

**Anatomy** (from Ancient Greek ἀνατομή (*anatomḗ*) 'dissection') is the branch of biology concerned with the study of the structure of organisms and their parts. Anatomy is a branch of natural science that deals with the structural organization of living things. It is an old science, having its beginnings in prehistoric times.<sup>[1]</sup> Anatomy is inherently tied to developmental biology, embryology, comparative anatomy, evolutionary biology, and phylogeny,<sup>[1]</sup> as these are the processes by which anatomy is generated, both over immediate and long-term timescales. Anatomy and physiology, which study the structure and function of organisms and their parts respectively, make a natural pair of related disciplines, and are often studied together. Human anatomy is one of the essential basic sciences that are applied in medicine.<sup>[1]</sup>

Anatomy is a complex and dynamic field that is constantly evolving as new discoveries are made. In recent years, there has been a significant increase in the use of advanced imaging techniques, such as MRI and CT scans, which allow for more detailed and accurate visualizations of the body's structures.

The discipline of anatomy is divided into macroscopic and microscopic parts. Macroscopic anatomy, or gross anatomy, is the examination of an animal's body parts using unaided eyesight. Gross anatomy also includes the branch of superficial anatomy. Microscopic anatomy involves the use of optical instruments in the study of the tissues of various structures, known as histology, and also in the study of cells.

The history of anatomy is characterized by a progressive understanding of the functions of the organs and structures of the human body. Methods have also improved dramatically, advancing from the examination of animals by dissection of carcasses and cadavers (corpses)<sup>[5]</sup> to 20th-century medical imaging techniques, including X-ray, ultrasound, and magnetic resonance imaging.<sup>[6]</sup>

### Etymology and definition[]

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A dissected body, lying prone on a table, by Charles Landseer

Derived from the Greek ἀνατομή *anatomḗ* "dissection" (from ἀνατέμνω *anatémnō* "I cut up, cut open" from ἀνά *aná* "up", and τέμνω *témnō* "I cut"),<sup>[1]</sup> anatomy is the scientific study of the structure of organisms including their systems, organs and tissues. It includes the appearance and position of the various parts, the materials from which they are composed, and their relationships with other parts. Anatomy is quite distinct from physiology and biochemistry, which deal respectively with the functions of those parts and the chemical processes involved. For

example, an anatomist is concerned with the shape, size, position, structure, blood supply and innervation of an organ such as the liver; while a physiologist is interested in the production of bile, the role of the liver in nutrition and the regulation of bodily functions.<sup>[1]</sup>

The discipline of anatomy can be subdivided into a number of branches, including gross or macroscopic anatomy and microscopic anatomy.<sup>[1]</sup> Gross anatomy is the study of structures large enough to be seen with the naked eye, and also includes superficial anatomy or surface anatomy, the study by sight of the external body features. Microscopic anatomy is the study of structures on a microscopic scale, along with histology (the study of tissues), and embryology (the study of an organism in its immature condition).<sup>[1]</sup> Regional anatomy is the study of the interrelationships of all of the structures in a specific body region, such as the abdomen. In contrast, systemic anatomy is the study of the structures that make up a discrete body system—that is, a group of structures that work together to perform a unique body function, such as the digestive system.<sup>[1]</sup>

Anatomy can be studied using both invasive and non-invasive methods with the goal of obtaining information about the structure and organization of organs and systems.<sup>[3]</sup> Methods used include dissection, in which a body is opened and its organs studied, and endoscopy, in which a video camera-equipped instrument is inserted through a small incision in the body wall and used to explore the internal organs and other structures. Angiography using X-rays or magnetic resonance angiography are methods to visualize blood vessels.

The term "anatomy" is commonly taken to refer to human anatomy. However, substantially similar structures and tissues are found throughout the rest of the animal kingdom, and the term also includes the anatomy of other animals. The term *zootomy* is also sometimes used to specifically refer to non-human animals. The structure and tissues of plants are of a dissimilar nature and they are studied in plant anatomy.<sup>[1]</sup>