

SCI-121 – Medical Science For AI Engineering

Reflection of Biomedical Science Lectures

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This lecture has provided by with various scientific concepts of biological products, specifically, how “biologics” are different from traditional drugs. From the lecture, Biologics are drugs that came from or “derived” from living organisms in which consists of large, complex molecules such as proteins or nucleic acids; they require complex production systems like mammalian cell culture due to the slight variations in the biological processes can affect their safety and potency. The lecture also introduced examples of biologic products, e.g. Vaccines, recombinant therapeutic proteins, allergenics and probiotics.

Biologics are very important to the human health and modern machine, e.g. vaccines play an important role in preventing infectious diseases by triggering protective immune responses and contributing to herd immunity. Recombinant therapeutic proteins like insulin for diabetes and monoclonal antibodies for cancer therapy shows how biotechnology can be used to remedy physiological deficiencies or target disease pathways more precisely. Probiotics and the gut microbiota shows how microbial balance can influence metabolic and inflammatory health i.e. showing a connection between everyday nutrition and immune function.

The part of the lecture that impressed me the most was on the process of producing biologics; a difficult process with involves using genetically engineered mammalian cells. The cells that are able to perform proper post-translational modifications makes sure that therapeutic proteins remain function and safe in humans. This section very much impressed on the engineering and innovation processes that goes on behind the scene of something we seem as just something that we get during day-to-day life.

Though, the part that I found to be a bit difficult to grasp / understand on the aspect of the regulations in regards to dietary supplements. As supplements are not required to have been pre-approved by the FDA and companies or the producers of such projects must be the one who ensures safety, it shows how important it is for consumers to always keep in mind of products and their potential risks.

In summary, this lecture very much increased my interest in biomedical sciences from its demonstration of how science, technology, and healthcare are all connected. Biologics, when understood, makes me feel very excited to see how future medical innovations will continue to improve human health and prevent more diseases effectively.