

Learning Objectives – Wound Healing & Immune Response
BE-410, Fall '06, Dr. C. S. Tritt

Wound Healing

Be able to explain a reason why understanding wound healing is important to biomedical engineering.

Be able to explain what is meant by the terms “healing by 1st intent” and “healing by 2nd intent.”

Be able to name in sequence 3 general steps that normally involved in healing.

Be able to name and describe any 3 of the 7 events that typically occur after an injury.

Be able to list 3 of the 5 factors that can influence the response of tissue to an implant.

Be able to describe in general how soft tissue typically heals after an injury (does it regenerate or scar?).

Be able to list the sequence of events and active cell types involved after an implantation (this is a plot in the slide show, but you can just list them if you want).

Be able to name 3 types of cells involved in soft tissue healing and briefly describe their individual roles.

Be able to name and briefly describe the individual roles of three chemical mediators involved in healing.

Be able to explain how bone heals differently than soft tissue.

Be able to briefly describe in sequence the cellular activity and events involved in bone healing (this is a plot in the slide show, but you can just give your answer in words if you want).

Immune Response

Be able to briefly describe the reticuloendothelial system (including its cellular constituents, distribution and purpose).

Be able to describe the roles of monocytes and macrophages in the response to implants and injuries.

Be able to name and briefly describe the two major types (branches) of immune response (you should have already covered this in other courses).

Be able to make a labeled sketch of the structure of a typical antibody.

Be able to explain the difference and relationship between antigens and antibodies (you should have already covered this in other courses; it may not be explicitly covered in the slide shows or book).

Be able to explain what an epitope is.

Be able to name or describe any 3 functions of antibodies.

Be able to name and describe the function of any 2 specific classes of antibodies.

Be able to describe and explain the clonal selection mechanism of antibody production.

Be able to explain the role of memory B cells in immunization (you should have already covered this in other courses; it may not be explicitly covered in the slide shows or book).

Be able to explain how B cells are programmed during fetal development to respond to different epitopes (including how self-tolerance is induced).

Be able to explain the role of the Major Histocompatibility Complex (a.k.a., Human Leukocyte Antigens) in natural and medical (transplant) immune responses.

Be able to describe any 3 functions of the complement system in the general (non-specific) immune response.

Be able to explain any 2 possible causes for autoimmune disorders.

Be able to describe any 1 of the 4 commonly defined types of hypersensitivity.