EVERY DAY SCIENCE

Basis of life

Cell

Cells are the basis of life. Some connect body parts and store nutrients, others fight disease and transport gases. Some cells gather information and control certain body functions, while specilized cells are used for reproduction.

Cell theory

In the late 1600's, an English Scientist named Robert Hook was the first to observe plant cells with a crud microscope. Then, almost a

century and a half later, in the 1830s two German scientists proposed that all living things are composed of cells. A pathologist named Rudolph Virchow extended this idea by contending that cells arise only from other cells.

Since the late 1800's, cell research has been astounding gains and provided us with four concepts collectively known as cell theory.

What is cell theory?

1. A cell is the basis structural and functional unit of living organism when you define cell properties, you define the properties the properties of life.
2. The activity of an organism depend on both the individual and the collective activities

of its cells.

3. According to the principle of complementarity of structure and function, the biochemical activities of cells are directed by their shapes or forms, and by the relative number of their specific sub-cellular structures.

4. Continuity of life from one generation to another has a cellular basis.

These concepts will be expanded on as we progress and links will be posted to new material as its available. For now, lets begin with the idea that the cells is the smallest living unit. No matter its form, or how it behaves, the cell is a microscopic package that contains all the necessary parts to survive in a changing world.

This is why the loss of cellular homeostasis underlies virtually every disease known to man.

There are trillions of cells in the human body. These include over 200 different cell types that vary greatly in size, shapes, nerve cells branch, and kidney tubule cells are cubed. These are just a few examples of the shape cells takes. Cells vary in length as well- loss of cellular homeostasis underlies virtually every disease known to man.

These are trillions of cells in the human body. These includ over 200 different cell types that vary greatly in size, shape and function. Red blood cells are disc-shaped cells takes. Cells vary in length as well- ranging from 2

micrometers in the smallest cells to over a meter in the nerve cells you wiggle your toes with. Generally, a cell's shape reflect its functions. For example, the epithelial cells that line the inside of your cheek are flat and fit closely together like floor tile, forming a living barrier that protects underlying tissues from bacterial invasion.

Regardless of the type, all cells are mainly composed of carbon, nitrogen, hydrogen, oxygen, and trace amount of a few other elements. In additional, all cells have the same basic parts and some common functions Because of this, it is imposible to speak of generalized, or composite, cell.

These basic parts of a cell

1. The Plasma membrane: the

boundary of the cell.
2. The cytoplasm: the intracellular fluid packed with organelles, small structure that perform specific cell functions.
3. The nucleus: an organelle that controls cellular activities. Typically the nucleus resides near the cell's center.

CHROMOSOME

Usually the gametes of a species contain one set or one copy of each different chromosms along with a single sex-chromosom from the single pair of sex-chroms The somatic cells are found to contain diploid number (2n) of chromosoms while the germinal cells or gametes contain haploid number (n) of

chromosome.

Chromosome formation

The cromosom of eukaryotic cell consist primarily of DNA attached to a protein core. They also contain RNA.... DNA wrapped around proteins called histones to form units known as nucleosoms. These units condense into a chromatin fiber, which condenses furthur to form chromosoms.

Types of chromosoms

There are four main types of chromosoms: matacentric Submetacentric, acrocentric and telocentric

Example of chromosom.

The chromasom is thread like structure of DNA that carries genes. the "X" or "Y" gene that determines whether you will be a boy or girl is an example of a chromosome.

what does chromosom represents.

The 23rd pair of chromosom are two special chromosoms, X and Y, that determine our sex.. chromosome are made of DNA, and genes are special units of chromosomal DNA. Each chromosom is a very long molecule, so it needs to be wrapped tightly around proteins for efficient packaging.

Chromosom appearance

Chromosom appearance changes with different phases of cell division. Especially the metaphase stage of mitotic division is most suitable for the study of chromosom morphology. The size of chromosoms, the position of chromosom, the presence of secondary constrictions and above all the shape of chromosom are revealed through individual's karyotype.

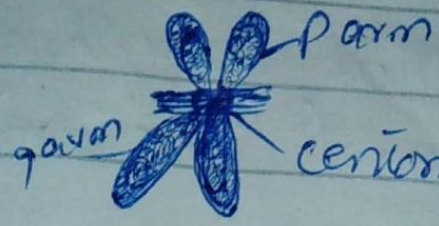
Chromosoms were first described by Strausburger in 1875 and the term was first used by Waldeyer in 1888. These are small elongated rod shaped bodies, clearly visible shaped bodies, clearly visible during the stage of cell division.

Metacentric chromosoms:

Chromosoms are called metacentric when centromere is found to be located at the center of chromosom, i.e the two arms on each side of centromere are almost equal in length.

Sub meta-centric chromsom.

when centromer is located on one side of the central point. Such centromere is known as sub-meta centric chromasom.



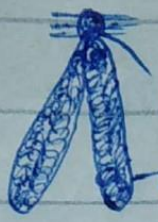
Acrocentric chromosom:

In some chromosom, the centromere is located very close to one end of chromosome. Such type of centromere is called acrocentric chromosoms.

Telocentric chromosome:

These chromosoms are with terminal centromere and generally such telocentric is unstable. Chromosoms are the most complex nuclear compment

not only in their morphology, but also in chemical nature.



GENES

A gene is the basis physical and functional unit of heredity. Genes are made up of DNA. Some genes act as introductions to make molecule called proteins... Allels are forms of the same gene with small differences in their sequence of DNA base.

Gene formation

Like chromosoms, genes

also come in pairs. Each of your parents has two copies of each of their genes, and each parent passes along just one copy to make up the genes you have. Genes that are passed on to you determin many of your traits such as your hair color and skin color.

Function of gene

Gene are a set of instruction that determine what the organism is like, its appearance, how it survives, and how it behaves in its environment. Genes are made of substances called deoxyribonucleic acid, or DNA. They give instructions for a living being to make molecules called protein.

Type of gene

An allele is a variant form of a gene. Some genes have a variety of different forms, which are located at the same positions, or genetic locus, on a chromosome. Human are called diploid organisms because they have two alleles at each genetic locus, with one allele inherited from each parent.

Genes location

They are found in almost every cells nucleus and are made from strands of DNA. Segments of DNA called "genes" are the ingredients. Each gene add a specific

protein to the recipe. Proteins build, regulate and maintain your body.

Structure and function

Gene structure is the organization of specialged sequence elements within a gene. Genes contain the information nesseesy for living cells to survive and reproduce. In the most organisms, gene are made of DNA, where the particular DNA sequence determine the function of the genes.

Clues to gene function can often be obtained by examining when and where a gene is expressed in the cell or in whole organism. One simply replace the target

genes coding sequence with that of the reporter gene, and introduction these recombinant DNA molecules into cells.

Nature of gene

A gene is a region of DNA that encodes function. A chromosom consists of a long strand of DNA containing many genes. A human chromosoms can have up to 500 million base pairs of DNA with thousand of genes.

Inside a gene

A gene is a short section of DNA --- Hidin inside almost every cell in your body is chemical called DNA.

Your genes contain instructions that tell your cell to make molecules called proteins.

How many genes in cell

Somatic cells usually have one copy of chromosoms 1-22 from each parent, plus an X chromsom from the mother and either an X or Y chromosom from the father for a total of 46. There are an essential estimated 20,000-25000 human protein-coding genes.

No of chromosom in a genes

Genes are contained in chromosomes, which are in the cell nucleus. A chromosome contains hundreds of genes.

Every normal human cell contain 23 pairs of chromosoms, for a total of 46 chromosoms. A trait is any gene-determined chracteristic and is often determined by more than one gene.

How gene encode proteins.

Most genes contain the information needed to make functional molecule called protein. The type of RNA that contains the information, or message, from the DNA out of nucleus into cytoplasm.

How many genes required for life

The human genome

is belived to contain between 20,000 and 25000 genes. And the fact that no one knows the function of 149 genes nessery for life means scientist actualy know a lot less about biological life than thaught they did.

Nucliec acid

The basic component of biological nucliec acid is the nucleotide, each of which contains a pentose sugars a phosphate group, and a nucleobase. Nucliec acid are also generated within the labortary, thraigh the use of enzym and by solid-phase chemical Synthesis.

Structure of nucleic acid

A nucleic acid is made up of three components: a nitrogen base, a pentose sugar, and a phosphate group. The two main type of nucleic acid are deoxyribonucleic acid and ribonucleic acid (RNA)

Function of nucleic acid

The function of nucleic acid have to do with the storage and expression of genetic information the cell needs to make protein. A related type of nucleic acid called ribonucleic acid (RNA), comes in different molecular forms that participate in protien synthesis.

Properties of nucliec acid

Nucliec acid are polynucltds that is, long chain like molecules composed of a series of nearly identical building blocks called nucleotides. Each nucleotide consist of a nitrogen-containing aromatic base attached to a pentose sugar, which in turn attached to a phosphate group.

Location of nucleotide in body

There are Two Type of nucleic acid which are polymers found in all living cells.

Deoxyribonucleic acid (DNA) is found mainly in the nucleus acid of cell, while Ribonucliec Acid (RNA)

is found mainly in the cytoplasm of the cell although it is usually synthesized in the nucleus.

what makes up nucleotide

A nucleotide consist of three things: A nitrogenous base, which can be either adenine guanin, cytocine, or thymine.

A five-carbon sugar, called deoxyribose because it is lacking an oxygen group on one of its carbons. One or more phosphate groups.

Defination of nucleic acid in biology.

Nucliec acid, which are composed of nucleic-acid

are very large and complex organic molecules that contain the genetic code for that organism. Two closely related types are needed to transmit the genetic information from parent to offspring : DNA and RNA.