparing the skeletons of a man and a monkey (Ongaro, 2001a).

In 1543, Vesalius published his masterpiece, printed in Basel by Oporinus, *De humani corporis fabrica* (Fig. 3B–D), dedicated to Charles V. The identity of the illustrator(s) of *De humani corporis fabrica* is still uncertain. The most plausible attribution is to Jan Stephan van Kalkar (1499–1550), a Flemish artist of the Venice *atelier* of Tiziano Vecellio (Zimbler, 2001). *De humani corporis fabrica* is usually considered as the beginning of the modern anatomy, mainly because of the methodological change in the anatomical investigation, which can be exemplifyingly appreciated in the same title page of the work. Before Vesalius, in the so-called quodlibetarian model of anatomical study, public anatomical lessons were usually performed by three different figures: the lector, sitting on the pulpit and reading the anatomy text; the ostensor, standing next to the cadaver and indicating with a pointer the anatomical parts to be dissected; the sector, directly dissecting the body. In the title pages of the pre-Vesalian anatomical texts, all three figures are represented, with their different distances from the cadaver. In the title page of *De humani corporis fabrica*, instead, Vesalius represents himself no longer distant from the cadaver but while directly dissecting. He wants to unify in himself the three figures of the lector, ostensor, and sector. The modern anatomical investigation relies on direct

Fig. 1. Statue of Pietro d'Abano in Prato della Valle in Padua.

Fig. 2. Statue of Giovanni Dondi dell'Orologio with his *Astrarium* in Prato della Valle in Padua.

observation and dissection of cadavers. Also, the authoritative anatomical texts must be subordinate to the firsthand experience of dissection. On the basis of this new approach, Vesalius corrected many anatomical mistakes present in Galen's works (Carlino, 1994; Joutsivuo, 1997).

Vesalius is considered to be the first to have discovered the spermatic vessels. He correctly described the hip bone. Against Galen's teaching, Vesalius stated that the jaw was composed of two bones (not one) and that the sternum was composed of three segments (not seven) (Vallejo-Manzur et al., 2003). He also coined many anatomical terms such as alveolus for the tooth socket, choana, incus, and mitral valve, and was the first to use the adjective vermiformis for the appendix (Vallejo-Manzur et al., 2003). He is also considered to have given the first scientific description of the superficial musculoaponeurotic system (Zimbler, 2001) and to have been the first to describe the prostate as a single organ (Dauge et al., 1999).

In 1544, Vesalius left Padua and returned to Brussels, where he married. He became court physician to Charles V, who made him a count in 1556. In 1559, Vesalius moved to Madrid where he became physician to Philip II. In 1564, he was charged with murder for having performed the dissection of a nobleman whose heart was reported to be still beating by some witnesses. The sentence was commuted to a pilgrimage to Jerusalem and, while he was there, the professorship at Padua was offered to him, after the death of Fallopius. During his return journey to Padua, Vesalius' ship was wrecked and he died on the island of Zante on October 15, 1564 (Norwich, 1967; Simeone, 1984; Silverman, 1991; Sherzoi, 1999; Vallejo-Manzur et al., 2003; Dunn, 2003).

Apart from the Fabrica, other works by Vesalius are: *Epistola docens venam axillarem dexteri cubiti in dolore laterali secandam* (1539), *Suorum librorum de corporis humani anatome epitomen* (1542), *Radicis chynae usus ad Joachimum Roelants* (1547), *Anatomicarum Gabrielis Faloppii observationum examen* (1564), *Chirurgia magna in septem libros digesta* (postumously published by Prospero Borgaruccio in 1568), *De artritide consilia quaedam* (1594), *Consilia aliquot medica* (1598), and *Consilium pro visu partim depravato, partim abolito, ad Wolfgangum Herwart Augustanum* (1583) (Tosoni, 1844).

A foreign scholar who studied in Padua under Andreas Vesalius was **John Caius (1510–1573)**, who took his medical degree in 1541. John Caius introduced anatomical dissections to Cambridge and is considered as the first to initiate the study of anatomy in England. In 1552, he published what is considered the first medical work written in English.

After Vesalius left Padua in 1544, **Realdo Colombo (c. 1516–1559)** (Fig. 4) was appointed to the chair of surgery, with the obligation to teach anatomy. Colombo was born in Cremona and studied first philosophy in Milan and then medicine in Padua. In 1536, the *Artistarum Universas* proposed that he join Marc'Antonio Montagnana in the second chair, but the Venetian Senate refused and withheld the position. Colombo was Vesalius' assistant dissector and frequently substituted for him during Vesalius' absences, as stated in Colombo's *De re anatomica* ("*Etenim cum Vesalius abesset, ac diutius in Germania detineretur ut opus suum de humani corporis fabrica imprimendum curaret: me tum … universa schola patavina dignum judicavit quem in Vesalii locum sufficeret, ac non contemnendo praemio accersivit*"). In 1541, Realdo Colombo was again proposed by the University for a second chair in surgery and anatomy, but the Venetian Senate did not confirm this decision either, claiming that the chair was to have been one, under Vesalius. Colombo held the chair of anatomy and surgery from 1544 to 1547, when he left Padua to teach first in Pisa and then in Rome. In Rome, Colombo obtained protection from Pope Paul IV, to whom he dedicated his masterpiece *De re anatomica libri XV*, published in 1559. It seems that Colombo asked Michelangelo Buonarroti to illustrate the *De re anatomica*, which however was finally

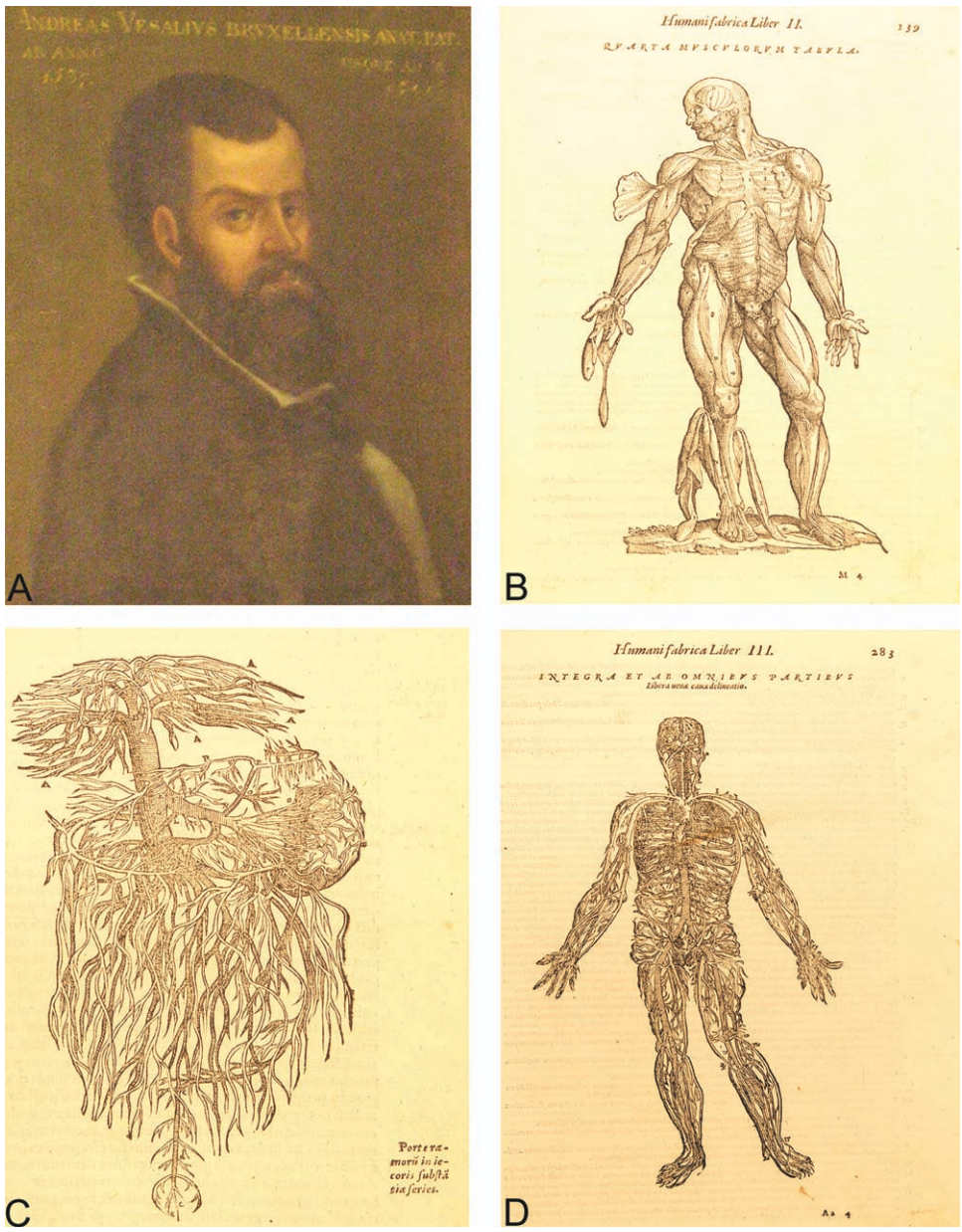


Fig. 3. **A**: Portrait of Andreas Vesalius in Hall of Faculty of Medicine and Surgery in Palazzo Bo, University of Padua. **B–D**: Illustrations from *De humani corporis fabrica*.

published without illustrations, due to the painter's age (Porter, 1985). *De re anatomica* contains some criticisms of Vesalius' work. During his stay in Padua, Colombo was helped during anatomical demonstrations by two professors of practical medicine, Paolo Crasso and Giambatista da Monte, mainly known for being considered the first to introduce clinical bedside teaching into medical education (Tosoni, 1844).

Among the most important scientific contributions of Colombo are the assertion of the impermeability of the interventricular septum and the description of the blood flow from the right ventricle to the left atrium through pulmonary vessels. He also demonstrated that the pulmonary veins contain blood and not air, and described the heart beating. Such discoveries were of foremost importance for the future work of Harvey on the circulation of blood (Eknoyan and De Santo, 1997; Ongaro, 2001a; Hurst and Fye, 2002; Tubbs et al., 2008). In *De re anatomica*, Colombo also stated that the right kidney is lower than the left one, he localized the lens in the anterior chamber of the eye and described the palmaris longus and the horseshoe kidney (Eknoyan and De Santo, 1997; Tubbs et al., 2008; Stringer and Becker, 2010).

On December 12, 1547, the chair left vacant by Colombo was given to **Giovanni Paolo Guidaccio** from Urbino, who had been a pupil of Vesalius', Guidaccio held the chair until 1550, when **Alessandro Sarego** from Verona became professor of surgery and anatomy, although only for 1 year.

In 1551, **Gabriel Fallopius (1523–1562)** (Fig. 5) became professor of anatomy, surgery, and botany at the University of Padua, where he stayed until his death. Fallopius was born in Modena in 1523 and studied in Padua, with Vesalius as his teacher. In 1548, Fallopius was appointed professor of anatomy at the University of Pisa. In 1551, he moved to the University of Padua.

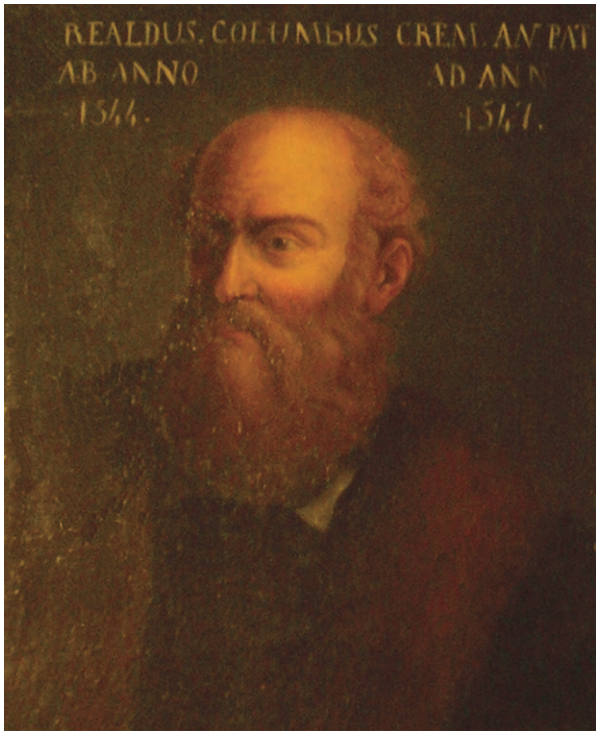


Fig. 4. Portrait of Realdo Colombo in Hall of Faculty of Medicine and Surgery in Palazzo Bo, University of Padua.


Fig. 5. Portrait of Gabriel Fallopius in Hall of Faculty of Medicine and Surgery in Palazzo Bo, University of Padua.

Fallopius' fame was so great that, in 1552, he was invited to Rome to attend the brother of Pope Julius III. In 1561, Fallopius published his *Observationes anatomicae*, mainly consisting of completions and corrections to Vesalius' *Fabrica*. Fallopius made more discoveries than Vesalius and Fallopius' research has been considered more precise (Ongaro, 2001a). For example, the following statement was made: "*Fallope avait le génie de l'invention; Vésale, le génie de la méthode; ou plutôt Fallope avait du génie, Vésale n'avait que du savoir*" (Daremberg, 1870).

Fallopius accurately described the uterine "fallopian" tubes, made detailed studies of foetal anatomy, and is considered one of the initiators of embryology, due to his studies on the centers of ossification and the development of teeth. He described the passage for the facial nerve in the petrous bone (Fallopian canal), the semicircular canals, and the *chorda tympani*. He also introduced the terms cochlea and labyrinth. Fallopius was the first in the modern age to develop the concept of "tissues," called "*partes similares*" (Tosoni, 1844; Wells, 1948; Speert, 1955; Kothary and Kothary, 1975; Ongaro, 2001a; Bender et al., in press).

**From Structure to Function—The Anatomy of the XVII Century**

Owing to the death in 1562 of Vesalius, who was to have returned to Padua, the chair of surgery and anatomy remained vacant until 1565. During this period, anatomical preparations were made by Francesco Borgaruccio and then by Nicolò Bucella, although dissections were very few and probably not made public. Finally, in 1565, **Hieronymus Fabricius ab Aquapendente (1533–1619)** (Fig. 6A) was appointed professor of surgery and anatomy. Born in 1533 at Aquapendente, Fabricius first studied Greek, Latin, and philosophy at the University of Padua and then medicine, under the guidance of Fallopius. In 1594, Fabricius built the first permanent theatre ever designed for public anatomical dissections, thus revolutionizing the teaching of human anatomy (Fig. 6B). Used until 1872 and still occupying its original place in the ancient building of the University of Padua, the so-called Palazzo Bo, the theatre has six concentric galleries and can hold 300 people, all standing no farther than 30 feet from the dissecting table. From Paduan medical students filling his theatre to aristocrats from all over Europe, Fabricius earned enormous respect and also remuneration as a physician and anatomist. As a doctor, he treated the Medici family, Galileo Galilei, the Duke of Urbino, and the King of Poland. Fabricius earned the title of professor supraordinarius from the Venetian Senate in 1600 (Westfall, 2002). In 1607, the Republic of Venice made him a Knight of St. Mark for his medical services (Walsh, 2003). By the time of his retirement, Fabricius was perhaps the highest paid and most respected physician in Europe. The last part of his career was mainly occupied by publishing his studies. In *De Visione, Voce, Auditu* (1600), he discussed the anatomy and physiology of sight, speech, and hearing (Fig. 6C,D). In the same year, he wrote the first Renaissance work on embryology and developmental anatomy, *De Formato Foetu* (1600), in which he described for the first time the changes in fetal vessels after birth, such as closing of the ductus arteriosus. He also published *De Locutione et Eius Instrumentis* (1601) and *De Brutorum Loquela* (1603). He was also the first to describe in detail and demonstrate publicly the valves in veins in *De Venarum Ostiolis* (1603) (Franklin, 1933). Fabricius, also described the so-called *bursa of Fabricius*, which in fowl is the anatomical structure that gives rise to B lymphocytes ("B" from *bursa*). In his innovative approach to anatomy, mainly stated in the introduction of *De Auditu*, Fabricius suggested that one should first describe the dissection and anatomy of a structure, then its independent action, and lastly its interdependent function in the body. This systematic, Aristotelian methodology revolutionized anatomical research by combining discussions of form and function to define the *notitia organorum tota*, "the entire knowledge of the organs" (Cunningham, 1985). Even the title of his principal work suggests that he aimed to discuss not only anatomy but also physiology: *De Visione, Voce, Auditu* (1600) focuses on sight, speech, and hearing rather than the eye, larynx, and ear (Smith et al., 2004).


Fig. 6. **A**: Portrait of Hieronymus Fabricius ab Aquapendente in Hall of Faculty of Medicine and Surgery in Palazzo Bo, University of Padua. **B**: Anatomical theatre, built in 1594, and still preserved in Palazzo Bo. **C, D**: Frontispiece and illustrations from *De Visione, Voce, Auditu*.

In addition to restructuring anatomical investigation, Fabricius remodeled the representation of anatomy. Artists and anatomists in the Renaissance studied each others' fields to gain better understanding of and appreciation for the beauty of the human body. In Vesalius' famous portraits of skeletons, the human bodies seem very much alive, striking *contrapposto* poses in fields while their muscles and organs are dissected. Vesalius' works also include some less artistic and more technical figures, and some scholars point to his illustrations as the beginning of detailed scientific drawing (Loechel, 1964). Although Vesalius began to abandon artistic flair for technical accuracy, it was Fabricius who completed the transition, making only technical illustrations without the animation, flourishing backgrounds, and artistic expression found in his predecessor's works. Fabricius' images were the foundation for modern anatomical illustration, but they are no less impressive or beautiful than previous, more animated illustrations. Indeed, in *Tabulae Anatomicae*, "*Anatomical Tables*," which were painted in oils on paper or cardboard, Fabricius painted over 200 images of the human body in stunning detail and artistry (Stefanutti, 1957). Many anatomical structures, apparently first described many years after Fabricius' death, were depicted earlier in these Tabulae Anatomicae. They include the foramen of Monro, Sylvian fissure, arachnoid layer, and bulbourethral glands (Riva et al., 2010). The *Tabulae Anatomicae* have been recently restored and are still present at the Marciana Library (Zanchin and De Caro, 2006).

Fabricius' most famous pupil, **William Harvey (1578–1657)**, probably relied heavily on *De Venarum Ostiolis* in his own work on the circulation of the blood. Harvey studied first in Canterbury and Cambridge before moving to Padua where he took his degree in medicine in 1602, before going back to England. In 1628, Harvery published his masterpiece *Exercitatio Anatomica De Motu Cordis et Sanguinis in Animalibus* in which he gave demonstration of the blood circulation (e.g., French, 2002; Zareba, 2007). This work has also been considered as the beginning of the modern physiology.

In 1609, the chair of surgery and anatomy was subdivided into one chair of anatomy, which remained to Fabricius, and one of surgery, which was assigned to **Iulius Casserius (1552–1616)** from Piacenza. However, as happened in the past, Casserio also replaced Fabricius in anatomical demonstrations when the older master was absent or ill. Casserius' family was very poor and he moved to Padua probably as a servant to some student (Sterzi, 1910; Riva et al., 2001). In Padua, he became assistant to Hieronymus Fabricius ab Aquapendente (Tomasini, 1630; Ghilini, 1647; Riva et al., 2001). However, Casserius took his degree in medicine and philosophy, probably in about 1580 (Sterzi, 1910; De Ferrari, 1978; Premuda, 1993; Riva et al., 2001) and first began to give private lectures on anatomy. Fierce rivalry developed between Fabricius and Casserius, and finally led to the separation of a chair of anatomy and a chair of surgery (Riva et al., 2001). In 1614, Casserius was also made a Knight of St. Mark. Casserius wrote the following anatomical works: *De vocis auditusque organis Historia anatomica* (1600–1601), *Pentaestheion, hoc est, De quinque sensibus liber, Organorum Fabricam …* (1609), and *Iulii Casseri Placentini Tabulae Anatomicae LXXIIX, omnes novae nec ante hac visa. Daniel Bucretius … XX quae deerant supplevit et omnium explications addidit* (1627).

In 1616, the ordinary lecture of anatomy and surgery was given to **Adrianus Spigelius** (or **Adriaan van den Spiegel**) from Brussels (**1578–1625**), Fabricius maintained the supraordinary role. Spigelius was also appointed a Knight of St. Mark in 1623, and died in Padua in 1625. In *De semitertiana libri quatuor* (1624), Spigelius gave the first detailed description of malaria. Other works by Spigelius, mainly published posthumously, were the following: *De humani corporis fabrica libri decem tabulis XCIIX aeri incisis … exornati* (1627), *De formatu foetu liber singularis aeneis figuris exornatus* (1626), *De lumbrico lato liber* (1618), *De lithotomia* (1638), and *Catastrophe anatomiae publicae, in celeberrimo lyceo Patavino feliciter absolutae* (1624). Spigelius described the caudate lobe of the liver (Spigelius' lobe) and was also the first to describe the lateral ventral hernia (Spigelian hernia) through the linea semilunaris (Spigelius' line), a curved tendinous line along the lateral border of the rectus muscle. Spigelius was also a botanist, and the genus *Spigelia* derives its name from him. His portrait (Fig. 7) is in the "Room of the Forty" of the original ancient building of the University of Padua, where 40 of the most famous personalities who studied in Padua are portrayed.

In 1618, a second chair of anatomy and surgery was assigned to **Francesco Piazzono (o Palazzono)** from Padua, who died in 1624. His fame was celebrated in the anatomical theatre with the following words: "*Tot post anatomes sublimia lumina, primum / Palazzonum dedit his urbs patavina scholis.*"

After the death of Spigelius in 1625, the ordinary professor of theoretical medicine, **Pompeo Caimo (1568–1631)** from Udine, was appointed lecturer of anatomy *per modum provisionis*, and held this post for about 5 years. In 1626, **Girolamo Sabionato** from Monselice was appointed supplementary professor to the chair of surgery, with the obligation to present anatomical preparations. In 1631, anatomical lessons were not performed, owing to an outbreak of plague.

In 1632, **Johann Wesling (Veslingius) (1598–1649)** (Fig. 8A) was appointed professor of anatomy, with the obligation to lecture also on surgery. Wesling was born in Minden, Westphalia. His Catholic family had probably left Vienna to escape religious persecution. In the winter of 1627–1628, Wesling gave an anatomical demonstration at Venice, gaining the right to practice medicine in that city. He also gave public lectures on anatomy in Venice. Wesling became the personal physician of Alvise Cornaro, who represented the city of Venice in Cairo, and went there in August 1628 with Cornaro, returning to Venice in early 1633, after being appointed professor of anatomy and surgery at Padua on December 30, 1632. During his stay in Egypt, he studied the local flora and published *De plantis Aegyptiis* in 1638. In 1638, he was appointed to the chair of botany, and left the chair of surgery but retained the chair of anatomy. Wesling published his most important work, *Syntagma Anatomicum, publicis dissectionibus in auditorum usum diligenter aptatum*, in 1641 (Fig. 8B–D).


Fig. 7. Portrait of Adrianus Spigelius in "Hall of the Forty" in Palazzo Bo, University of Padua.

**Johann Georg Wirsung (1589–1643)** (Fig. 9A) discovered the pancreatic duct in 1642, when he performed autopsies in Padua before Wesling presented his demonstration lectures to the public in the anatomy theatre. Wirsung made a copper table showing the discovery of the pancreatic duct, which is preserved in Palazzo Bo (Fig. 9B,C) (Howard et al., 1998). In this table, the following words are reported: "*Jo. Georgii Wirsungi inventum Figura ductus cujusdam cum multiplicibus sui ramulis in pancreate a Jo. Geor. Virsungio, Phil. et Med. Doct. in diversis corporibus humanis observati. Paduae 1642*." Wirsung was murdered in 1643, 1 year after his great discovery, and Wesling was accused of the crime, for sentimental reasons or academic jealousy, although he was eventually acquitted. Conflicts between Wesling and Wirsung were known and had surfaced as the young doctor became well established (Carter, 1998). Wesling died in Padua on August 30, 1649 and a funerary monument was erected in St. Anthony's Basilica. After his death, Wesling's papers and letters (*Observationes anatomicae et epistolae medicae*) were published posthumously by Thomas Bartholin in 1664.

The *Syntagma Anatomicum* was very popular and was translated into many languages. Through this volume Western anatomy first entered Japan. In the history of Japanese medicine, the translation into Japanese of Johann Adam Kulmus' (1689–


Fig. 8. **A**: Portrait of Johann Wesling in *Syntagma Anatomicum*. **B–D**: Frontispiece and two plates from the first illustrated edition (1647) of the *Syntagma Anatomicum*.

1745) *Ontleedkundige Tafelen* is considered to be a pioneering feat. However, most of the illustrations of this book, which gave rise to "the dawn of Western medicine in Japan," were taken from *Syntagma Anatomicum* (Luyendijk-Elshout, 1991; Riva et al., 2006), which had also been introduced into Japan by Shinnin Kawaguchi (1736–1811), the first Japanese to dissect the brain.

Wesling provided descriptions of the human lacteals and he also studied the development of the chicken in artificially hatched eggs, with particular reference to the development of the four-chambered heart. He was one of the first authors to state that four pulmonary veins empty into the left atrium of the heart. The first accurate anatomic illustrations of the cerebral vasculature of the brain base were performed by Casserius, posthumously published in 1627, and Wesling (Traystman, 2004; Bender et al., in press), in 1647, before the work by Thomas Willis (1621–1675) in 1664. Casserius illustrated the anterior communicating artery complex in one figure and the posterior communicating arteries in another. In the illustration by Wesling, in one of the three *tabulae* on the "Cerebrum and cerebellum" of the first illustrated version of the *Syntagma*, the anterior communicating artery seems to be missing, although some authors suggest that it is shown. Wesling's name was also given to the central line running over the scrotum from the anus


Fig. 9. **A**: Portrait of Wirsung in "Hall of the Forty" in Palazzo Bo, University of Padua. **B, C**: Original copper plate (1642) showing Wirsung's duct and a page printed with that plate.

to the root of the penis, Wesling's line, marking the position of the septum scroti. He also entered the discussion of Harvey's new theory. In 1636, Wesling wrote to Harvey, accepting his ideas on the origin, structure, and motion of the heart, and the function of the lungs on the basis of autopsy findings, but expressed doubt about Harvey's view on the return of blood through the veins of the heart, on the basis of Weslings's embryological studies. Wesling subsequently stated in another letter to a Paduan colleague that Harvey had resolved his doubts by letter. Wesling consequently accepted Harvery's theory and, indeed, may be considered one of its supporters.

In 1637, a second chair of surgery and anatomy was given to **Bonaventura Ferrari** from Udine. In 1640, it was given to **Pietro Marchetti (1589–1673)**, after Ferrari left Padua. Marchetti was made a Knight of St. Mark in 1644. He retired in 1669 and his place was taken by his son **Antonio Marchetti**.

In 1649, after the death of Wesling, **Antonio Molinetto** was appointed professor of surgery and anatomy in the first chair. In 1661, the chair was again divided and the chair of surgery was given to **Domenico Marchetti (1626–1688)** from Padua. In 1675, Molinetto died, leaving the following works: *Dissertationes anatomicae et pathologicae de sensibus et eorum organis* (1669) and *Dissertationes anatomico-pathologicae quibus humani corporis partes describuntur* (1675). In the same year, **Giacomo Pighi (1647–1682)** was appointed professor of anatomy in the first chair. After his death, Marchetti moved to the first chair of surgery and **Michelangelo Molinetto (1651–1714)**, son of Antonio, took the second. Marchetti died in 1688, after having published the following work: *Anatomia, cui responsiones ad Riolanum anatomicum parisiensem in ipsius animadversionibus contra Veslingium additae sunt* (1652). In 1689, Michelangelo Molinetto moved to the first chair of anatomy and **Giovanni Viscardi** from Verona took the second one.

Apart from Harvey, many other foreign scholars studied under the above professors of anatomy and surgery, and then spread the principles of medical investigation and education according to the Paduan model to their countries. **Caspar Bauhin (1560–1624)** studied in Padua and then become professor of anatomy and botany in Basel. His most known work is the *Pinax theatri botanici* (1596). In anatomy, his name is linked with the ileocaecal valve, although he apparently did not discover it (Bergmann and Wendler, 1986).

Another pupil of Fabricius and Casserius was **Caspar Bartholin the Elder (1585–1629)**, who studied anatomy in Padua but later went to Copenhagen, where held a position as professor of medicine in 1613 and then of theology in 1624 (Hill, 2007). His most important work was *Anatomicae institutiones, corporis humani utriusque sexus historiam & declarationem exhibentes*, first published in 1611 (Hill, 2007). He described the adrenal glands as ductless and hollow, with an internal cavity containing an atrabiliary fluid, which now we know is the effect of autolysis of the medulla (Carmichael, 1989; Hiatt and Hiatt, 1997). He probably used, for the first time, the terms *nervus olfactorius* and *nervus vagus* (Persaud, 1997; Simon et al., 2011). Caspar's son, **Thomas Bartholin (1616–1680)**, also studied in Padua. He is mainly known for his descriptions of the lymphatic system and he also called the *Ossa Wormiana* in honor of his uncle, Ole Worm, who had undertaken many studies on osteology. Another anatomist who studied in Padua and provided descriptions of the lymphatic vessels was the Swedish teacher **Olof Rudbeck (1630–1702)**. He became Rector of the Faculty of Uppsala, where he established, for the first time, the anatomical theatre and the botanical garden on the basis of the Paduan models. A priority dispute arose between Thomas Bartholin and Rudbeck about who was the first to recognize the peripheral lymphatics, named *vasae lymphaticae*


by Bartholin and *vasae gladularum serosae* by Rudbeck (e.g., Chikly, 1997; Ambrose, 2007).

**Werner Rolfinck (1599–1673)** studied in Padua under Adrianus Spigelius from 1622 to 1625, when Rolfinck took his doctorates in Philosophy and Medicine. After graduating in Padua, he practiced medicine and taught Anatomy in Venice. In 1628, he was appointed professor of Anatomy in the University of Wittenberg. A request to become ordinary professor of medicine at Padua probably reached him too late after his return to Germany. In 1629, he became professor of anatomy, surgery, and botany in the University of Jena, where he established the first anatomical theatre (Favaro, 1927; Rossetti, 1976–1977).

### The Clinical Anatomy of the XVIII Century

Michelangelo Molinetto died in 1714 and the following year **Giovanni Battista Morgagni (1682–1771)** (Fig. 10) moved from the second chair of ordinary theoretical medicine to the first chair of anatomy. Born on February 25, 1682 in Forlì, Morgagni studied philosophy and medicine at the University of Bologna in 1698, where he received doctor's degrees in both disciplines in 1701. He was appointed prosector to Antonio Maria Valsalva at the "Santa Maria della Morte" hospital in Bologna. In 1707, Morgagni went to Venice, where he performed dissections with **Gian Domenico Santorini (1681–1737)**, the discoverer of the accessory pancreatic duct (Santorini's duct). In 1709, Morgagni returned to Forlì, where he practiced medicine successfully and in 1711 was appointed professor of theoretical medicine in Padua. He taught in Padua and enjoyed a worldwide reputation. Morgagni became a fellow of the most important scientific societies throughout Europe, that is, the Royal Society of England (1724), Academy of Sciences of Paris (1731), Imperial Academy of St. Petersburg (1735), and Academy of Berlin (1754). In 1740, Morgagni's wages reached 2,200 florins, the highest ever given by the Venetian Republic to a professor of the University of Padua (at the end of his career, Molinetto only received 1,000 florins). Morgagni was consulted by popes and kings. In 1769, the students of the *Natio Germanica* placed a statue of him in the room near the anatomical theatre, with the following inscription: "*JO. BAPT. MORGAGNO NOB. FOROLIV. ANATOMICOR. TOTIVS EVROPAE PRINCIPI POST ANNOS LIV IN HOC THEATRE ADHVC DOCENTI NATION GERMANICA ARTIST. PROTECTORI AMANTISS. ET LIBERALISS. VIVENTI P. A. MDCCLXIX LOCVM D.D. III LITTER.*"

In his *Adversaria Anatomica*, published between 1706 and 1719, Morgagni made observations about the larynx, lachrymal apparatus, male urethra, and female pelvic organs. This work greatly contributed to establishing his anatomical reputation, as he corrected many errors made by preceding anatomists. In 1712, he published the inaugural lecture of his course on theoretical medicine *Nova Institutionum Medicarum Idea*, in which he presented the educational project for his idea of *medicus perfectissimus* (Zanchin and Panetto, 2004; Zani and Cozzi, 2008). This lecture is still relevant after 300 years, because it stressed the importance of a deep knowledge of all the preclinical and clinical aspects of the medical science.

In 1761, Morgagni published his masterpiece *De Sedibus et Causis Morborum per Anatomen Indagatis*, based on more than 600 autopsies, in which he correlated post-mortem findings with clinical symptoms. This work is considered to represent the foundation of pathologic anatomy. Other works published by Morgagni were: *In Aur. Cornelium Celsum et Quintum Serenum Samonicum epistolae* (1722), letters to his friend Giovanni Battista Volpi about works by Aurelius Cornelius Celsus and Quintus Serenus Samonicus; *Opuscula Miscellanea* (1763), containing writings on medico-legal matters; letters to Lancisi about the manner of Cleopatra's death and a brief biography of Valsalva; *Epistolae anatomicae duae novas observationes et animadversiones complectentes* (1728) and *Epistolae anatomicae duodeviginti ad scripta pertinentes celeberrimi viri Antonii Mariae Valsalvae* (1740). Morgagni died in December 1771 (Tosoni, 1884; Zani and Cozzi, 2008). A series of consultations by Morgagni was also published posthumously in 1935 (*Consulti Medici*).

Apart from being considered the father of pathologic anatomy, Morgagni also described so many normal anatomical structures that Puccinotto, a 17th-century physician, wrote: "if all anatomical findings made by Morgagni should bear his name, probably one-third of human body would be called Morgagni's." His name has been given to the appendix testis (Morgagni's hydatid), the vertical folds in the mucous layer of the rectum (Morgagni's column), the middle prostatic lobe (Morgagni's caruncle), the superior nasal concha (Morgagni's concha), the orifices of the mucous glands of the male urethra (Morgagni's lacunas), the lateral pouch in the vestibulum laryngis (Morgagni's ventricle), the space between the upper border of the levator veli palatini and the base of the skull (Morgagni's sinus), the right-sided fissure between the pars sternalis and pars costalis in the diaphragm (Morgagni's foramen), and the congenital hernia through the above foramen (Morgagni-Larrey hernia). He also described many anatomical variations, with particular reference to the urinary tract—for instance, fetal lobulations of the kidney, anomalies of shape, site and number of the kidneys, and ureteral valves (Valvo et al., 1983).

### From Morgagni's Death to the XXI Century

In 1771, **Leopoldo Marcantonio Caldani (1725–1813)**, professor of theoretical medicine, was provisionally appointed to perform anatomical demonstrations. In 1773, the chair of anatomy was finally given to him, but he also kept the chair of theoretical medicine (Tosoni, 1844). From an anatomical viewpoint, Caldani's most important work was *Icones anatomicae* (1801–1813), which he published with the help of his nephew Floriano Caldani; *Icones anatomicae* is considered one of the most important anatomical atlases of the period (Fig. 11). Other works are the following: *Lettera sull'ipersensibilità ed irritabilità di alcune parti degli animali* (1757), in which he defended the ideas of Albrecht von Haller on muscle irritability; *Relazione di un caso felice di innesto del vajuolo* (1768), *Institutiones pathologicae* (1772), *Institutiones physiologicae* (1773), *Institutiones anatomicae* (1787), and *Institutiones semeioticae* (1808). The *Institutiones* were conceived as textbooks for students; they had numerous editions and translations, and were widespread across Europe until the first decades of the 19th century. Caldani was a member of many scientific academies such as the National Academy of Sciences, Royal Society of London, Scientific Academy of Berlin, and Real Scientific Society of Gottingen. He performed experimental studies on the function of the spinal cord and also devoted time to the study of the circulation of the blood and structures of the ear. He believed that liquid, not air, was present in the semicircular canals. He also created the anatomical museum of the University of Padua (Premuda, 1996; Pazzini, 1974; Ongaro, 2001a). Leopoldo retired in 1806. The chair of anatomy was given to **Floriano Caldani (1772–1836)**, who was also Rector of the University of Padua in the last years of his life.

**Vettore Fabris** from Feltre was professor of anatomy from 1836 to 1838, and **Francesco Cortese (1802–1883)** from Treviso from 1838 to 1848 (Fig. 12A). From 1842 to 1847, on the basis of Cortese's suggestions, modifications were made to the anatomical theatre, which had remained substantially unchanged since 1594. These changes consisted of the reduction of daylight and the establishment of an anatomical laboratory. Cortese was greatly interested in the doctrine of phrenology and collected for the anatomical laboratory the skulls of the following illustrious scholars and professors of the University of Padua: Santorio Santorio, Salvatore dal Negro, Antonio Meneghelli, Floriano Caldani, Stefano Gallini, Pier Luigi Mabil, and Bartolomeo Signoroni. The skulls of Giacomo Andrea Giacomini and Carlo Conti were also added by Cortese's successors after he left Padua (Ongaro, 2001b). They are still on display in the hall of the Faculty of Medicine and Surgery, in Palazzo Bo (Fig. 12B).


Fig. 10. **A**: Statue of Giovanni Battista Morgagni. **A**: Statue of Giovanni Battista Morgagni. **B**: Portrait of Giovanni Battista Morgagni in his *Opera Omnia*. **C, D**: Frontispiece and an illustration from *Opera Omnia*.

In 1848, Cortese took an active part in the revolutionary provisional government, so that, on the return of the Austrians, he was obliged to leave Padua and his academic position. He joined the Savoy army as head of the Medical Corps. His portrait was added to the series of portraits of Paduan professors of anatomy in 1866, when Padua and Venice were annexed to the Italian Kingdom.

In the second half of the 19th century, the most important professor of anatomy was **Giampaolo Vlacovich (1825–1899)** from Lissa, who was appointed as a professor at the age of 27 and held the position until 1898. He was Rector of the University of Padua from 1885 to 1891. During this period, in 1873, the medical faculty was moved from the Palazzo Bo to the ex-convent of San Mattia, and the work of the ancient anatomical theatre was interrupted in 1872 (Ongaro, 2001b). The above ex-convent was then demolished and the present anatomical institutes were built on the same area between 1922 and 1933 (Premuda, 1935; Zanchin, 2004).

The successor to Vlacovich was **Dante Bertelli (1858–1946)** who mainly devoted himself to the anatomy and embryology of the diaphragm and the respiratory system of vertebrates. Bertelli's diaphragmatic fascicle is a muscle bundle which, at the level of the seventh costal cartilage, arises from the aponeurosis of the abdominal transverse muscle.

In this period, **Giuseppe Sterzi (1876–1919)** was also appointed as assistant in the Institute of Anatomy. He became professor of

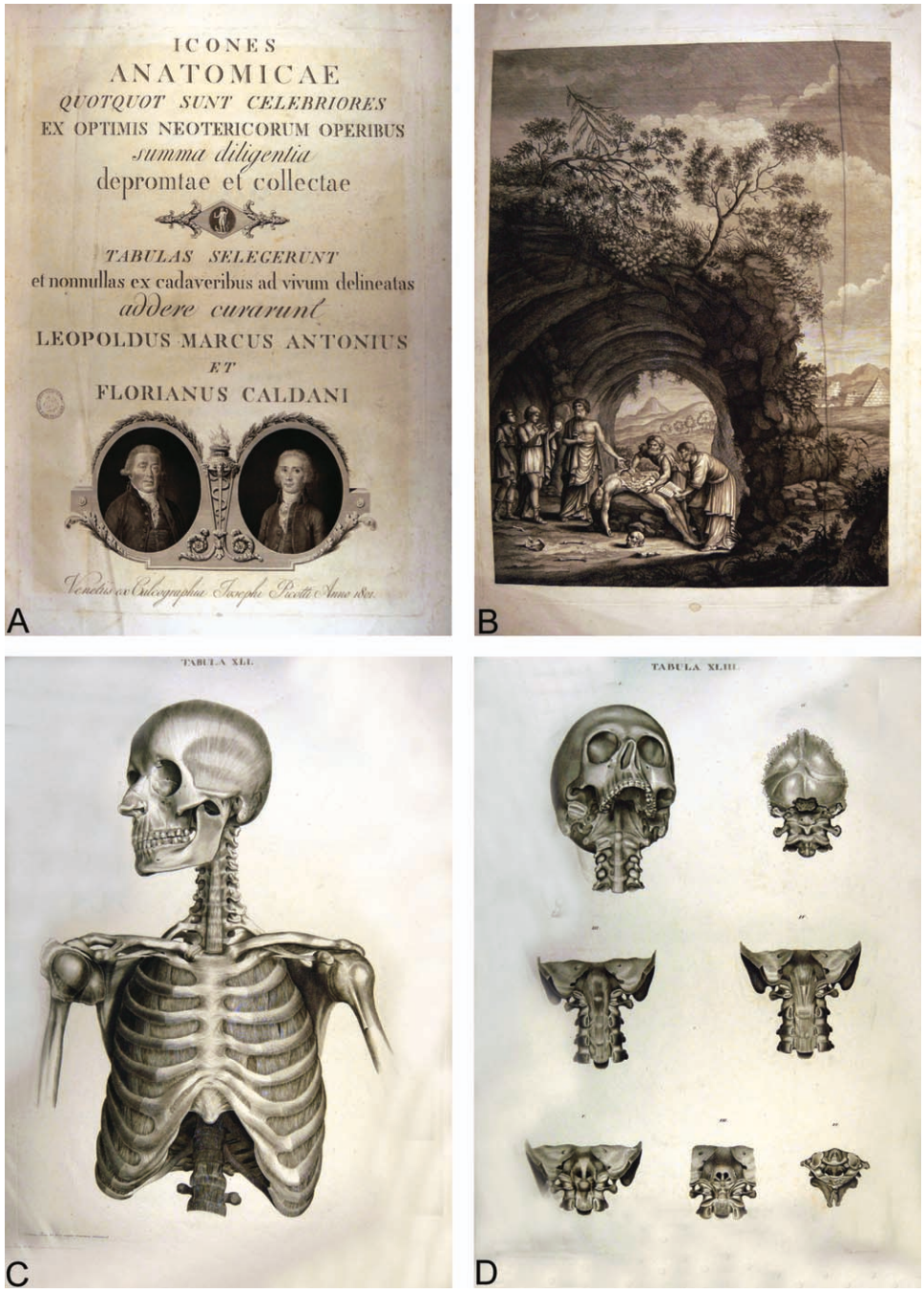


Fig. 11. **A–D**: Frontispiece and tables of *Icones Anatomicae* by Leopoldo Marcantonio and Floriano Caldani.

Topographical Anatomy in 1906, but he was assigned the Chair of Human Anatomy at the University of Cagliari in 1910. Born in Cittadella, near Padua, he had taken his degree in Medicine in Pisa in 1899. He mainly devoted his time to neuroanatomy, with research on the comparative anatomy of the meninges and vessels of the spinal cord and brainstem. He also published works on the anatomy and embryology of the endolymphatic sac and the anatomy of subcutaneous tissue. He made many contributions in the field of history of anatomy. While professor in Padua, he discovered the *Tabulae Anatomicae* by Fabricius ab Aquapendente in the Marciana Library in Venice (Sterzi, 1909). He also published a monograph on Iulius Casserius (Sterzi, 1910; Bertelli, 1919; Sciarra, 1967; Franceschini, 1972; Riva et al., 2000).

In 1933, **Tullio Terni (1888–1946)** (Fig. 13) succeeded Dante Bertelli to the Chair of Anatomy and to the Direction of the Anatomical Institute. Terni had taken his degree in medicine and surgery in Florence and had been used as assistant to Giuseppe Levi, teacher of the future Nobel Prize winners Luria, Montalcini, and Dulbecco, in the Universities of Sassari (1910), Palermo (1915), and Torino (1919). During the First World War, Terni had been in the Medical Corps and been awarded a medal for military valor. In 1924, he became professor of histology at the University of Padua, and in 1932 refused to follow

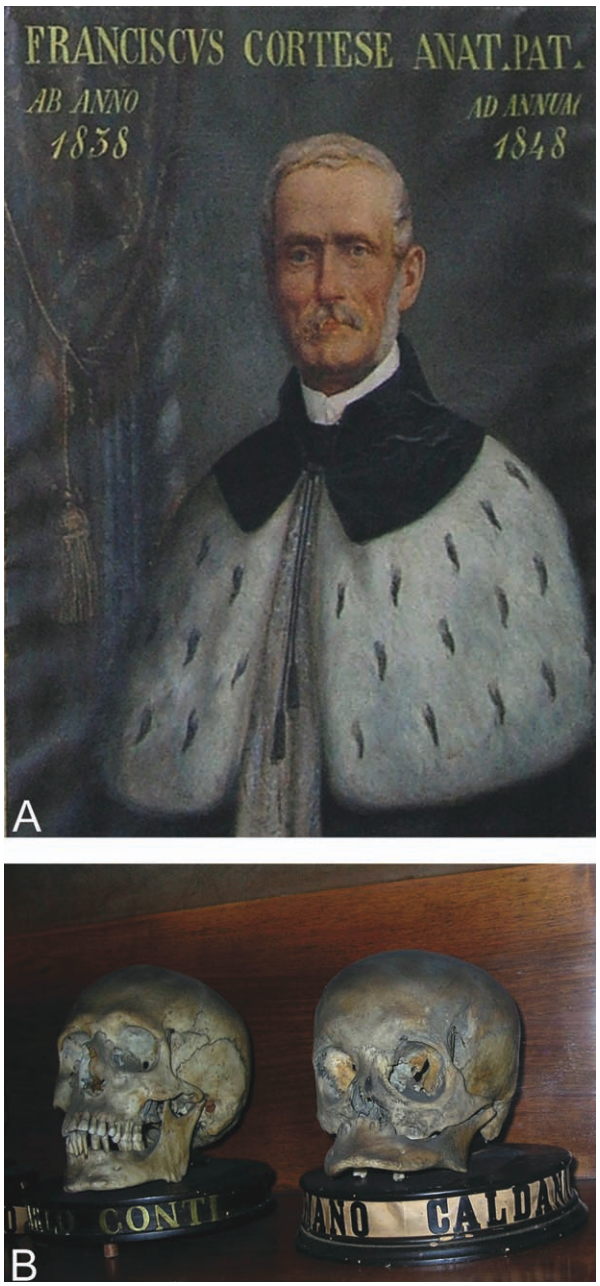


Fig. 12. **A**: Portrait of Francesco Cortese in Hall of Faculty of Medicine and Surgery in Palazzo Bo, University of Padua. **B**: Skulls of Floriano Caldani and Carlo Conti, collected by Francesco Cortese and his successors, and still preserved in above Hall.

Fig. 13. Tullio Terni.

Giulio Chiarugi to the Chair of Anatomy at the University of Florence. He was a very brilliant scientist, mainly involved in research on neuroanatomy, neurobiology, and tissue regeneration. He discovered in birds the so-called column of Terni, the group of sympathetic preganglionic neurons in the spinal cord. He was a member of a series of scientific academies, such as the Accademia Nazionale dei Lincei, the Galileian Academy of Sciences, Letters and Arts, and the Venetian Institute of Sciences, Letters and Arts. In 1938, due to the promulgation of the Fascist racial laws, he was removed from universitary teaching and the above scientific academies. The Rector of the University of Padua, Carlo Anti, then enabled Terni to continue his scientific work in the Institute of Anatomy. In 1940, Terni went to Florence and remained in Tuscany until the end of the war. In 1945, he was readmitted to the Accademia Nazionale dei Lincei but, on January 4, 1946, was removed from the Academy, together with 35 other members, for having formally supported Fascism in 1922. In the Commission that made this decision, was Giuseppe Levi, also a member. Terni fell into a state of despair, which led him to commit suicide on April 25, 1946 (Levi-Montalcini, 1987; Finzi, 1997; Simoncelli, 2003; Rossi, 2003; Ventura, 2005).

The many following anatomists who worked at the University of Padua shared the awareness of the important tradition of the local Anatomical School and the desire to follow the principles that characterized it in the past and are still felt as modern nowadays. A specific attention to the developmental, functional, pathologic, and clinical implications of morphology also characterized the local research, main fields of study including morphogenesis, neuroscience, endocrine system, and clinical anatomy.

**Luigi Bucciante (1902–1994**) worked with Giuseppe Levi (1872–1965) in the University of Turin. In 1941, he was in Padua as full professor in human anatomy. He was Dean of the Faculty of Medicine and Surgery of the University of Padua from 1952 to 1972. He developed cell culture techniques for investigation of many different anatomical systems and deeply studied the structural and functional mechanisms of blood flow regulation. **Virgilio Meneghelli (1931–1998**), full professor of human anatomy in Padua from 1968, collaborated with Albert Claude (1899–1983), Nobel Prize in 1974, and mainly dedicated himself to ultrastructural studies, with particular reference to steroidogenic cells. **Gastone Giovanni Nussdorfer (1943–2007**), full professor of human anatomy in Padua from 1975, mainly contributed to the cyto- and patho-physiology of the adrenal gland


(e.g., Nussdorfer, 1986). He was awarded ad Honorem Degree in Medicine at the University of Medical Sciences in Poznan in 2002. **Pietro Franco Munari** became full professor of Human Anatomy in Padua in 1970. He developed electron microscopy studies and then developed with **Raffaele De Caro**, the actual Director of the Department of Human Anatomy, specific research in neuroscience, and clinical anatomy. The role of human dissection, as main tool for anatomical investigation, has been stressed in Padua (e.g., Macchi et al., 2007, 2011) and our Body Donation Program has recently achieved ISO 9001:2008 certification (Porzionato et al., 2012).

In the past, the value of the Anatomical School of Padua greatly resided also in the capability to attract foreign scholars and teachers. We tried to follow this tradition by keeping scientific contacts with many European and American Universities, by hosting professors of anatomy in the local events and by organizing meetings of international associations of anatomy, such as British Association of Clinical Anatomists, in 2007 and 2011, and European Association of Clinical Anatomy, in 2011. The annual meeting of the Italian Society of Anatomy and Histology also took place in Padua in 2011, to celebrate the 250th anniversary of the publication of *De Sedibus et Causis Morborum per Anatomen Indagatis* by Morgagni.

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