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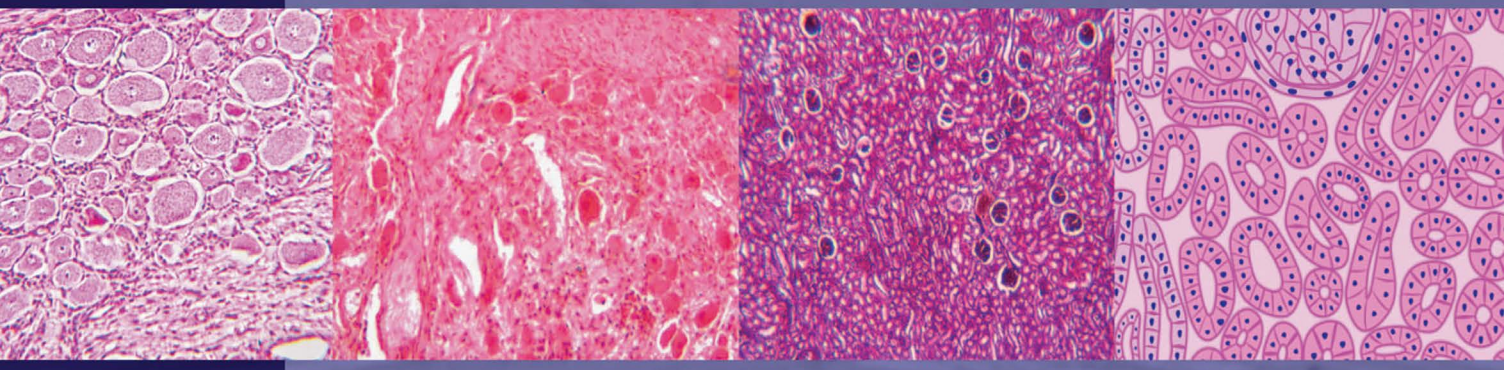

Practical Manual of HISTOLOGY for Medical Students

Neelkanth Kote

Foreword
DL Ramachandra

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CHAPTER

2 History of Histology

Innumerable of scientists have worked in the field of 'Histology' to explain more about its origin, evolution and advancements with a clear and a better view. Let us consider few great personalities, who tried to build the history of Histology.

ROBERT HOOKE (Fig. 2.1)

Robert Hooke was born in Isle of Wight in the year 1635. His father John Hooke was a curate of Freshwater's Church of All Saints and was expecting his son to join the church soon after his education. But, Robert Hooke was a fascinated person and always wanted to know more and more about the life. And finally his interest about the life made him to discover the **cell**.

When he observed a **piece of cork** under a **micrographia** designed by him, he could realize many small living entities and named it as cell. The word cell comes from Latin **cellule,** which means a small room. Since he compared the cork cells to the small rooms in which monks lived in, hence the name **cell**. This was the first and most valuable discovery, which started building the history of histology.

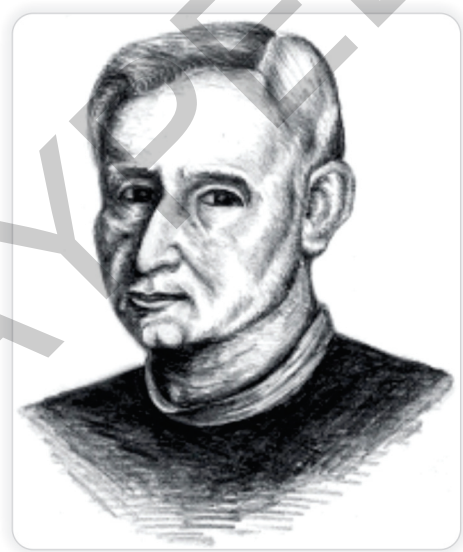

Figure 2.1: Robert Hooke

ANTONIE VAN LEEUWENHOEK (Fig. 2.2)

Antonie was born in Delft on October 24, 1632. His father was a basket maker, seeing him, Antonie started building his career in business as a minor draper (a fabric merchant) and later he also worked as a surveyor, a wine assayer and as a minor city official.

After some time (in 1668), Antonie learned to grind the lenses and designed a simple microscope. He started observing different kinds of objects in it. Even though simple microscope was made up of powerful magnifying lenses, he could visualize the objects 200 times more bigger than its actual size with a better, clearer and brighter images.

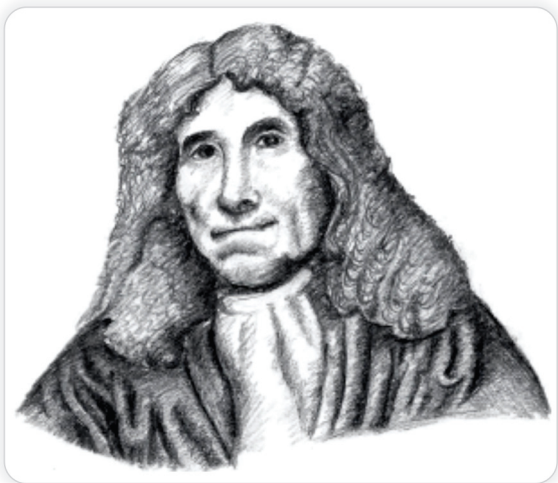

Figure 2.2: Antonie van Leeuwenhoek

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According to some people, **"Antonie van Leeuwenhoek was an unlikely scientist."** Since he had no family background in research, received no higher education or university degrees and knew no languages other than his native Dutch, but his skills at grinding lenses, natural eagle's eyesight, light adjustments, great curiosity to observe almost everything which comes to his hands and a special care in describing what he saw, made him enter the Royal Society of London.

Bacteria, blood cells, living sperms, microscopic rotifers and protistas are few of his discoveries and the list of his discoveries go on.

ROBERT BROWN (Fig. 2.3)

Robert Brown was born in Montrose, Scotland on 21st December 1773. He was a famous botanist in Australia during the first half of the 19th century.

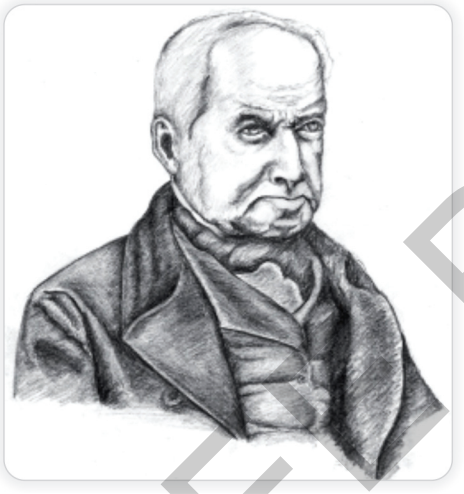

Figure 2.3: Robert Brown

After his medical study at the University of Edinburgh, he was appointed as army surgeon. Later he accepted naturalist post. He also did an intensive botanical research in Australia for three and a half years during which he discovered and coined the term **Nucleus**. He was also a well-recognized person for his **Brownian motion** phenomenon.

MARIE FRANÇOIS XAVIER BICHAT (Fig. 2.4)

Marie François Xavier Bichat was a French anatomist and physiologist born in Thoirette on November 14, 1771. He also worked in the field of mathematics and physical sciences, but ultimately dedicated his life to the study of anatomy and surgery. He did an intensive study in the field of Histology and Pathology. He also coined the term **Tissue**, which means a fabric. He also introduced



Figure 2.4: Marie François Xavier Bichat

the concept of "**Diseases attack tissue rather than the whole organ".**

Now he is best remembered as **"The Father of Modern Histology and Pathology".**

RUDOLF ALBERT VON KÖLLIKER (Fig. 2.5)

Albert von Kölliker was a Swiss anatomist and physiologist born in Zurich, Switzerland on July 6, 1817. He worked in the University of Wuzburg as a professor of Physiology and comparative anatomy.

Kölliker's dedications in the field of Zoology and Embryology are remembered. His discoveries in the field of Histology are innumerable and unlimited. Kölliker demonstrated that **smooth muscle** is made up of distinct units

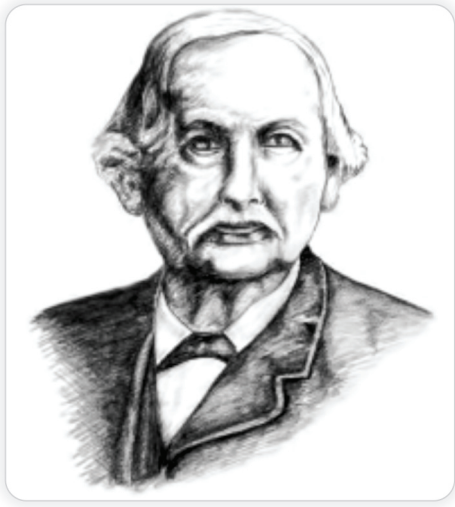

Figure 2.5: Rudolf Albert von Kölliker

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of nucleated muscle cells; he also demonstrated the presence of **mitochondria** in the cell.

Skin, bone, teeth, blood vessels, viscera, smooth and striated muscle have been investigated by Kölliker with a special work on Histology of nervous system. **In fact, he was among the first to introduce and improve the hardening, sectioning, staining techniques in Histology**. Finally, Kölliker's work grabbed the Royal Society's attention and made him a part of it in 1860.

THEODOR SCHWANN (Fig. 2.6)

Theodor Schwann was a German physiologist, histologist and cytologist born in Neuss on December 7, 1810. His father was a goldsmith, later a printer.

Schwann's contribution to biology includes the development of **cell theory**, discovery of **Schwann cell**, discovery and study of **pepsin enzyme**, discovery of **organic nature of yeast**, coined the term **Metabolism**, etc.

He did an intensive study on Histology of peripheral nervous system and he also stained the nerve cells by using silver stains and its compounds, which was popular as **Black reaction**. He died on January 11, 1882.



Figure 2.6: Theodor Schwann

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Neelkanth Kote MBBS is one of the youngest Indian medical authors to present a medical publication in the field of histology. Served as the Students' Editorial Board Member of a medical magazine 'Medicoz Lemon' and has written about 10 histology articles under the section of Histo Corner. He has also given guest lectures at All India Radio (AIR) in association with Children Health and Science Department, Prasar Bharati, Bengaluru, Karnataka, India. Has worked with NGOs in doing social services and received Hardekar Manjappa Award for being the Best Student of the Year during college days. Currently serving as the Secretary of Alumni Association of Rajarajeswari Medical College and Hospital (RRMCH), Bengaluru, Karnataka, India, since 2013.

"…This practical manual will help the students in drawing correct diagrams of histology and help in understanding the basic information of the microscopic anatomy of tissue under study…"

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