

## Cell Theory Unit: Jewish Scientist Bio Bib # 2: Robert Remak

Robert Remak Identifies the Cell Membrane in Cell Division



**Who:** Robert Remak

**When:** January 01, 1855

**Why:** To discover how cells originate

**Methods:** By creating a chemical hardening agent which allowed him to observe how the membrane divided the cell

**Institution:** University of Berlin

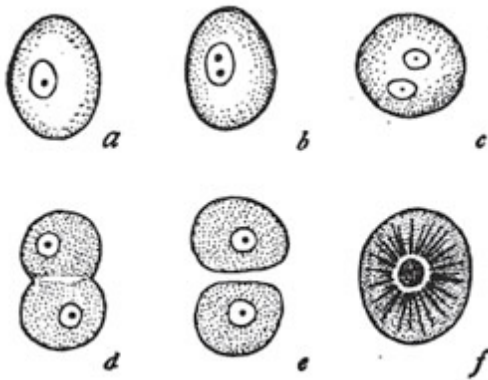
**Where:** Berlin, Germany

**Funding:** Self-Funded

**Technology:** Chemical hardening agent, Microscope

Source: <https://www.science-of-aging.com/timelines/robert-remak-membrane-cell-division.php#OgsvvkuHhgIEERww.99>

Robert Remak (1815-1865) was a neurologist, a physiologist, and an embryologist. He was born in Poznań, Poland, where he lived for 18 years before attending the University of Berlin to study medicine. This town and much of Poland was occupied by Prussia during his lifetime. In his papers, written in Polish, he refers to Poles as his compatriots (people he relates to and shares love of county) [3]. Later, when Prussian rule dictated that his further career depended on receiving [baptism](#), he refused to reject his Jewish identity (Source: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3675270/>) .After graduating, Remak accepted a position as assistant to Johannes Peter Müller. [The University of Berlin could not escape anti-Semitic pressures of the time, and Remak, a Polish Jew, did not receive pay for his work in Müller's lab.<sup>2</sup> According to legal provisions at that time, as a Jew he was also banned from occupying the post of professor in areas under Prussian rule.](#) Working as a private physician to pay the bills, Remak set out to prove that cells originate from division. His idea was to stain or harden the cell membrane and thus be able to see the cell divide. Remak experimented with many chemicals before finding that a mixture of copper sulfate, vinegar, and alcohol worked to solidify the cell membrane.<sup>1,2</sup>



-Remak's view of cell division.<sup>3</sup>

As a result, Remak substantiated the existence of the cell membrane, while proving that at least some cells originated via division from prior cells. Remak, felt that all cells originated by division, and theorized cell division caused the spread of pathological tissue (like tumors).<sup>1,2</sup> He writes:

*These findings are as relevant to pathology as they are to physiology...I make bold to assert that pathological tissues are not, any more than normal tissues, formed in an extracellular cytotblastem(spontaneously), but are the progeny or products of normal tissues in the organism.*

The statement made a bold and direct denial of Schwann's physio-chemical theory, but went unnoticed. Remak had divined one of the greatest thoughts of medicine and cell theory, only to be left shouting into a void. It would take someone with political savvy, command of science, and courage to stand beside Remak and popularize his ideas into the establishment.

## AND WHO WAS NOT JEWISH BECAUSE BEING JEWISH PREVENTED THE SCIENTIFIC COMMUNITY FROM LISTENING TO REMAK!

### References

1. Otis, Laura. [Müllers lab](#) Oxford University Press US, 2007
2. Henry, Harris. [The Birth Of the Cell](#). Connecticut and London: Yale University Press, 2001
3. Wilson, Edmund B. [The Cell in Development and Inheritance](#) London: Macmillan, 1897

### Life and Jewish Identity

Remak discovered that the origin of cells was by the [division](#) of pre-existing cells.<sup>[2]</sup>

Despite his accomplishments, because of his Jewish faith, he was repeatedly denied full professor status until late in life, and even then was denied the usual benefits of the position. According to historian Paul Weindling, [Rudolf Virchow](#), one of the founders of modern cell theory, plagiarized the notion that all cells come from pre-existing cells from Remak.<sup>[3]</sup>

His son [Ernst Julius Remak](#) was also a neurologist and his grandson was the mathematician [Robert Remak](#) who died in [Auschwitz](#) in 1942.

[https://en.wikipedia.org/wiki/Robert\\_Remak](https://en.wikipedia.org/wiki/Robert_Remak)

