



An illustration of Virchow's cell theory. Virchow's vision of pathology as something occurring within cells would come to dominate over humoral theory in the new academic medicine.

Theodor Schwann and others, mapped out a new “cellular” science to replace Bichat’s “compartments.” They literally and figuratively viewed the building blocks of life through an extraordinary new lens. As the historian William Bynum writes:

*Virchow's Cellular Pathology (1858) did for the cell what Morgagni's Seats and Causes of Disease (1761) had done for the organ, or Bichat's Treatise on the Membranes (1800) had for the tissues...[it] established a new, essential unit for thinking about function and disease.*¹¹⁶

Virchow's now-famous phrase “*omnis cellula e*

cellula,” or “each cell from a cell,” compellingly linked the microscope to a material, cellular, vision of health and disease. Given the high-profile work of neo-humoralists like Schwann, however, it was not necessarily obvious or inevitable that Virchow's vision of pathology as something occurring within cells would come to dominate over humoral theory in the new academic medicine.

As Virchow's theories became more widely accepted toward the end of the nineteenth century, the central challenge of the age remained: to draw together clinical observation, morbid anatomy, clinical-pathological correlation, and now histology to determine ever-finer distinctions between diseases while simultaneously developing effective therapeutic interventions by uncovering underlying mechanisms. This was an extremely difficult task, of course, and one that tested (and confounded) the abilities of generations of physicians, surgeons, and clinical researchers. The final innovation of the late-nineteenth century—**germ theory**—will be discussed in more detail later in this guide, but both the patho-anatomical research from the Paris clinics and the cellular theories of Virchow and Schwann were critical in opening up institutional, cognitive, and (literally in the case of the laboratory) instrumental spaces in which both Louis Pasteur and the German bacteriologist **Robert Koch** (1843–1910) conducted their work.

MEDICAL HETERODOXIES FROM MESMERISM TO THOMSONIANISM

Despite new scientific advancements, the healthcare provided by regular physicians for much of the nineteenth century was still very much a matter of individualized attention to a patient's idiosyncratic symptoms and signs of illness. Care was mostly provided in the patient's own home, and much of it was provided by a general practitioner. The Western medical marketplace in Europe and North America was still highly pluralistic. In addition to regular, allopathic, or orthodox, medicine (the kind of elite, academic, secular medicine we have been tracing all along), there also flourished several “irregular,” heterodox, or “alternative” kinds of medicine.