

August 1, 1991

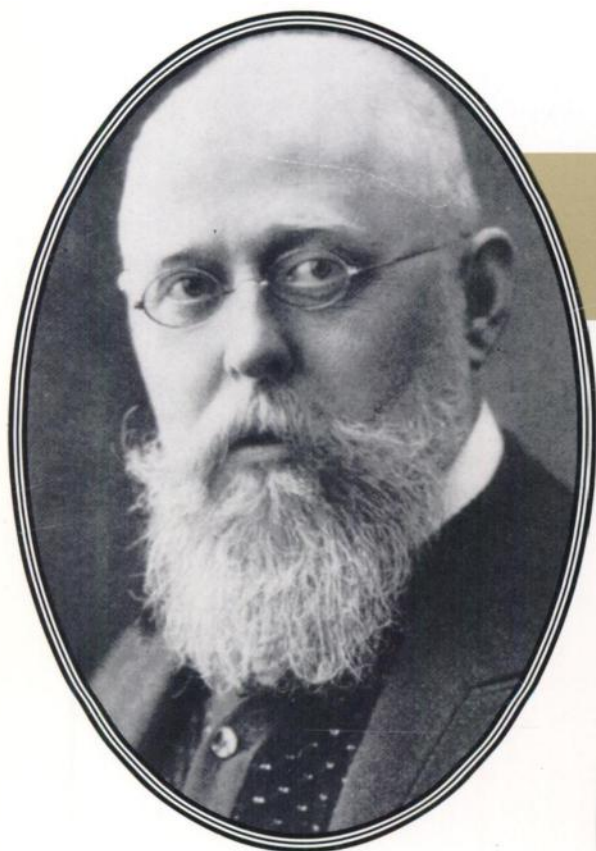


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Cellular Responses to Environmental DNA Damage

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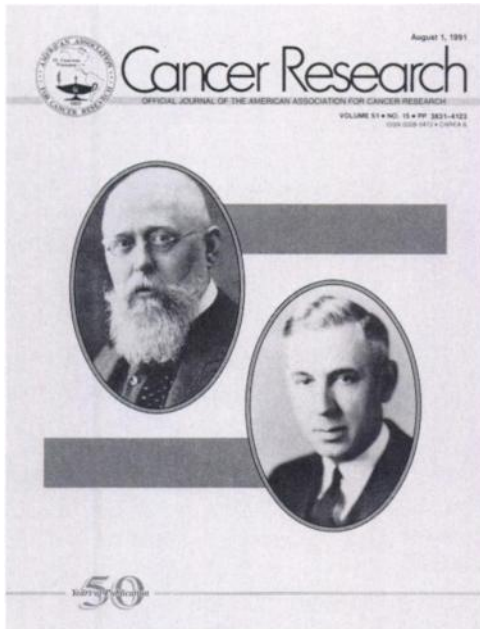
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COVER LEGEND



David Paul von Hanseemann (*pictured left*) studied medicine in Berlin, Kiel, and Leipzig. After defending his doctoral dissertation in 1886 under Julius Cohnheim, Hanseemann worked as an assistant to Rudolph Virchow and then held in succession the positions of lecturer, nominal professor, and honorary professor of pathological anatomy at the University of Berlin. He had a special interest in cancer and, in 1890, described the concept of anaplasia, postulating that the increased growth potential of the cancer cell was accompanied by a loss of differentiation and that asymmetrical mitoses were a characteristic of cancer [Arch. Pathol. Anat. (Virchow's), 119: 299, 1890]. Hanseemann contrasted his theory of anaplasia [from the Greek, *ana*, backward + *plassein*, to form] to the more popular theory of embryonalism; embryonal tissues remained undifferentiated, while anaplastic tissues had once been differentiated. These theories were

further refined in his monograph *Studien über die Spezificität des Altruismus und die Anaplasie der Zellen* published in 1893. Hanseemann's contemporaries considered his ideas very controversial. Hanseemann died in 1920, several months after Albert C. Broders (*right*) of the Mayo Clinic published his method of tumor grading.

Broders graduated from the Medical College of Virginia in 1910 and then studied pathology at the Mayo Clinic. Prior to the 1920s, surgeons had little if any basis for predicting a patient's prognosis after removal of a malignant tumor. In 1919, Broders, by then an associate surgical pathologist, studied a series of 537 cases of epithelioma of the lip that had been excised at the Mayo Clinic. Broders graded each of these neoplasms as 1, 2, 3, or 4, depending on the degree of differentiation, and found a strong correlation between tumor grade and patient prognosis (JAMA, 74: 656, 1920). More than 90% of patients with well-differentiated tumors (grade 1), two-thirds of those with grade 2 tumors, 25% of those with grade 3 tumors, and none of the patients with anaplastic, poorly differentiated tumors (grade 4) survived. Thus, using David von Hanseemann's concept of anaplasia, Broders had developed the first useful system of grading cancers. The concept of tumor grading was quickly applied to other types of cancers and has enjoyed widespread use since 1920.

Both Dr. Manfred Sturzbecher of West Berlin and Professor Dr. Chr. Thierfelder at the Humboldt-Universität zu Berlin in East Berlin provided copies of the photograph of David Paul von Hanseemann. It is originally from a collection of photographs of faculty members of the University of Berlin. We thank Dr. Sturzbecher for a reprint of a Hanseemann biographical sketch that appeared in the Bavarian Academy of Science's *Neue Deutsche Biographie* in 1966. The photograph of Broders was obtained through the courtesy of the National Library of Medicine.

James R. Wright, Jr., M.D.