

RVGS Summer Biomedical Institute

For our talks,
scientists will

- Talk about their education and career for 10-15 minutes
- Talk about their research for 20-25 minutes
- Answer questions for 10-15 minutes
 - **At any point during the talk, you can send me a question for the scientist using "Remind" and I will ask the question.**
 - Questions can be general about education and career or
 - Specific questions about research



Listening to scientific talks

I don't know any
of these words
and I am lost!



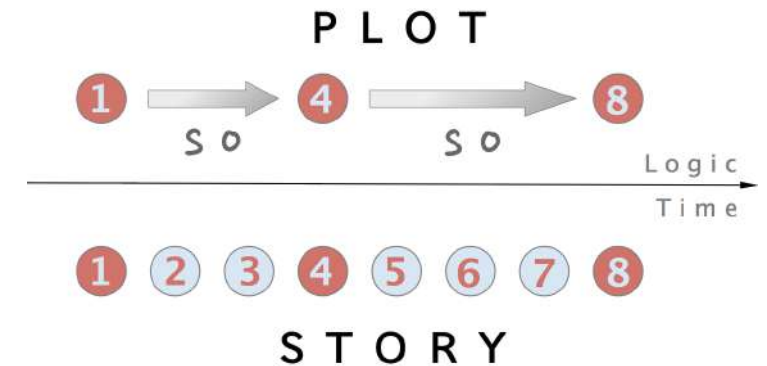
Some of that went
over my head but
what I understood
was really
interesting!



Listening to scientific talks

Pay attention to the main story line

- What problem is the scientist working on?
- How does it relate to broader issues in medicine and health?
- How was the experiment set up? Does the set-up make sense? What control groups were used?
- What do the results mean?
- What questions are raised by the results?



Listening to scientific talks



Terms you
might hear:

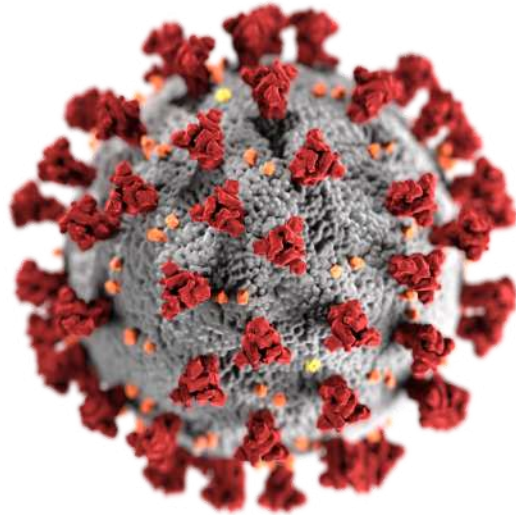
Assay: An experiment
“To test that idea, we set
up an **assay**.”



Terms you might hear

Pathogen

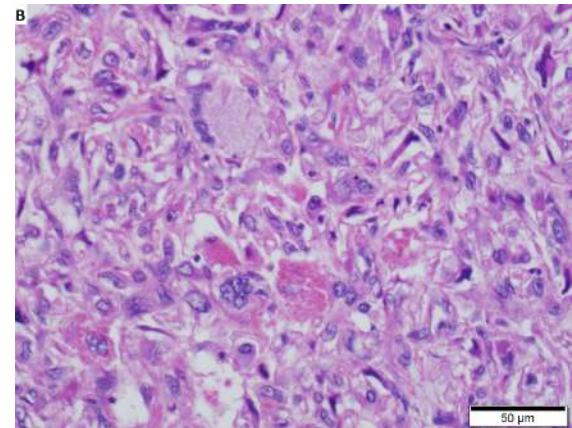
A virus, bacteria, fungus,
or some other
microorganism that
causes disease



Pathology

The science of the causes
and effects of disease

Often associated with lab
examination of samples
of body tissue

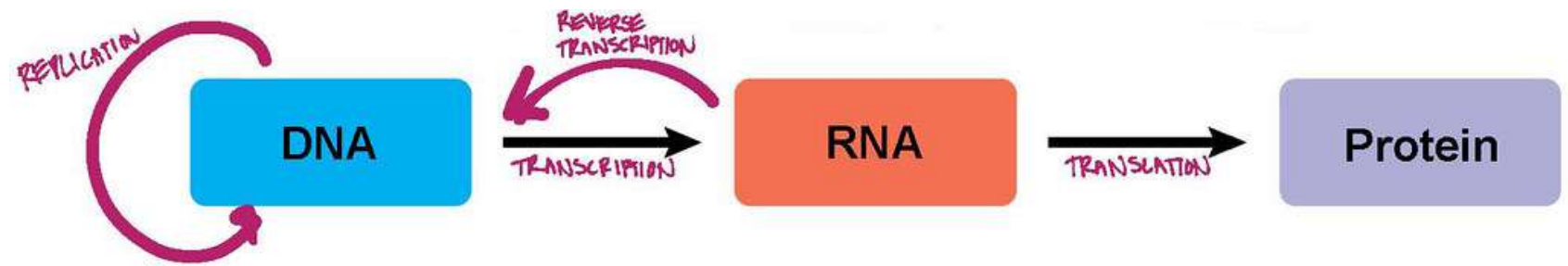




Basic Molecular Biology


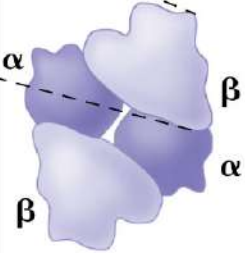
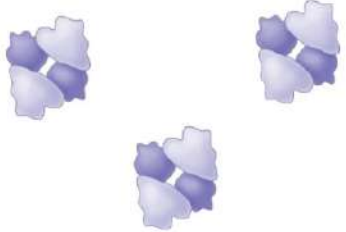

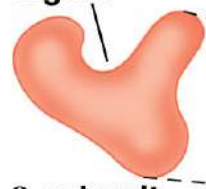
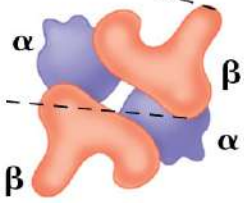
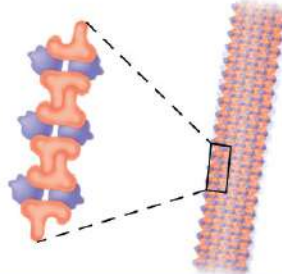

Central Dogma

Gene Expression

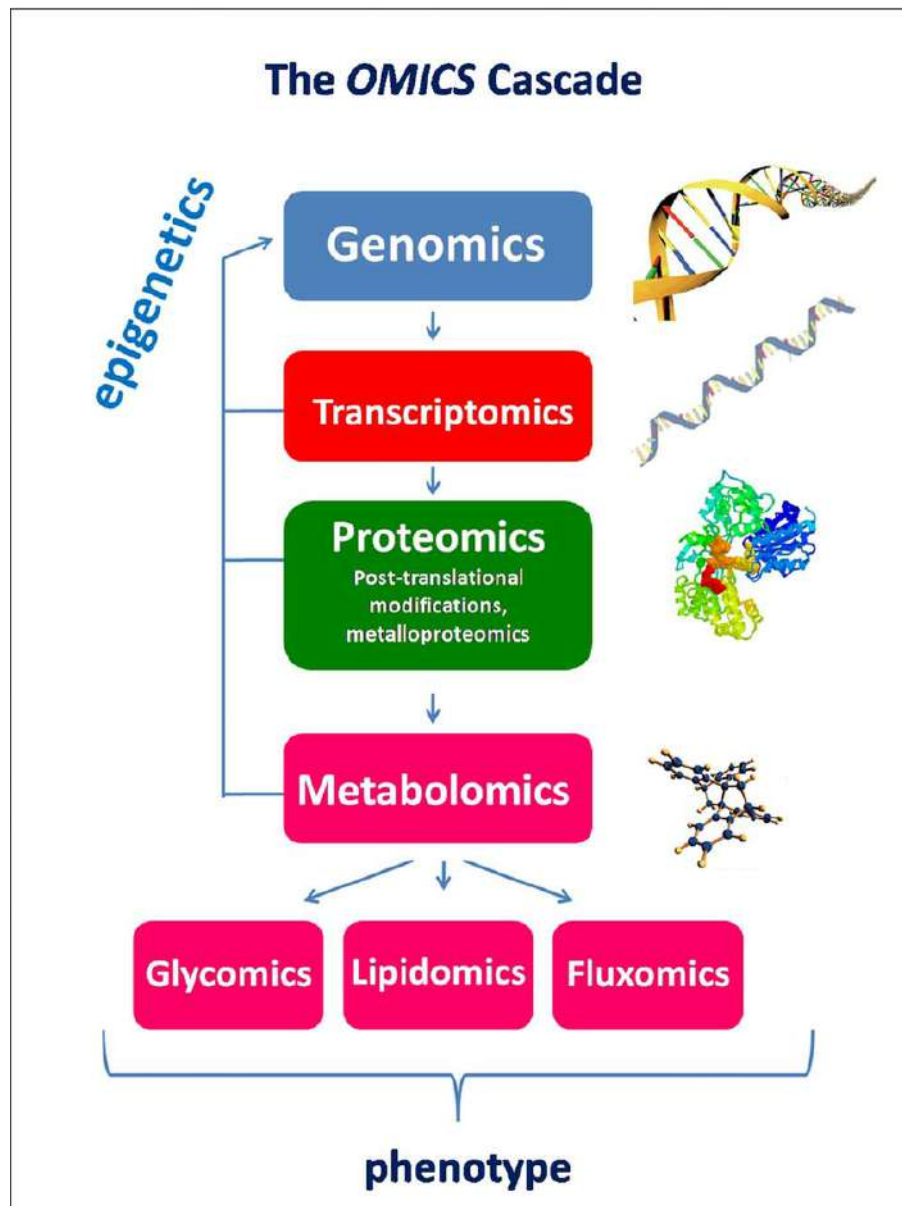


Single gene studies

Gene Therapy
Gene Editing

	Primary Structure	Secondary and Tertiary Structures	Quaternary Structure	Function	Red Blood Cell Shape
Normal hemoglobin	1 Val 2 His 3 Leu 4 Thr 5 Pro 6 Glu 7 Glu	 <p>β subunit</p>	Normal hemoglobin 	Molecules do not associate with one another; each carries oxygen. 	 <p>10 μm</p>
Sickle-cell hemoglobin	1 Val 2 His 3 Leu 4 Thr 5 Pro 6 Val 7 Glu	Exposed hydrophobic region  <p>β subunit</p>	Sickle-cell hemoglobin 	Molecules crystallize into a fiber; capacity to carry oxygen is reduced. 	 <p>10 μm</p>

'Omics

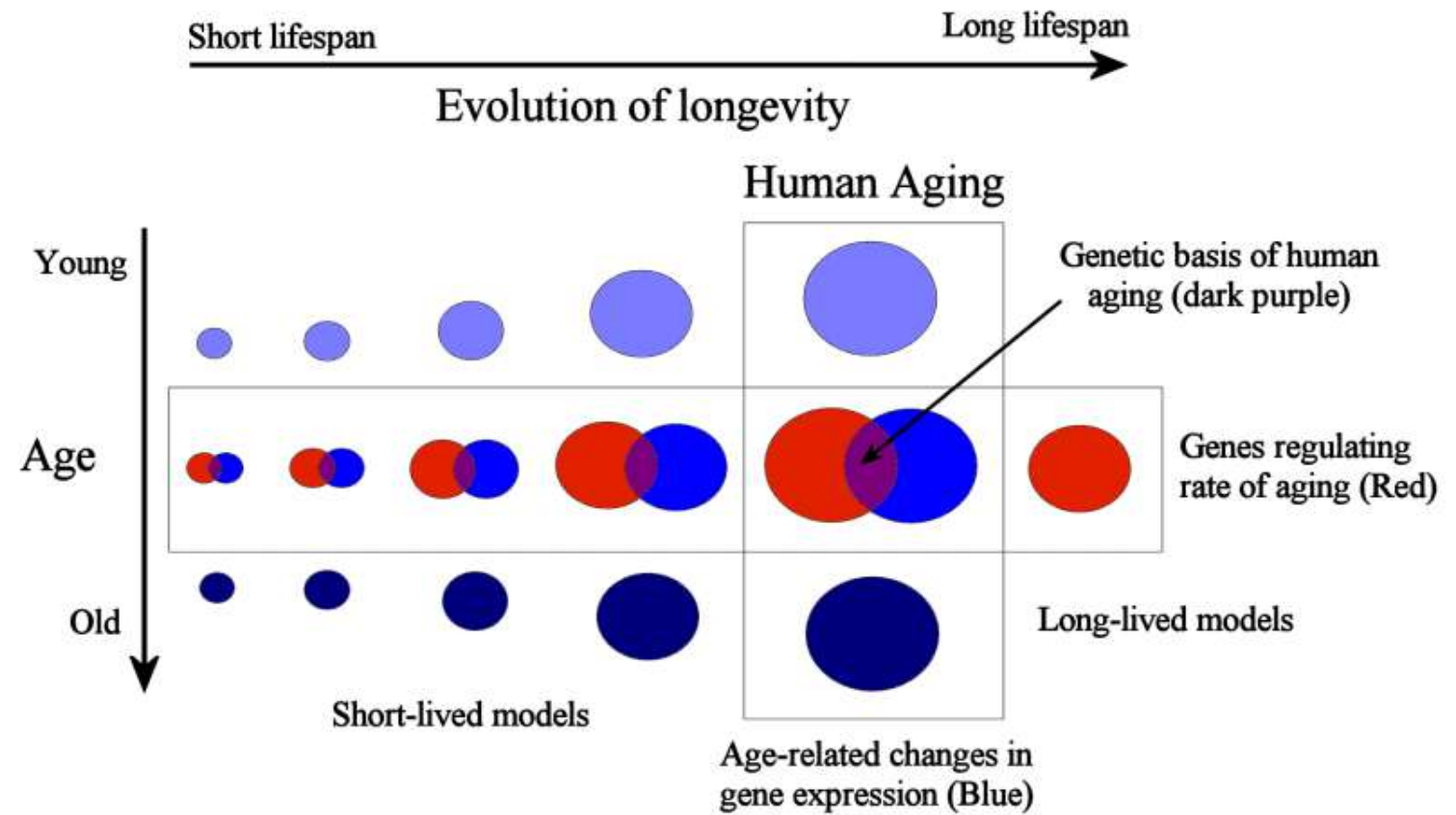


Proteomics, Metabolomics and Lipidomics in Reproductive Biotechnologies: The MS Solutions

Article [Full-text available](#) Aug 2010

Christina Ramires Ferreira · Edson Guimarães Lo Turco · Sergio Saraiva · [...] · Marcos N. Eberlin

Comparative Genomics Studies



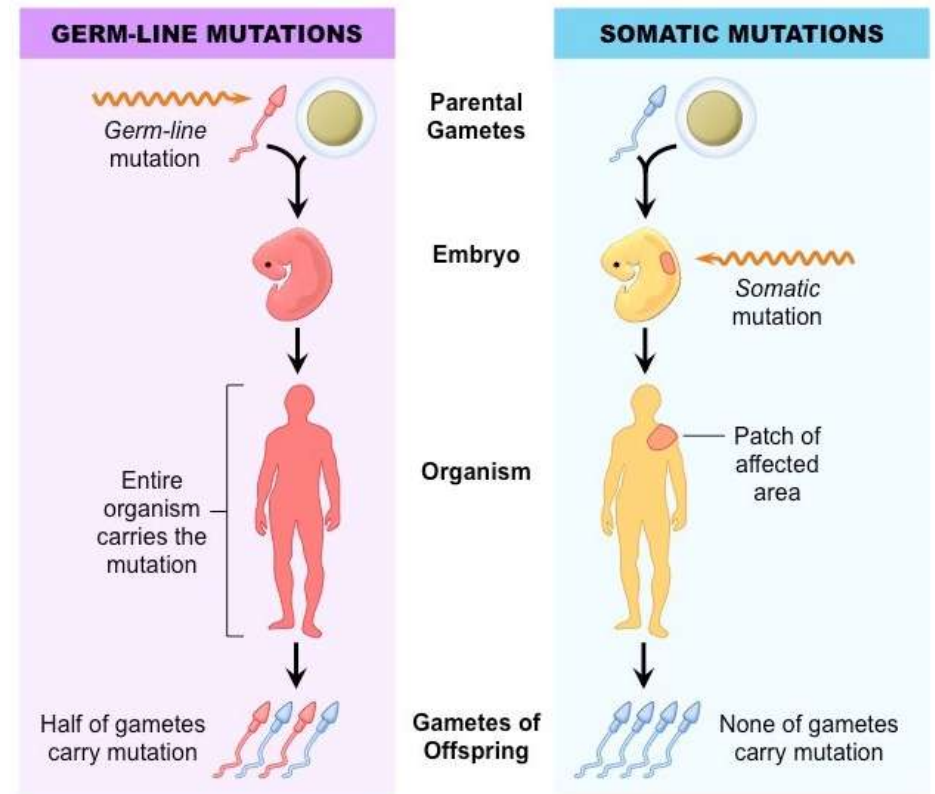
<https://genomics.senescence.info/science.html>

Personalized Medicine

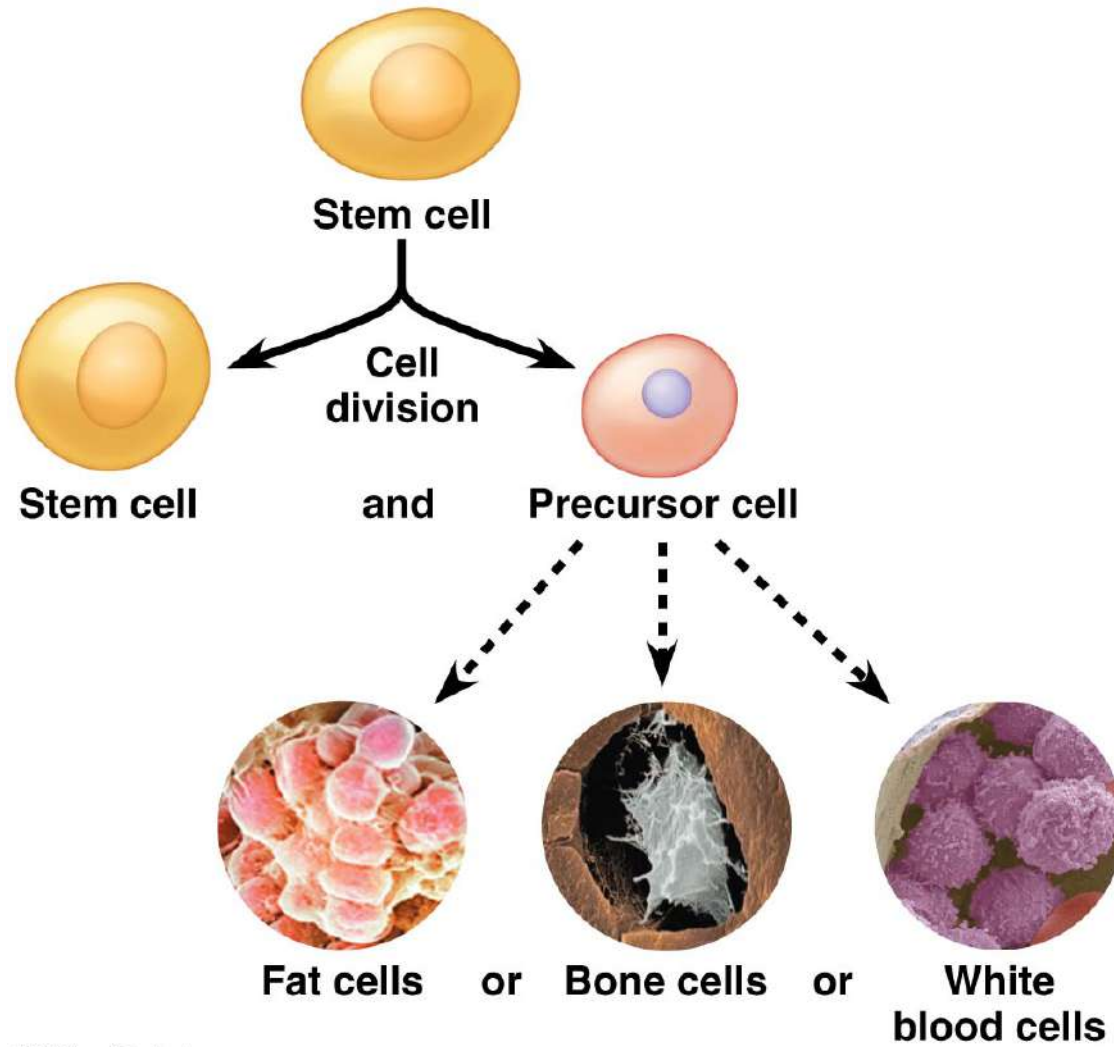


Major Types of Cells in Humans

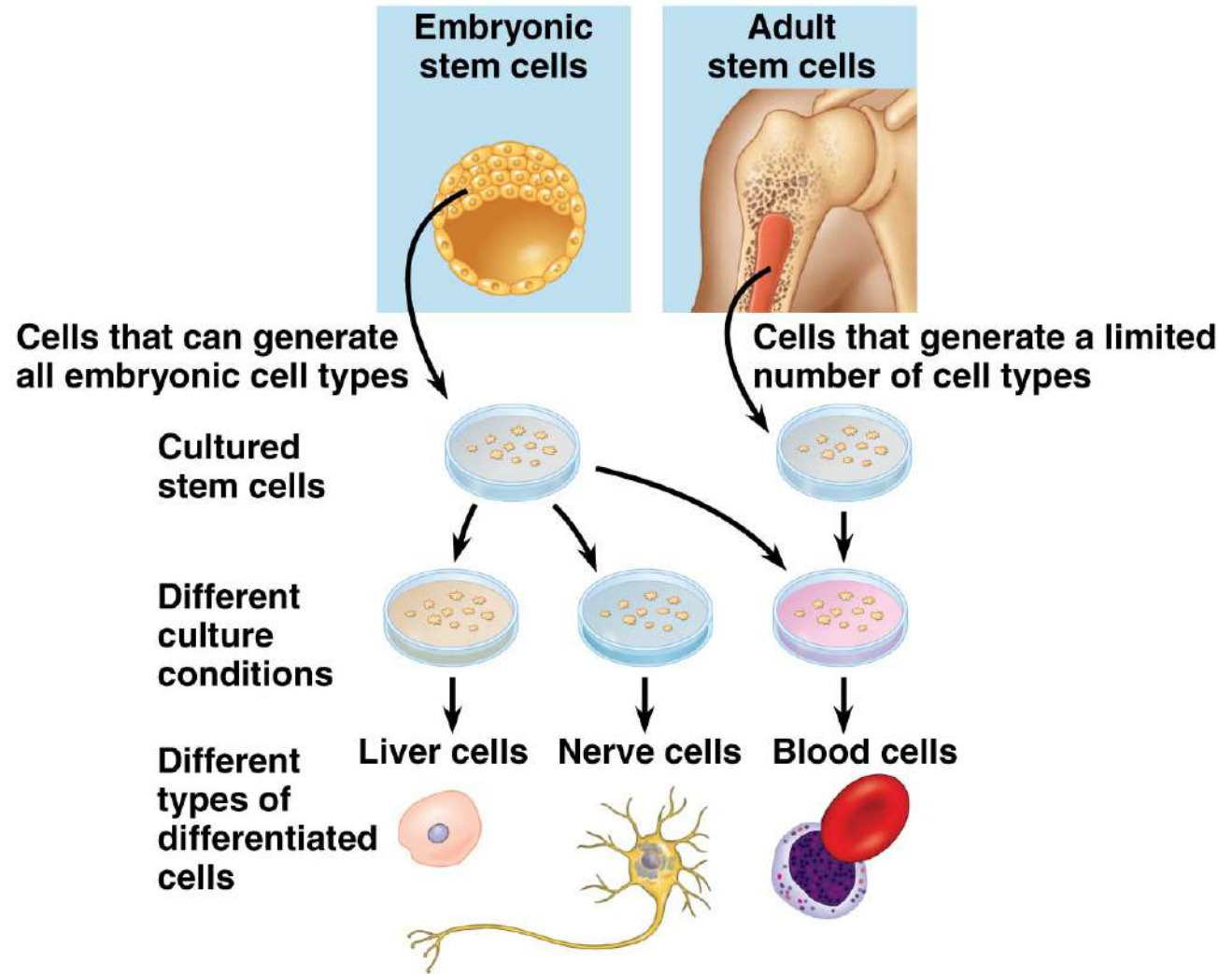
- Somatic Cells
- Germline Cells
 - Produce gametes



Stem Cells



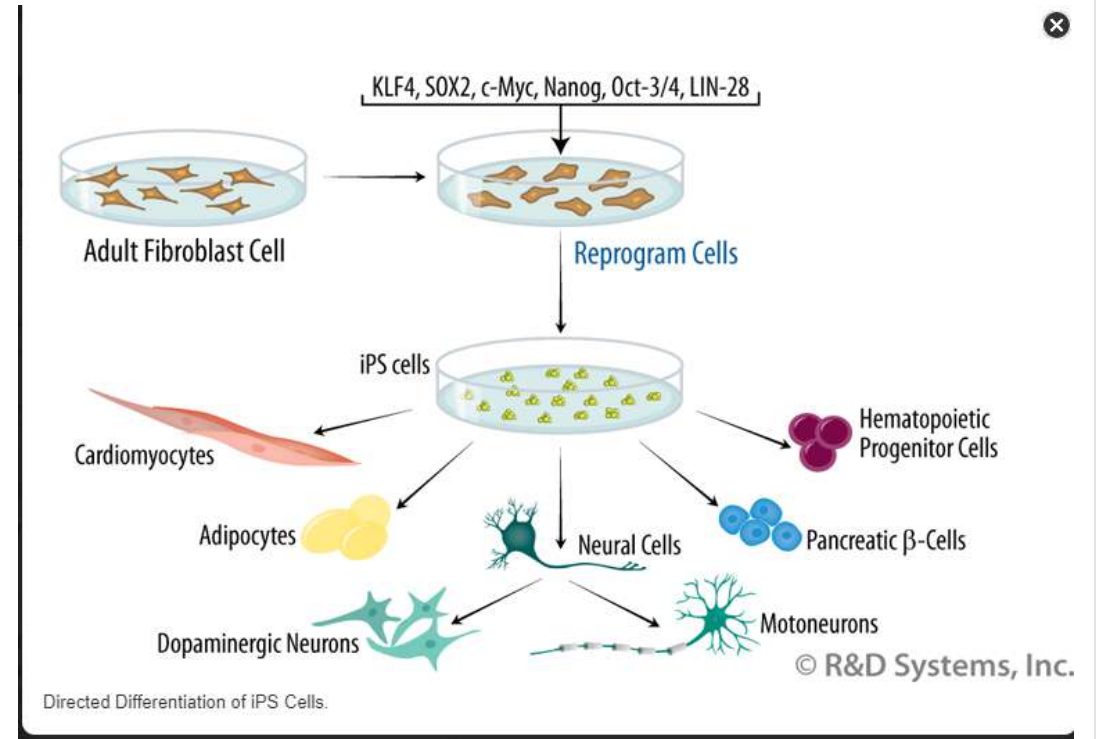
Embryonic versus Adult Stem Cells



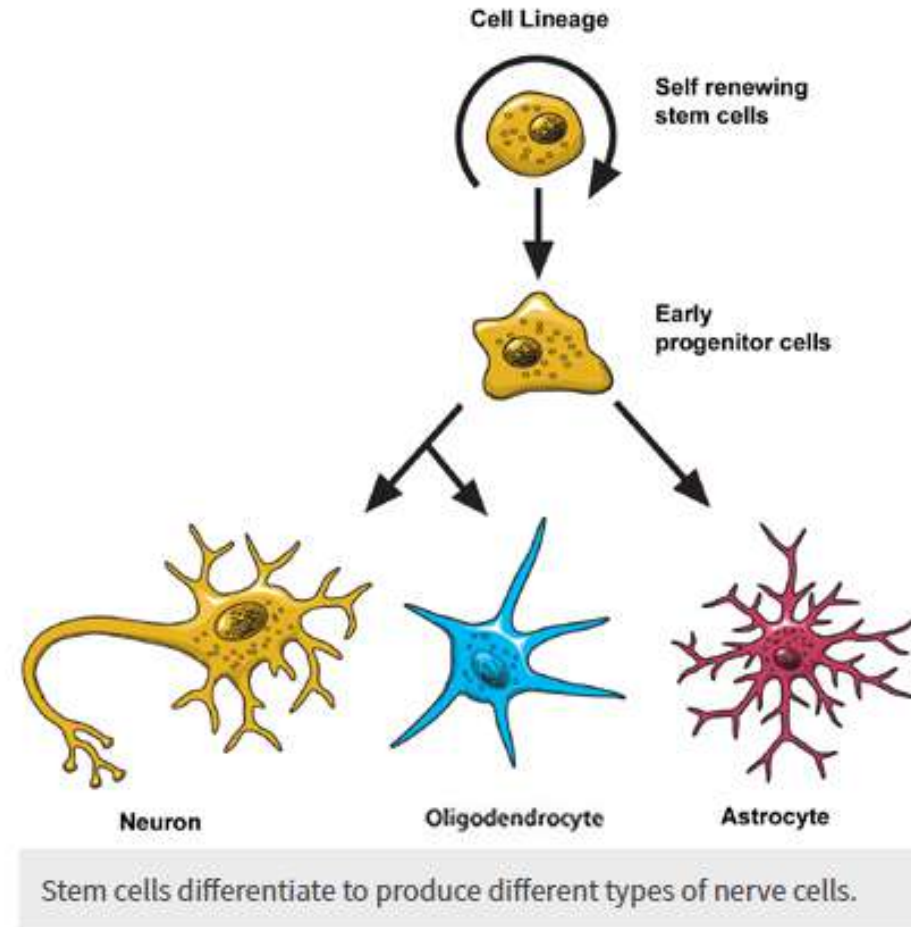
iPS/iPSC: Induced Pluripotent Stem Cells

Body cells that have been reprogrammed back into an embryonic state

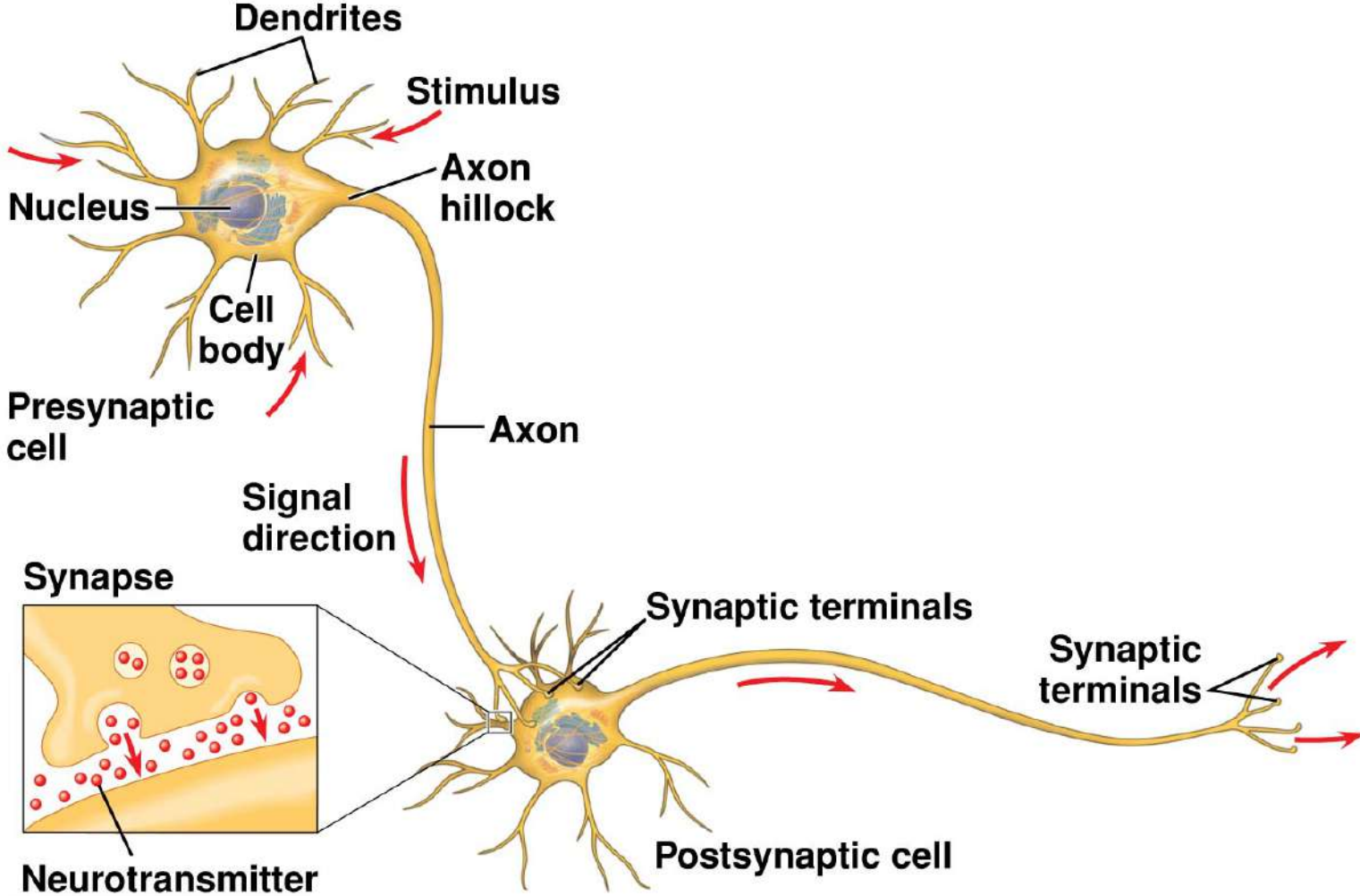
Now, they can differentiate into any kind of cell



Cells in the brain

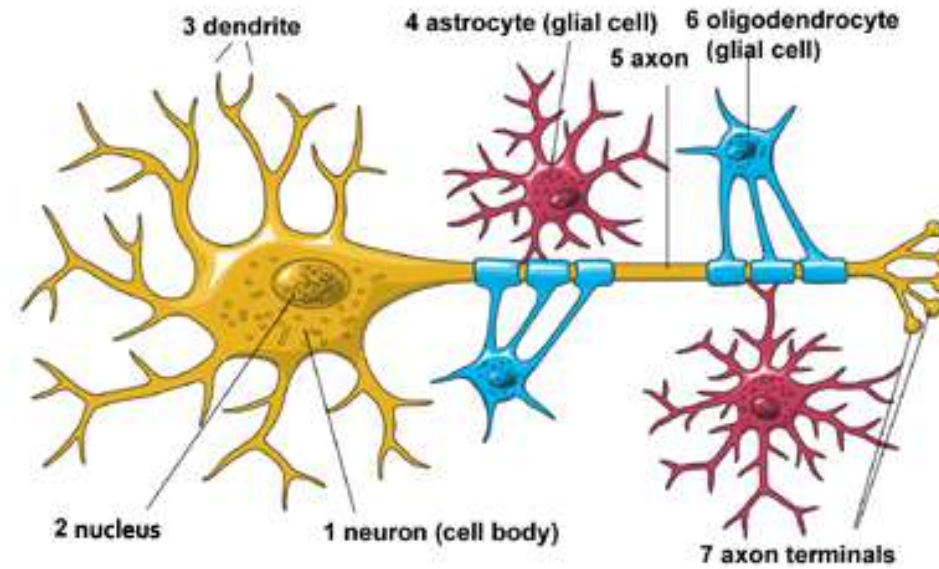


Neuron Structure



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Support Cells



The architecture of the neuron.

Astrocytes

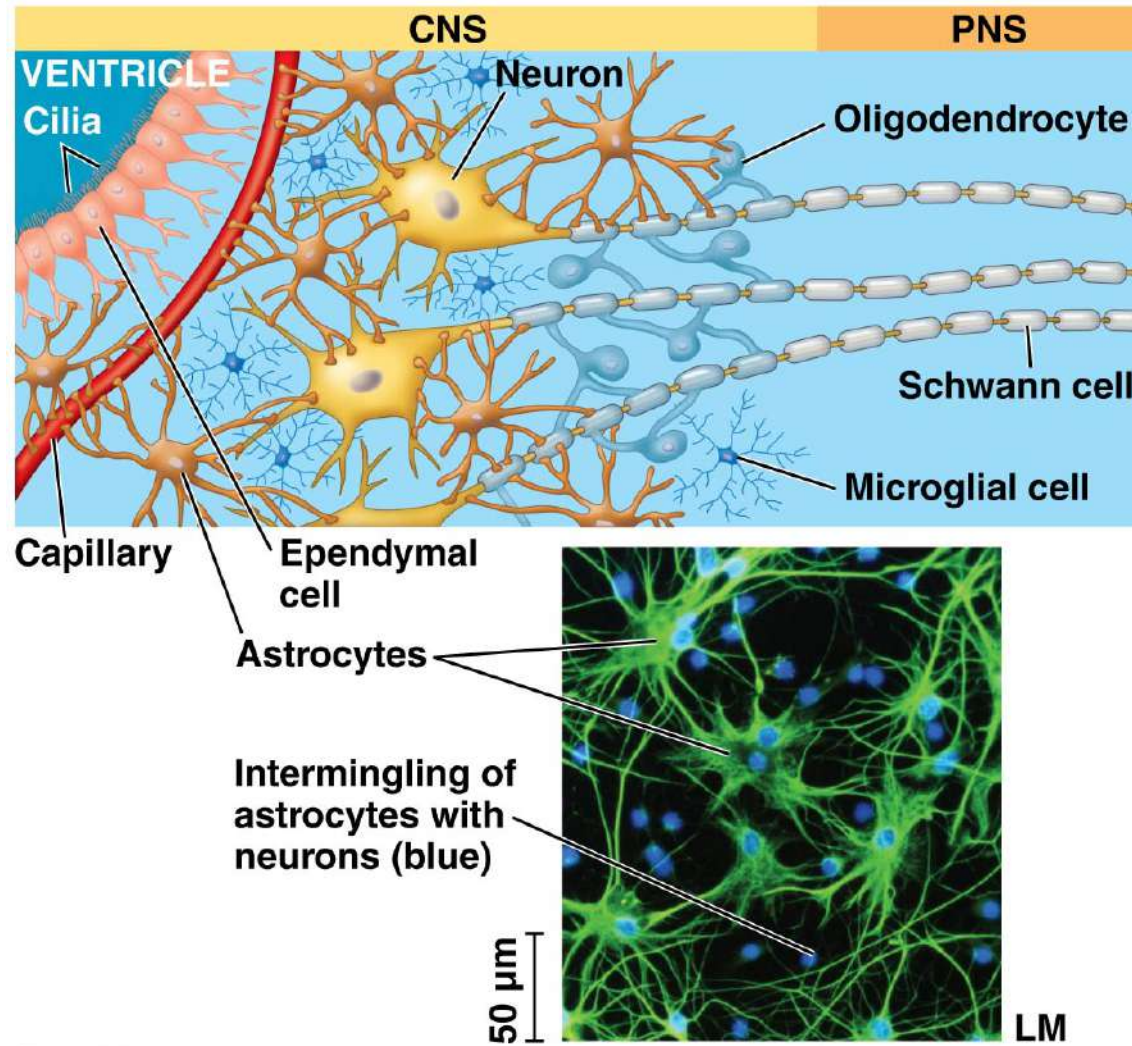
Lots of functions; help with communication, promote blood flow, help form blood brain barrier

Oligodendrocytes

myelinate axons which helps speed up signals

Microglia

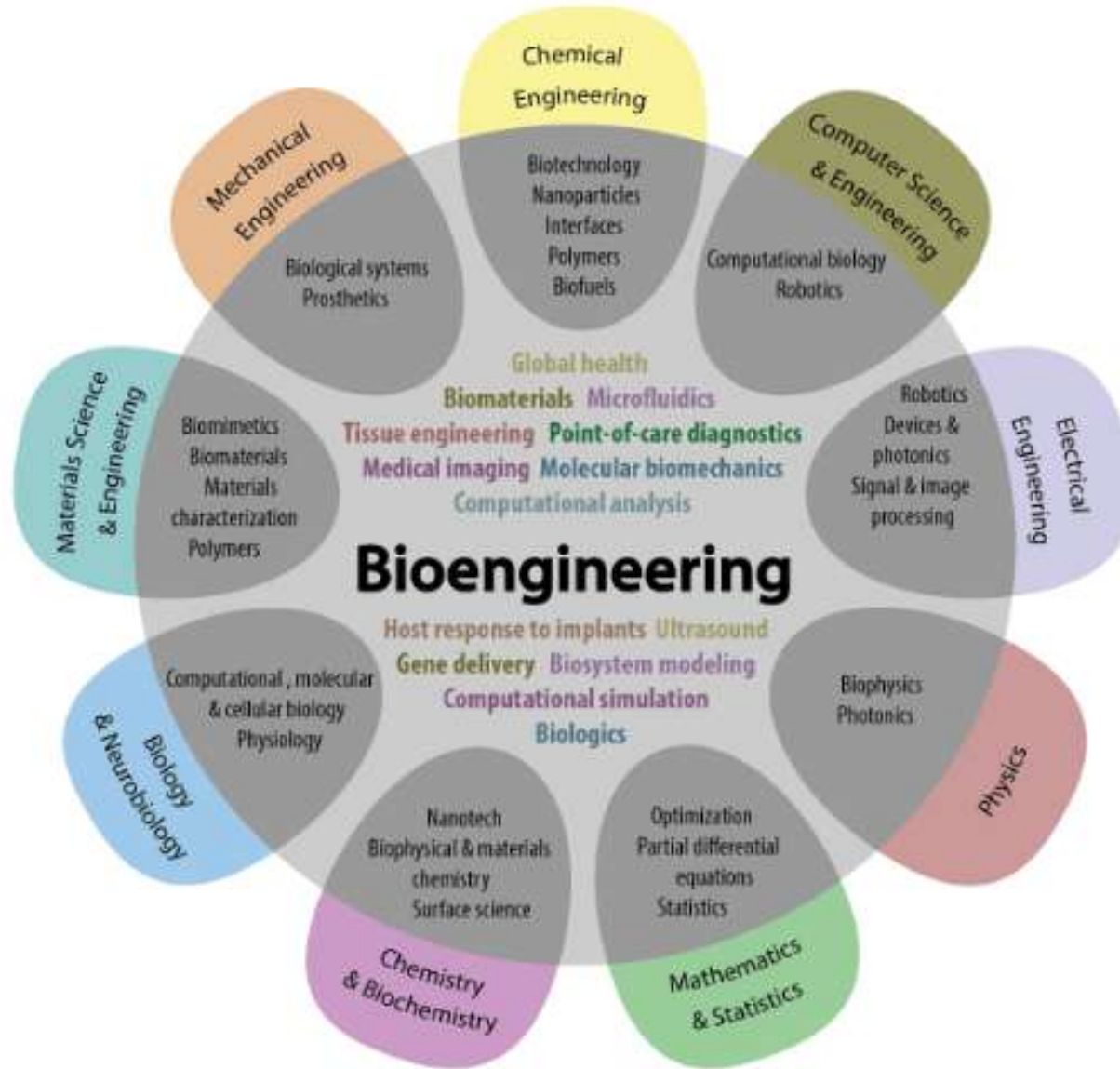
immune cells that protect against pathogens



Bioengineering

applies engineering principles of design and analysis to biological systems and biomedical technologies

<https://bioeng.berkeley.edu/about-us/what-is-bioengineering>



<https://bioe.uw.edu/academic-programs/about-bioengineering/>



Any Questions, Comments, Concerns?

If yes, send me a remind message now!