A lysosome (derived from the Greek words lysis, meaning “to loosen”, and soma, “body”) is a membrane-bound cell organelle found in most animal cells (they are absent in red blood cells). They are structurally and chemically spherical vesicles containing hydrolytic enzymes, which are capable of breaking down virtually all kinds of biomolecules, including proteins, nucleic acids, carbohydrates, lipids, and cellular debris. They are known to contain more than fifty different enzymes which are all active at an acidic environment of about pH 5. Thus they act as waste disposal system of the cell by digesting unwanted materials in the cytoplasm, both from outside of the cell and obsolete components inside the cell. For this function they are popularly referred to as “suicide bags” or “suicide sacs” of the cell. Further, lysosomes are responsible for cellular homeostasis for their involvements in secretion, plasma membrane repair, cell signalling and energy metabolism, which are related to health and diseases.

Depending on their functional activity their sizes can be very different, as the biggest ones can be more than 10 times bigger than the smallest ones.

They were discovered and named by Belgian biologist Christian de Duve, who eventually received the Nobel Prize in Physiology or Medicine in 1974.

Lysosomes are sacs of enzymes within cells that digest large molecules and pass the fragments on to other parts of the cell for recycling. This process requires several critical enzymes. If one of these enzymes is defective, because of a mutation, the large molecules accumulate within the cell, eventually killing it.