

# Treatments for Metastatic Colorectal Cancer that are Histology-Agnostic

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## Introduction

Histology, also known as microscopic anatomy, is the study of the structure and function of tissues at the microscopic level. It is a crucial field of study in medicine and biology, providing a detailed understanding of the structure and organization of different tissues and their role in the body. The origins of histology can be traced back to the early 17th century when the Dutch scientist, Antonie van Leeuwenhoek, invented the microscope and observed tiny structures within living organisms. Over time, other scientists, including Robert Hooke and Marcello Malpighi, made important contributions to the field of histology, leading to a better understanding of the cellular structure of tissues [1].

## Description

Today, histology has become an essential tool in medical research and diagnosis, allowing clinicians to examine tissue samples to identify diseases and disorders at the cellular level. In this article, we will explore the different types of tissues, their structure and function, and the techniques used to study them. Epithelial tissue covers the surfaces of the body, including the skin and the lining of organs and cavities. This tissue provides a protective barrier against physical, chemical, and biological factors, preventing injury and infection. There are several types of epithelial tissue, including simple squamous, simple cuboidal, simple columnar, pseudostratified columnar, and stratified squamous. The structure and function of each type of epithelial tissue depend on its location in the body and the specific functions it performs [2].

Connective tissue is the most abundant type of tissue in the body, providing support, protection, and nourishment to the organs and tissues. This tissue is composed of cells, fibers, and extracellular matrix, which together create a complex structure that supports the body's various functions. There are several types of connective tissue, including bone, cartilage, adipose tissue, blood, and lymphoid tissue. Each type of connective tissue has a specific function, such as providing structural support, storing energy, or carrying oxygen and nutrients throughout the body. Muscular tissue is responsible for movement, both internal and external, and maintaining posture. There are three types of muscular tissue: skeletal, smooth, and cardiac. Skeletal muscle is attached to the bones and allows for voluntary movement, while smooth muscle is found in the walls of internal organs and is responsible for involuntary movement. Cardiac muscle is found in the heart and is responsible for pumping blood throughout the body [3].

Nervous tissue is responsible for transmitting electrical signals throughout the body, allowing for communication and coordination between different organs and tissues. This tissue is composed of two types of cells: neurons and glial cells. Neurons are responsible for transmitting electrical signals, while glial cells provide support and nourishment to the neurons. The history of histology can be traced back to ancient times when physicians and philosophers attempted to understand the structure and function of the human body. One of the earliest attempts at

studying tissues was by the Greek philosopher Aristotle, who described the liver as having a spongy texture with many small vessels. However, it was not until the development of the microscope in the 17th century that the study of histology became possible. The first to use the microscope to study tissues was the Italian anatomist Marcello Malpighi in the 17th century. He was able to observe the structure of various tissues, including the lungs, skin, and kidneys, and described them in his book "De viscerum structura exercitatio anatomica". His work paved the way for the development of histology as a scientific discipline.

Epithelial tissue covers the body's surfaces and lines internal organs and cavities. It serves as a barrier to protect the body from external factors such as bacteria and other pathogens. It also plays a role in secretion and absorption. Epithelial tissue is further classified based on its shape and arrangement. For example, simple squamous epithelium is a single layer of flat cells found in the lungs, while stratified squamous epithelium is multiple layers of flat cells found in the skin. Connective tissue provides support and structure to the body. It is made up of cells and extracellular matrix, which includes proteins such as collagen and elastin. Connective tissue includes bone, cartilage, adipose tissue (fat), and blood vessels. Each type of connective tissue has a unique structure and function [4-6].

## Conclusion

Muscle tissue is responsible for movement and includes three types: skeletal, smooth, and cardiac muscle. Skeletal muscle is attached to bones and is responsible for voluntary movement. Smooth muscle is found in the walls of internal organs and is responsible for involuntary movement. Cardiac muscle is found only in the heart and is responsible for pumping blood throughout the body. Nervous tissue is found in the brain, spinal cord, and nerves. It is responsible for transmitting and processing information throughout the body. Nervous tissue is made up of neurons, which are specialized cells that transmit electrical impulses, and glial cells, which support and protect neurons. Histological analysis involves the use of specialized techniques to prepare tissue samples for examination under a microscope. The following are some of the common techniques used in histological analysis. This is the first step in preparing tissue samples for histological analysis. It involves treating the tissue with a chemical such as formalin to preserve its structure and prevent decay. Once the tissue is fixed, it is embedded in a material such as paraffin wax or resin to provide support for sectioning.

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## Conflict of Interest

There are no conflicts of interest by author.

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