

## Topic Page: [Virchow, Rudolf, 1821–1902](#)

Definition: **Virchow** from *Merriam-Webster's Collegiate(R) Dictionary*

 [pronunciation](#)

Rudolf Virchow 1821–1902 Ger. pathologist

Summary Article: **Virchow, Rudolf Carl**

From *Encyclopedia of Life Sciences*

(1821-1902) German pathologist, reformer and man of science who first systematically applied cell theory to the understanding of pathological processes.

### Introductory article

Virchow dominated pathology internationally during the second half of the nineteenth century. Yet, although he became an important member of the Prussian scientific and political elite, he always retained the integrity, intellectual independence and liberal sentiments that featured so prominently during the revolutions of 1848.

He was born in Schivelbein, Pomerania (now Poland), the only son of a merchant. A gifted child with an early interest in science, he obtained a scholarship to study medicine in Berlin, where Johannes Müller and Johann Schönlein encouraged his research aspirations. After graduating in 1843, he worked at the major Berlin hospital, the Charité, where his interests in pathology were further kindled. Even at this period, he was an articulate spokesman for the importance of scientific rigour within medicine. He was also convinced that both health and the medical profession had fundamental roles to play in the creation of a democratic, liberal German state. **See also:** Muller, J P (Johannes); History of Classic Anatomy

In 1848, revolutions occurred in many European countries, and Virchow was active in the one in Prussia, of which Berlin was the capital. He was sent by the Prussian government to investigate an outbreak of epidemic typhus in Silesia. The experience convinced him that epidemics were in some measure a result of social disequilibrium, and that the introduction of social equality, education and democracy was the best way to control disease in backward societies such as Silesia. As he once famously said, 'Medicine is a social science, and politics nothing but medicine on a grand scale'.

True to his beliefs, Virchow actively participated in the Revolution, both on the barricades and, more consistently, through his writings. With a colleague, he edited a journal called *Die medizinische Reform* (Medical Reform), in which many of his own essays appeared. He sought to make doctors more aware of their social responsibilities and to encourage the Prussian government to pay more attention to the social and economic conditions that generate disease and deprivation.

When the Revolution collapsed in 1849, Virchow was removed from Berlin, the centre of political life. He became Professor of Pathological Anatomy at the University of Würzburg, during which time he devoted himself primarily to medical and scientific work. He had already established a scientific journal, *Archiv für pathologische Anatomie und Physiologie*, which he edited from 1845 until his death. He also edited an annual yearbook of medicine and a six-volume handbook on pathology and therapeutics. In Würzburg he began a happy marriage which produced six children.

During the 1850s, Virchow became increasingly convinced that the cell is the centre of all biological phenomena, physiological as well as pathological. Building on the earlier work of microscopists such as Theodor Schwann and Jacob Henle, Virchow re-evaluated pathology in terms of cell theory. But whereas Schwann had likened cell formation to crystallization, Virchow recognized that all cells during processes such as inflammation and embryological development actually come from other cells: 'omnis cellula e cellula', as he summarized it. This important insight was the central feature of his most influential book, *Die Cellularpathologie* (1858), which went through three further editions during Virchow's lifetime. He always emphasized the dynamic elements of pathology, arguing that a new pathological physiology of cells should replace the older anatomical pathology of organs. Virchow never lost his concern with the clinical applications of pathological insights, both as aids in diagnosis and as guides for therapeutics. **See also:** Schwann, Theodor Ambrose Hubert; Henle, Friedrich Gustav Jakob; History of Cell Biology

Virchow himself contributed to the knowledge of a number of diseases. He did important work on phlebitis, pulmonary embolism, amyloidosis and cancer, the latter condition the subject of an enormous but unfinished work, *Die krankhaften Geschwülste* (Morbid Tumours), three volumes of which appeared between 1862 and 1867. Few diseases escaped his notice, although he remained cautious about bacteriology and evolutionary theory, remarking after Robert Koch's 1882 discovery of the tubercle bacillus, 'Phthisis has remained what it was'. His point was not that bacteria and other microorganisms were irrelevant in the causation of many diseases, but that there was much more to disease. He supported the antiseptic surgery of Joseph Lister. **See also:** Amyloidosis; Cancer; Koch, Heinrich Hermann Robert; Lister, Joseph

In 1856, Virchow returned to Berlin, as the director of a new Pathological Institute there. It became the training ground for a whole generation of pathologists from all over the world. Few major pathologists in the second half of the nineteenth century did not spend at least some time in Virchow's Institute. The move to Berlin also brought Virchow back into politics, both local and national. He played a major role in the introduction of modern sanitation to

Berlin, helping to implement a new sewage system. He also advocated the building of more hospitals, the provision of clean water and the institution of a formal school medical service. For many years he was a member of the German Parliament, where he was one of Bismarck's chief opponents. Bismarck once challenged him to a duel, which honour Virchow wisely declined.

Virchow also contributed significantly to the development of anthropology in Germany. He undertook a survey of the physical features of German schoolchildren, incidentally showing that there was no such thing as a pure Germanic 'race' of Aryans. He also spent much time in archaeological excavations, both in northern Europe and in the Middle East, where he worked with Heinrich Schliemann at Hissarlik, the Troy of Homer's great epic poems. **See also:** Eugenics: Historical

During the last third of his life, Virchow was recognized as one of the giants of medical science. He participated in many international gatherings and delivered many eponymous lectures. Although he became something of an authoritarian, he never lost his optimistic belief that scientific rationality could guide human progress. He retained his vigour until January 1902, when he fell, jumping off a Berlin streetcar, and broke his hip.

### Further Reading

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