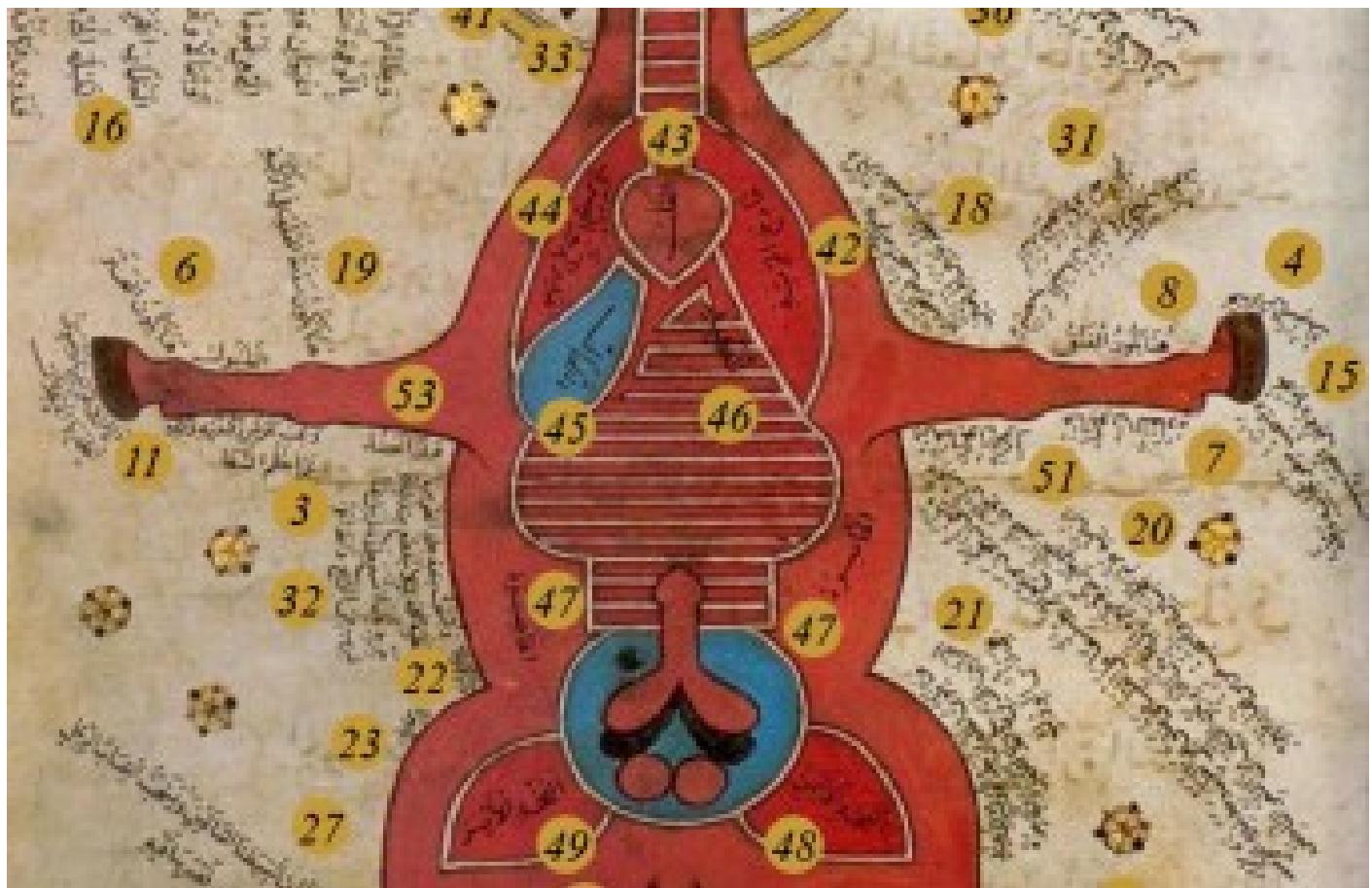


# Anatomy



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Hunayn Ibn Ishaq systemized and defined the life sciences and devised practical concepts and procedures for study, experimentation, and practice.

He wrote *al-Masa'il fi at-tibb*, Introduction to Healing Art. As a result of this book, the medicopharmaceutical branches of science were further developed. *Introduction to Healing Art* was the manual used by examiners to approve physicians licensing for practice from the 8th to the 14th century. The book was translated into Latin and was widely read in Europe.

Hunayn then wrote *Kitab al-Manazir* (Book of Optics) and ten treatises on anatomy, physiology, and treatment of the eye. These treatises became the first systematic and organized Arabic text on the earliest known anatomical charts.

Muslim surgeons were among the first to use narcotic and seductive drugs in operations. Islam teaches that God has provided human beings with a great variety of natural remedies to cure the ills. The man should identify them and use them with skill and compassion.



Hunayn Manuscript (800-873)

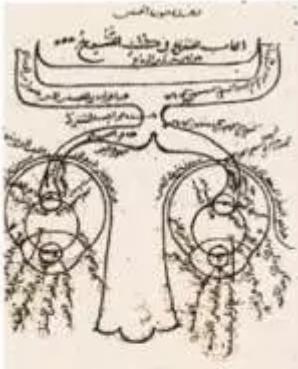


Diagram of the Eyes and Related Nerves, MS Illustration from  
Kitab al-Manazir (Book of Optics) by Ibn al-Haytham.  
Istanbul, Eleventh Century

Of all the known medieval scientific texts, the al-Haytham's *dioptrical* *Kitab al-Manazir*, which includes this diagram, is perhaps the outstanding example of experimental and mathematical argument in the presentation of new and original theory. Building on the theories of Euclid, Ptolemy, and Aristotle, Ibn al-Haytham proposed vision as occurring when a "cone" capable of representing an object's visible features enters through the pupil and proceeds to the brain, where the faculty of vision completes the process. This proposition is not far from what we understand of the process of vision today.

Diagram of the Eyes and Related Nerves,  
Kitab al-Manazir (Book of Optics)  
Ibn al-Haytham Istanbul, 11th Century

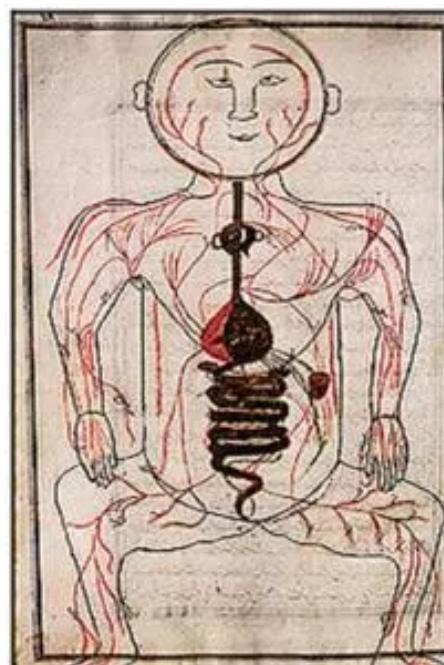
Al Majusi (died 994) is considered the first theorist on anatomy and physiology in Arabic medicine. His *Liber Regius* was the early Islamic work to deal with surgery in detail, and he was the first to use the tourniquet to prevent arterial bleeding.

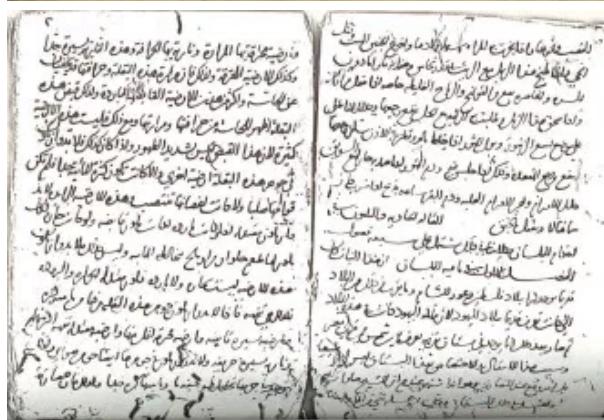
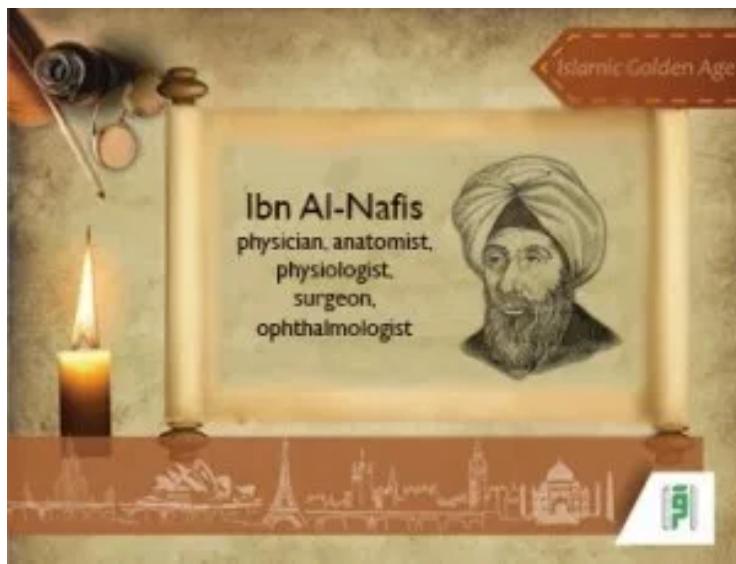
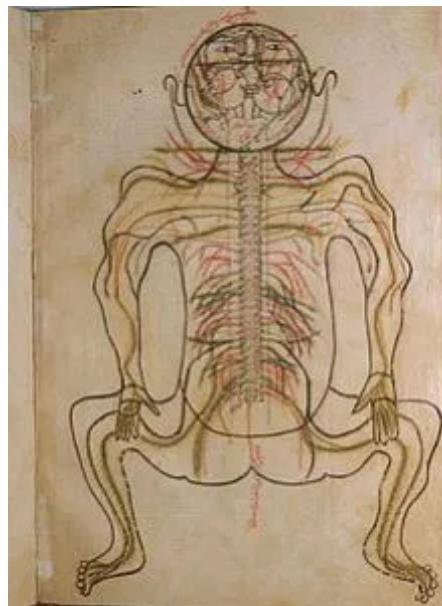
Al-Zahrawi of Moorish Spain (940-1013) wrote an encyclopedia, *at-Tasrif* which deals with obstetrics, pediatrics, and midwifery, as well as deleted word general human anatomy. His latest treatises were devoted to surgery-including cauterization.

Ibn an-Nafis (1210-1288) gave the most comprehensive description of surgical operations and treatment of bodily injuries ever contained in any Arabic text do you mean text? Of its kind. He explained the function of the capillaries, the minute blood passages that connect arteries and veins and the action of cordial valves in the veins and the heart chambers. We are also indebted to him for making the first appeal for uniformity of standards of weights and measures used in medicine, pharmacy, and surgery.



Muscle figure, shown frontally, with extensive text denoting muscles. From *The Anatomy of the Human Body (Tashrih-i-badan-i insani)* written at the end of the 14<sup>th</sup> century. All the major Arabic medical encyclopedias had sections on anatomy, summarizing the Galenic anatomical concepts. These were occasionally illustrated with schematic diagrams. (Islamic Culture and the Medical Arts, US National Library of Medicine)





Ibn an-Nafis also worked on the correct anatomy of the lungs and was the first person known to record the coronary circulation – the vessels supplying blood to the heart itself: .... the nourishment of the heart is from the blood that goes through the vessels that permeate the body of the heart ... Ibn al-Nafis's work was based on extensive work and study of anatomy. But the significance of his ideas were not understood even in his own country and was probably unknown by physicians in western countries. Around 300 years after his original writings, some of Ibn al-Nafis's work was translated into Latin by Andrea Alpago of Belluno in 1547.

His essential observations then became available in Europe – shortly before some European scientists and doctors began to make the same discoveries! A coincidence or not? It was only in the 20th century that his work was brought to light again and people became aware of how early he had reached his conclusions on the workings of the heart and that some “borrowing” of ideas may have occurred!