CELLS

Cell – the smallest unit of life
living things take nutrients/energy from environment for their own use
can repair themselves
can reproduce

Cell is an organized container of chemicals that behaves in a way that we say is living.

3 parts of the cell:

<table>
<thead>
<tr>
<th>basic chemicals</th>
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<tbody>
<tr>
<td>carbohydrate</td>
</tr>
<tr>
<td>sugars, glucose</td>
</tr>
<tr>
<td>lipids</td>
</tr>
<tr>
<td>fats, oils</td>
</tr>
<tr>
<td>protein</td>
</tr>
<tr>
<td>diverse structures and functions</td>
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<td>nucleic acids</td>
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Cell membrane
inside the cell = intracellular
outside the cell = extracellular

phospholipid bilayer
protein channels
receptors
glycocalyx (cell coat)
= antigens
cholesterol

= chemical of the cell membrane
transport through the membrane
helps cells stick together
act as ID markers
cells can recognize “self” vs “foreign”
support, strengthens cell membrane

= cytosol
= compartments in cytoplasm w/ special functions
= site of protein synthesis
= transport through the cytoplasm
RER = rough endoplasmic reticulum (have ribosomes) protein synthesis
SER = smooth endoplasmic reticulum (no ribosomes) lipid synthesis; calcium storage

mitochondria
= makes ATP (“energy” molecule) cell respiration

Golgi apparatus
= packages proteins for secretion

lysosomes
= destroy foreign cells; aid in cell death
digestive enzymes = lysozyme

Nucleus
contains genetic material = DNA
chromosome 1 DNA molecule + attached protein
humans have 23 different chromosomes pairs of each chromosome = 46 chromosomes
a gene is part of a DNA molecule = the code to make protein

Mitosis = cell division
one cell \(\rightarrow\) 2 identical cells

prophase
metaphase
anaphase
telophase
cytokinesis

chromosomes appear
chromosomes line up metaphase plate
chromosomes move to opposite poles
cell membrane forms fissure
cell separation

We make many different cells
All cells, organs develop from 1 original cell.
Cell structure varies – cell membrane, organelles, chemicals
The cells, tissues, and organs develop different structures to perform different functions