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UNIFYING THEMES

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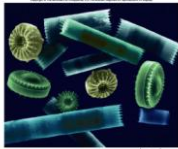
CELL THEORY
DESCRIBES THE
ORGANIZATION OF
LIVING SYSTEMS

- Cell theory 1839
 - living things are made of cells
- cells come from other cells
 - all cells have membranes
 - all cells have DNA (at some stage)

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Two main cells types

1. prokaryotic – simple (bacteria, archaea)
2. eukaryotic – compartments, nucleus (protists, plants, animals, fungi)



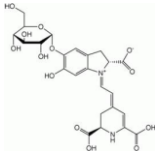

Do they both have DNA?

How big is a micron?

51 μm
Protist (single cell, but organized)

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Betacyanin



The slide features the title 'Betacyanin' at the top. Below the title, on the left, is a simple yellow lightbulb icon. To the right of the lightbulb is the chemical structure of Betacyanin, a complex organic molecule with a central nitrogen atom, multiple hydroxyl groups, and a carboxylate group.

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Absorbance measured in AUs

- MUST be converted to concentration
- LAMBERT/BEER equation /Law

$$A = \epsilon lc$$

- ϵ = epsilon = molar coefficient (standardizes to 1cm/1M)
- l = length (how far light travels)
- c = concentration

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LAMBERT BEER (OR BEER LAMBERT)

- Concentration and absorbance are related
(intuitive)

In lab find absorbance (A), but we want to know (and graph) concentration (C)

$$A = \epsilon cl$$
$$c = A/\epsilon l$$

ϵ = molar coefficient (for betacyanin 38,000 L/mole-cm)
 l = length of light path (for ours, 1.2 cm)

$$c = \frac{A}{0.0456 \text{ uM}}$$
