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PHARMACEUTICAL BIOTECHNOLOGY

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INTRODUTION

PHARMACEUTICAL BIOTECHNOLOGY consist of the combination of two branches which Are **"PHARMACEUTICAL SCIENCE" AND "BIOTECHNOLOGY".**

DEFINATION:

PHARMACEUTICAL SCIENCE: Can simply be define as the branch of science that deals with the formulation compounding and dispensing of drugs

BIOTECHNOLOGY: Can simply be define as the application of biological system, living organisms, or their derivatives in making or modifying products or processes for specific use.

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Key Words

Protein

Enzymes

Antigen

Antibodies

Monoclonal Antibodies

Recombinant DNA

Vector

Vaccine

Plasmid

PHARMACEUTICAL BIOTECHNOLOGY

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- Can simply be define as the science that covers all technologies required for the production, manufacturing and registration of biological drugs.

- The aim of this pharmaceutical biotechnology is to design, produce drugs that are adapted to each persons genetic make up, which can give the maximum therapeutic effect.

- Biotechnology plays an important role in pharmaceutical science most especially in the pharmaceutical industries by creation of genetically modified organisms that can be used in industrial production.

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COMMON PHARMACEUTICAL BIOTECHNOLOGICAL PRODUCT

The common pharmaceutical biotechnology products that are made by the biotech pharmaceutical companies includes:

***Antibodies**

***Proteins**

***Recombinant DNA Products.**

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ANTIBODIES

Antibodies:

Antibodies are proteins that are produced by white blood cells and are used by the immune system to identify bacteria, viruses, and other foreign substances and to fight them off.

In the recent years, monoclonal antibodies are one of the most exciting developments in biotechnology pharmaceuticals.

Example:

Actin in Alpha monoclonal Antibodies, Actin smooth muscle monoclonal antibodies etc.

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PROTIENS

Proteins: Proteins made of amino acids are large, complex molecules that do most of the work in cells and are required for the structure, function, and regulation of the body's tissues and organs.

Protein biotechnology is emerging as one of the key technologies of the future for understanding the development of many diseases like cancer or amyloid formation for better therapeutic intervention.

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RECOMBINANT DNA PRODUCT

Recombinant DNA Products:

Recombinant Deoxyribonucleic Acid is the genetically engineered DNA created by recombining fragments of DNA from different organisms. Some of the Recombinant DNA Products includes:

*Recombinant DNA Vaccines
*Recombinant DNA Drugs
*Recombinant DNA Enzymes
*Recombinant DNA Growth Hormone
*Recombinant DNA Insulin
*Recombinant DNA Proteins
*Recombinant DNA Yeast

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RECOMBINANT DNA VACCINE

A recombinant vaccine is a vaccine produced through recombinant DNA technology. This involves inserting the DNA encoding an antigen (such as a bacterial surface protein) that stimulates an immune response into bacterial or mammalian cells, expressing the antigen in these cells and then purifying it from them.

Example: Hepatitis B infection is controlled through the use of a recombinant hepatitis B vaccine

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RECOMBINANT DNA DRUGS

NAME OF DRUG	WHAT HUMAN PROTEIN IS FORMULATED AS THE DRUG	PHARMACODYNAMICS OF THE DRUG
1. Humulin Chart comparing Time Activity Profiles (go here)	**rInsulin** [FDA approval 1982]	**Diabetes: Used by over 3.5 million people in the U.S. every day**
2. Humatrope	**rHuman growth hormone** (hGH) (Somatropin) [FDA approval 8/96]	**For Somatropin Deficiency Syndrome (SDS)** in adults and GHD in children
4. Forteo	**rParathyroid hormone**, [FDA Approval Nov 26, 2002]	**Treatment of osteoporosis** in women and men

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RECOMBINANT DNA PRODUCTS

R-DNA PRODUCT	EXAMPLE	FUNTION
R-DNA ENZYME	CHYMOSINE	Essential to the Nmanufacture of firm cheeses
R-DNA GROWTH HORMONE	PROTROPIN	Support growth and development
R-DNA INSULIN	HUMULIN	For the treatment of insulin-dependent diabetes
R-DNA PROTEIN	**Tissue plasminogen activato**	Involved in the breakdown of blood clots

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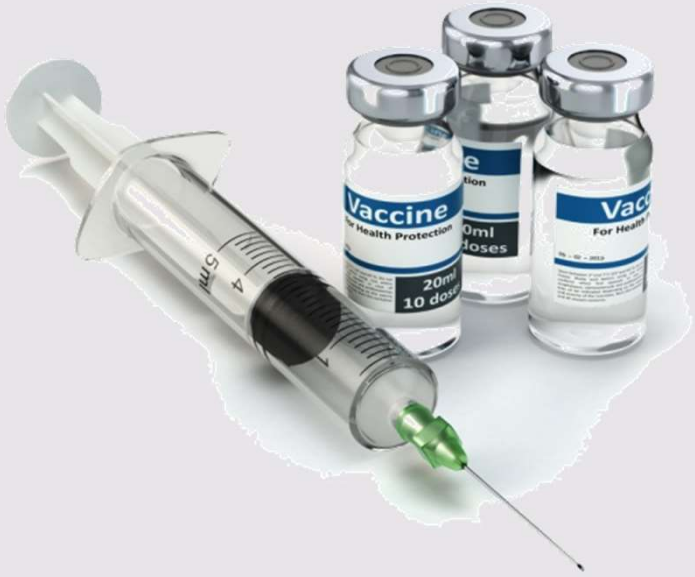
THANK YOU



Happy to Answer if you have any question.....