

# Hieronymus Fabricius: professor of anatomy at Padua in Vesalius' footsteps

**D**uring the centuries of the 'Dark Ages', the teachings of Galen (?131–201AD), physician to the Emperor Marcus Aurelius, were held as sacred. His anatomical studies were based on animal dissections, particularly the pig. Anatomy was taught in the universities of medieval times by the professor reading from the writings of Galen, illustrated by occasional dissection of human cadavers by the porter assistants. Thus, the professor would read that the kidneys are lobulated (as they are in the pig), and the porter would hold up the smooth human organs.

It was Andreas Vesalius (1514–64), who was appointed Professor of Anatomy at the University of Padua in 1537, at the tender age of 23 years, who revolutionized the teaching of anatomy by personally teaching as he dissected human bodies. While acknowledging Galen's genius, he pointed out in his textbook *De Humani Corporis Fabrica* (The Fabric of the Human Body), published in 1543, no less than 200 of Galen's anatomical errors. Vesalius retired the year after the publication of the *Fabrica* and was succeeded by one of his pupils, Gabrielle Fallopio (1523–62). Fallopio published his 'Anatomical Observations' in 1561. In this he gives an accurate description of the female genital tract and is remembered by the eponymous term the Fallopiian tubes for the uterine tubes.

Fallopio died at the early age of 39 years and was succeeded by another protégé of Vesalius, Hieronymus Fabricius, who carried on the great Vesalian tradition of teaching and research as well as being an innovative surgeon. This year marks the 400th anniversary of the death of Fabricius in 1619.

Hieronymus Fabricius, also known as Fabricius ab Aquapendente, after the Tuscan

village of his birth or by his Italian name of Girolamo Fabrizio, was born in 1537, studied at Padua as a pupil of Fallopio and graduated in 1559. He practised surgery and taught anatomy privately in Padua, and succeeded his old chief, Fallopio, as Professor of Anatomy and Surgery in 1565, both chairs having been left vacant for 3 years. Among his contributions to teaching was his designing and construction of the first permanent theatre for public anatomical teaching, the style of which, with tiered seats for spectators around the centrally placed dissecting table, was widely adopted.

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Fabricius taught at Padua for nearly 40 years until 1604, when he retired in order to devote himself entirely to his research until his death. His studies ranged widely over the fields of anatomy and surgery. In effect, Fabricius founded the study of embryology and published the first illustrated book on the subject, in which he describes the development of the chick embryo within its shell.

In 1600, Fabricius correctly described and pictured the lens of the eye, placed well forward behind the iris, correcting the illustration published in the *Fabrica* of Vesalius which showed the lens in the centre of the eyeball.

Today, Fabricius is probably best remembered as the anatomist who first described and illustrated the venous valves. His clear diagram of the valves in the great saphenous vein are shown in his treatise *De venarum ostiis*, published in Padua in 1603. He notes that these structures are so placed that the valves are always directed towards the heart. The valves had, in fact,

been noted previously, but not described and figured in such detail.

Fabricius was an anatomist and not a physiologist. Steeped in the old theory of Galen concerning the circulation of the blood, he thought that the function of the valves was to stop too much blood from flowing backwards, for example, in the leg, distally into the foot, where the distended veins might burst.

Now enters serendipity! William Harvey, after education at Cambridge, studied in Padua from 1598 until 1602, when Fabricius was at the height of his fame. Harvey would certainly have been familiar with venous valves.

Harvey's simple experiments on the superficial veins of the arm, distended by a cuff around the upper arm, were illustrated in his monograph *De Motu Cordis* (On the Motion of the Heart), published in 1628. I hope every reader of this article will have performed these experiments on himself or herself, or on a colleague, as a delightfully simple means of showing that the veins do, indeed, convey venous blood back to the heart.

As a surgeon, Fabricius made numerous contributions to the subject of surgical anatomy. Apparently he never performed a tracheotomy on a living patient, but he described the operation carried out through a vertical incision into the trachea and advised the insertion of a tube through the opening. He also advised tracheotomy for removal of a foreign body impacted in that organ. He wrote on ligation of arteries and aspiration of the chest cavity. He described an apparatus for the treatment of curvature of the spine and another for the management of torticollis.

Hieronymus Fabricius died in Padua in 1619, aged 82 years, a truly remarkable man. He was succeeded by one of his pupils, Julius Casserius. An interesting and highly productive dynasty of anatomical teachers and researchers. **BJHM**

*Conflict of interest: none.*

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