



# Ecotoxicology TP Course

Concepts, Tests & Biomarkers

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MARE – Marine and Environmental Sciences Centre



# TP4 Pigment Profiling

**Control****10 ug/L Glifosato****250 ug/L Glifosato****500 ug/L Glifosato**

## PROTOCOL

- Add 2 mL acetone to the pellet
- Sonicate the samples;
- Store at -20 °C
- Centrifuge;
- Read the absorbance

$$\text{Chl a} = -2,6839 \times A_{632 \text{ nm}} + 13,2654 \times A_{665 \text{ nm}}$$

$$\text{Chl c} = 28,8191 \times A_{632 \text{ nm}} - 6,0138 \times A_{665 \text{ nm}}$$

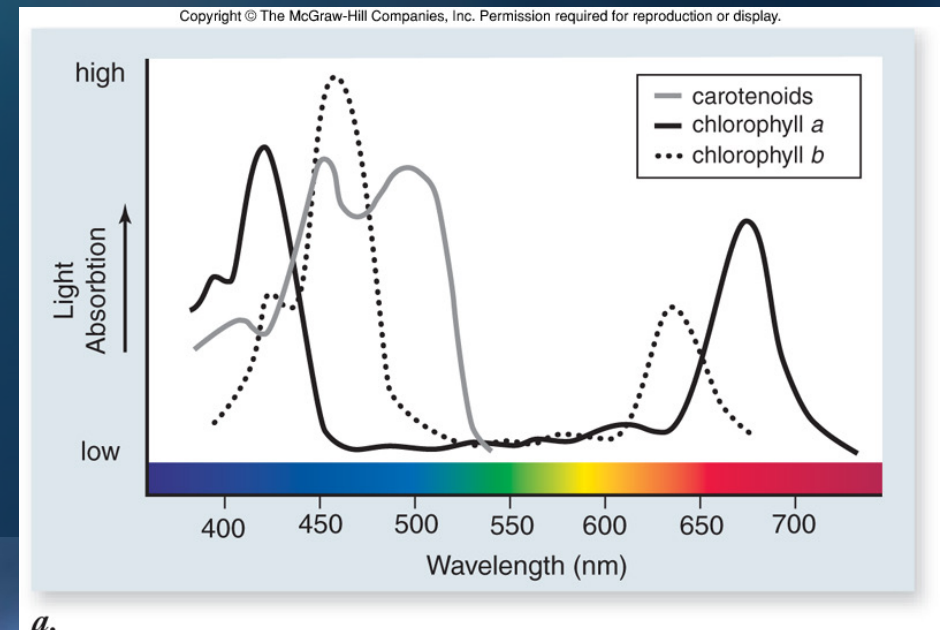
$$C + X = (1000 \times A_{470 \text{ nm}} - 2,13 \times \text{Clorofila a} - 97,63 \times \text{Clorofila c}) / 209$$

*PIGMENTS ARE LIGHT-ABSORBING COLORED MOLECULES.*

*DIFFERENT PIGMENTS ABSORB DIFFERENT WAVELENGTHS OF LIGHT.*

*CHLOROPHYLLS ARE THE MAJOR LIGHT-ABSORBING PIGMENTS IN PLANTS.*

*THEY ABSORB ENERGY FROM VIOLET-BLUE LIGHT AND REFLECT GREEN LIGHT, GIVING PLANTS THEIR GREEN COLOR.*



## *ROLE OF ACCESSORY PIGMENTS:*

*ACCESSORY PIGMENTS HELP PLANTS ABSORB ADDITIONAL LIGHT. PLANTS NEED TO MAKE THESE ACCESSORY PIGMENTS TO MAXIMIZE THE AMOUNT OF PHOTOSYNTHESIS THEY CAN DO.*

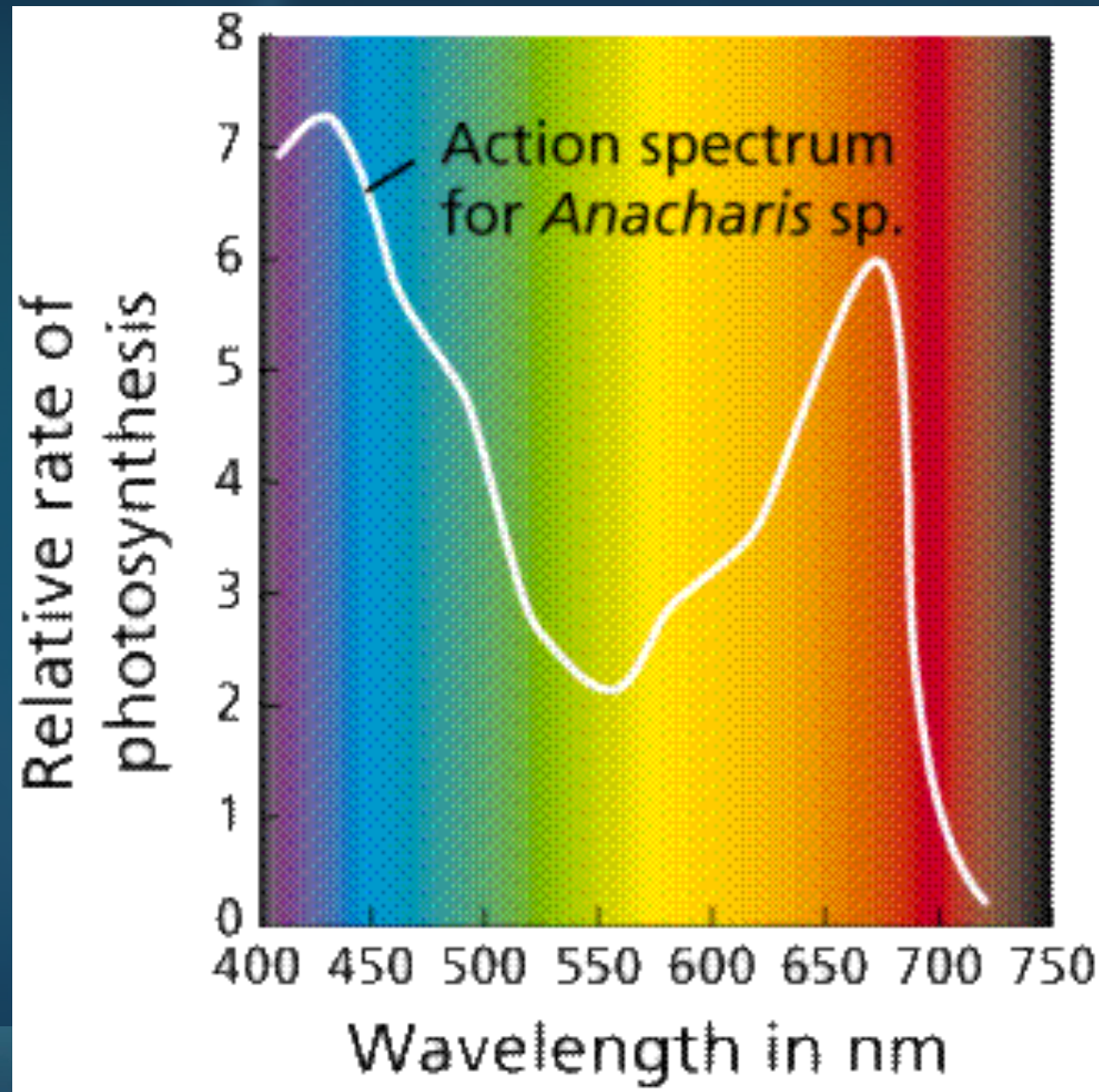
*MORE PIGMENTS = MORE GLUCOSE OR FOOD FOR THE PLANT!*

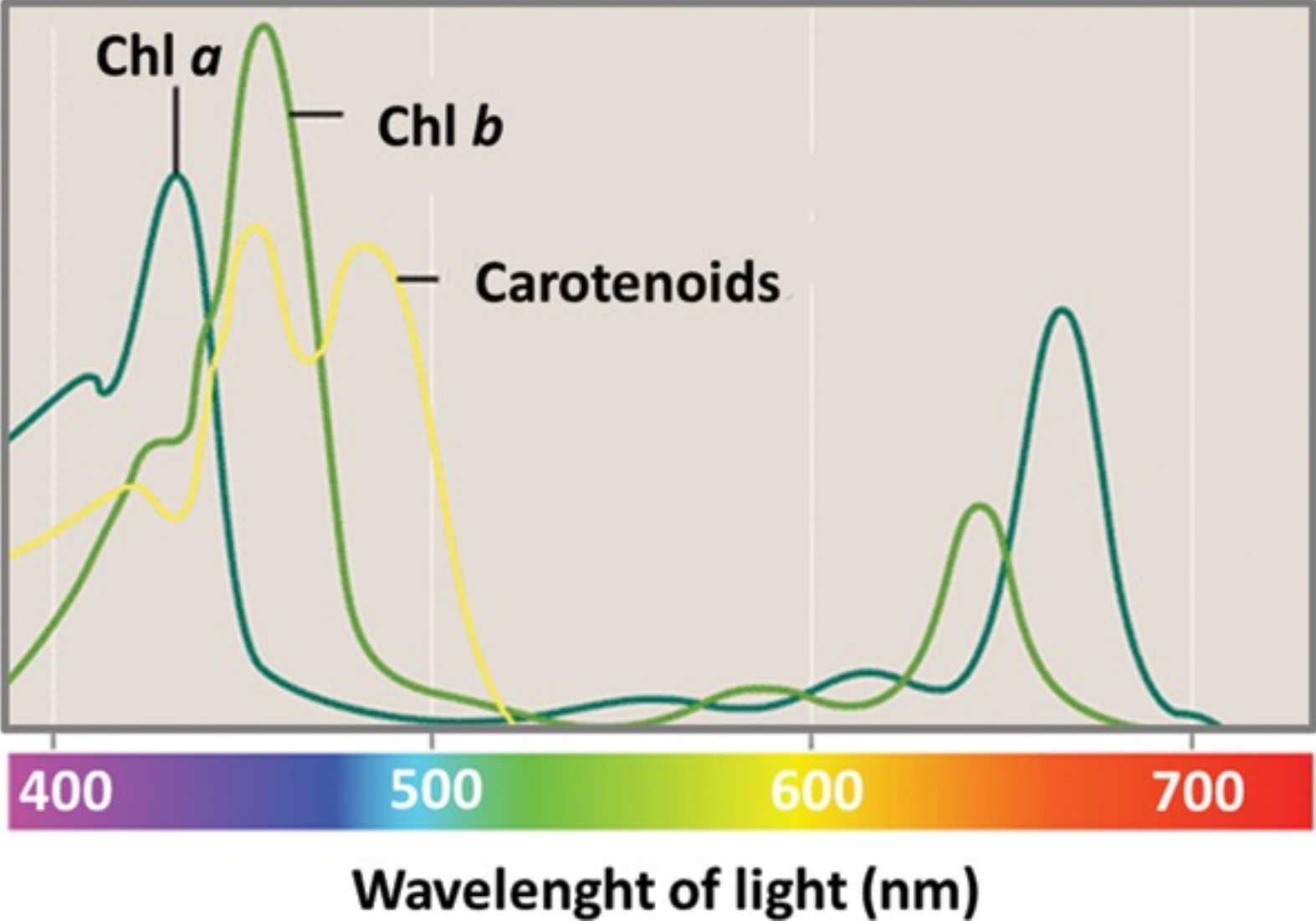
*CAROTENOIDS: REFLECT YELLOW, ORANGE, AND RED LIGHT.*

*CAROTENOIDS GIVE CARROTS AND SWEET POTATOES THEIR ORANGE COLOR.*

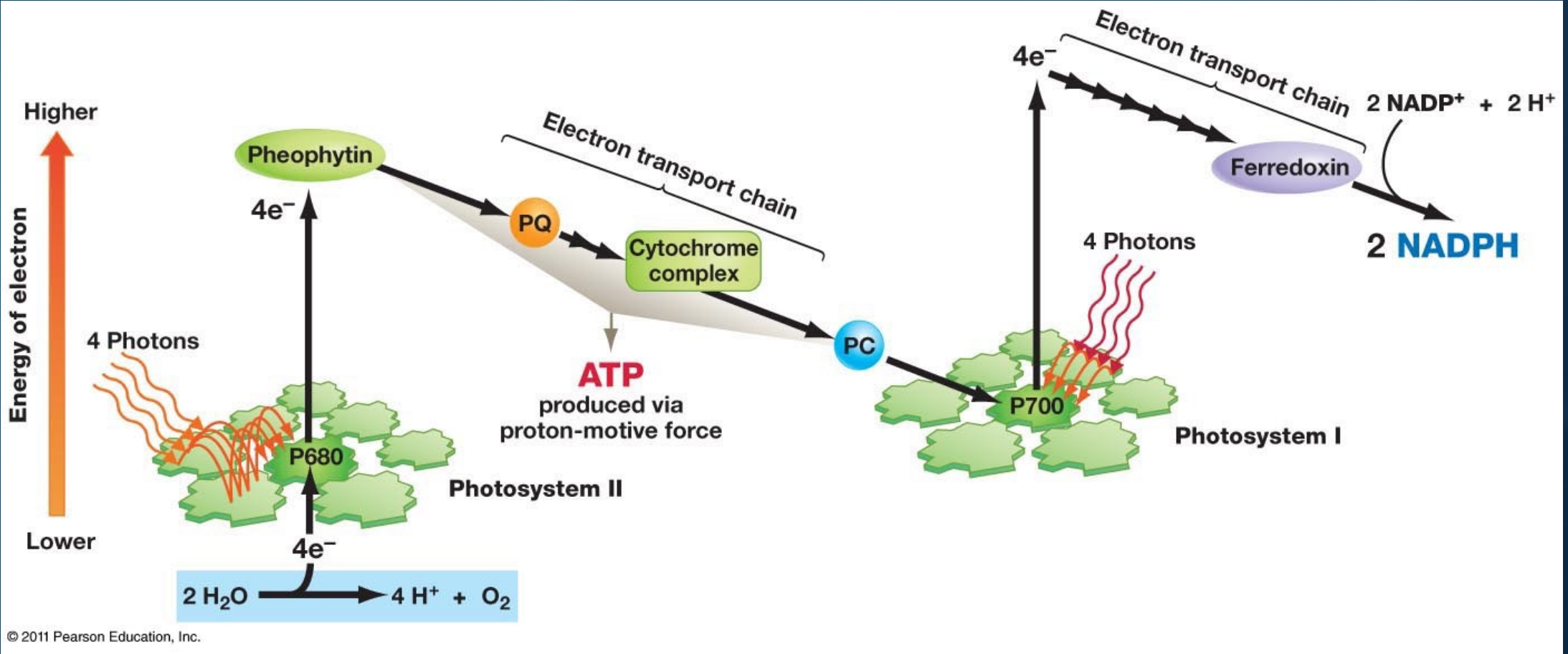
*ANTHOCYANS: REFLECT RED, BLUE, VIOLET LIGHT.*

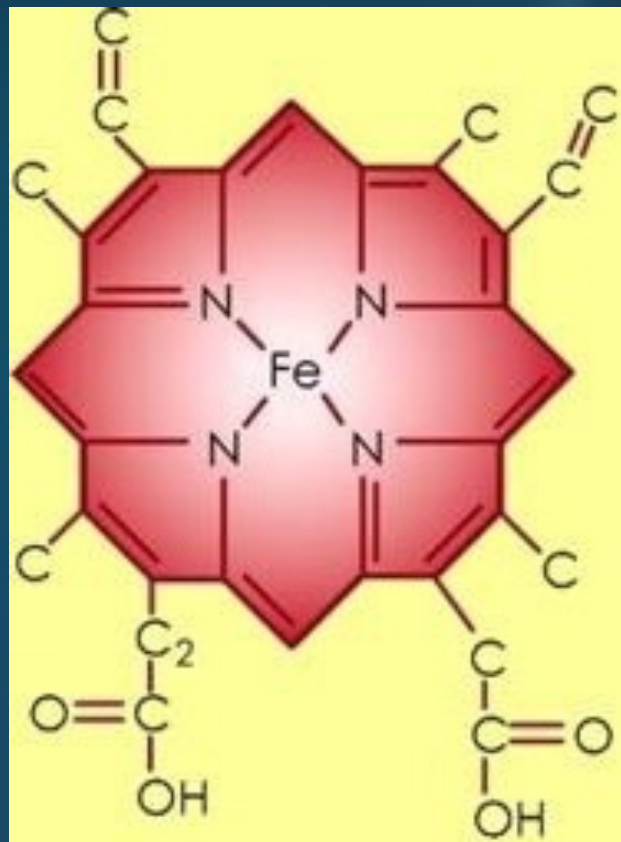
*XANTHOPHYLLS: REFLECT YELLOW LIGHT.*



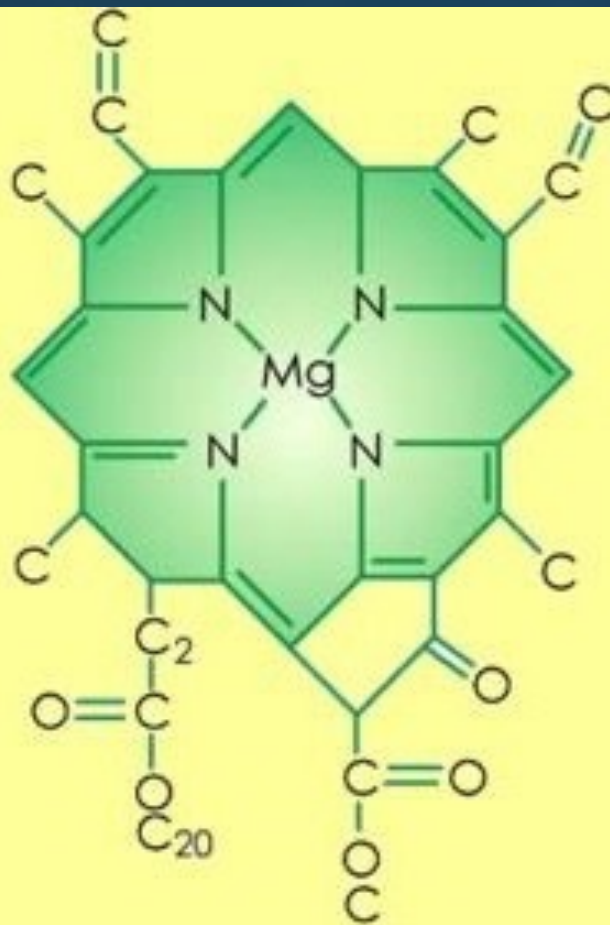






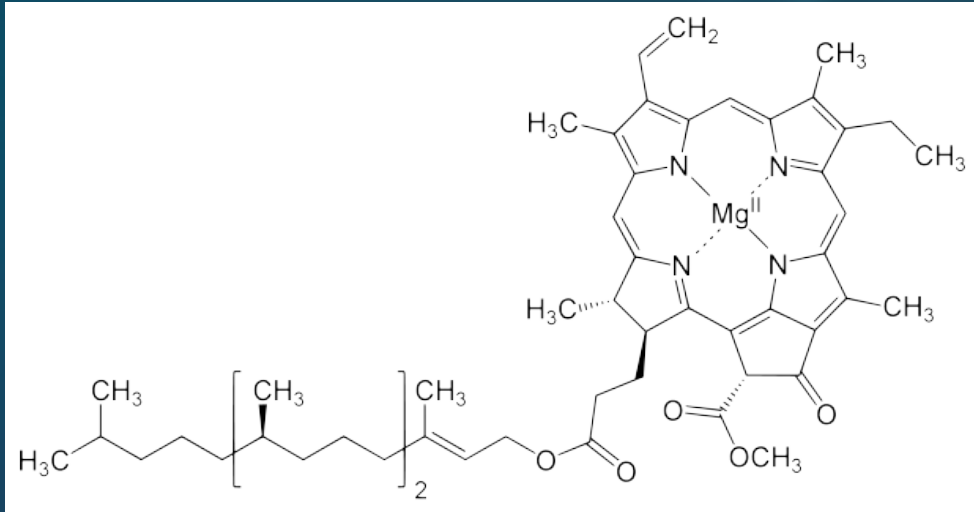


Human Blood  
Hemoglobin

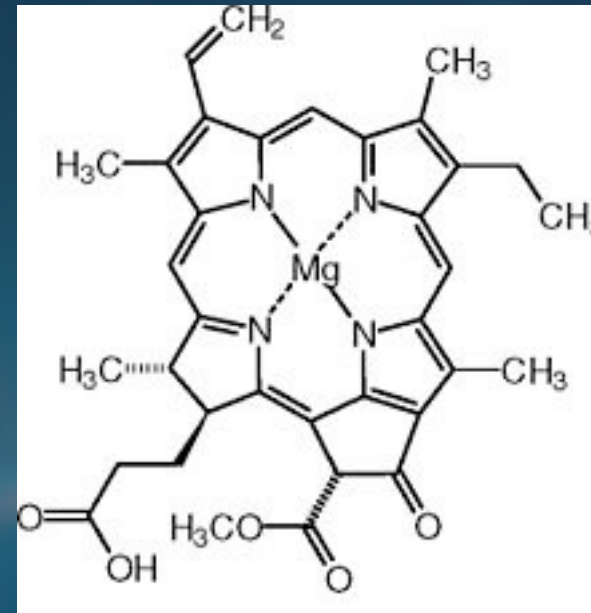


Plant Chlorophyll

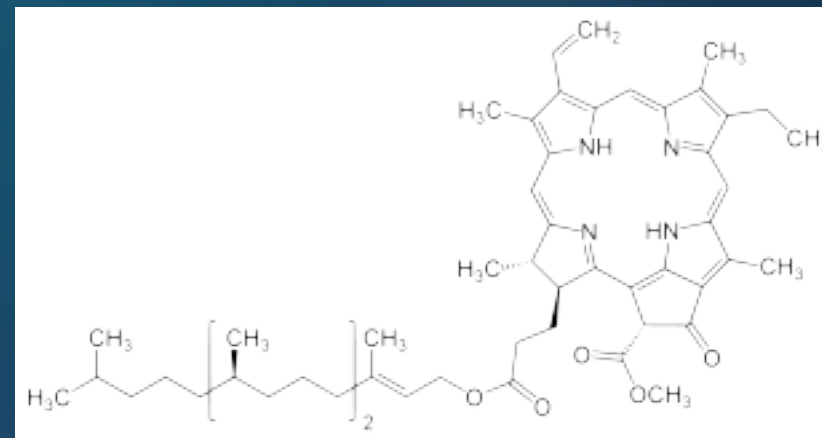
# CHLOROPHYLL DEGRADATION PRODUCTS



*Chlorophyll a*



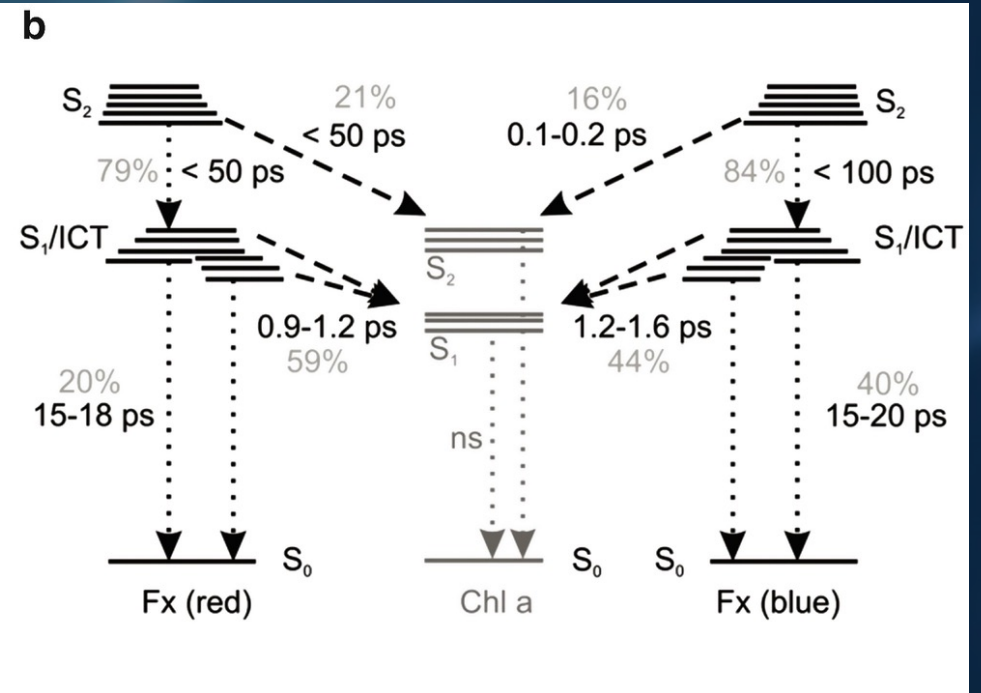
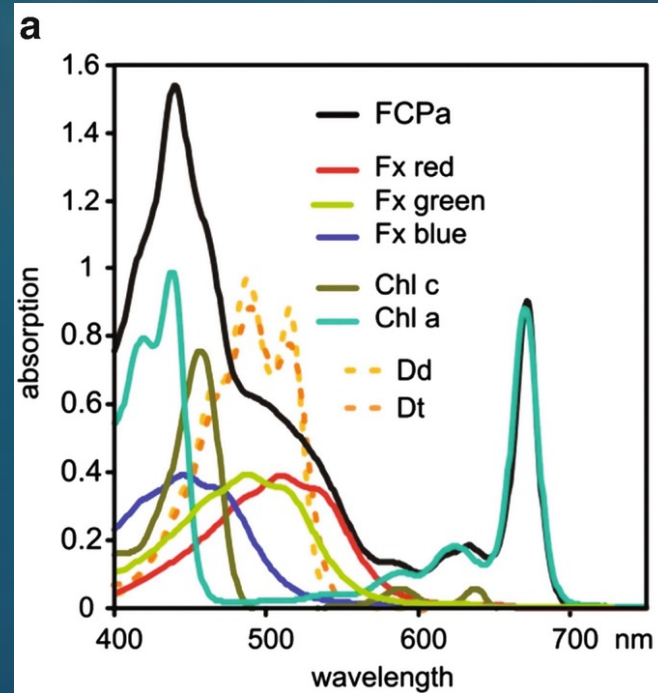
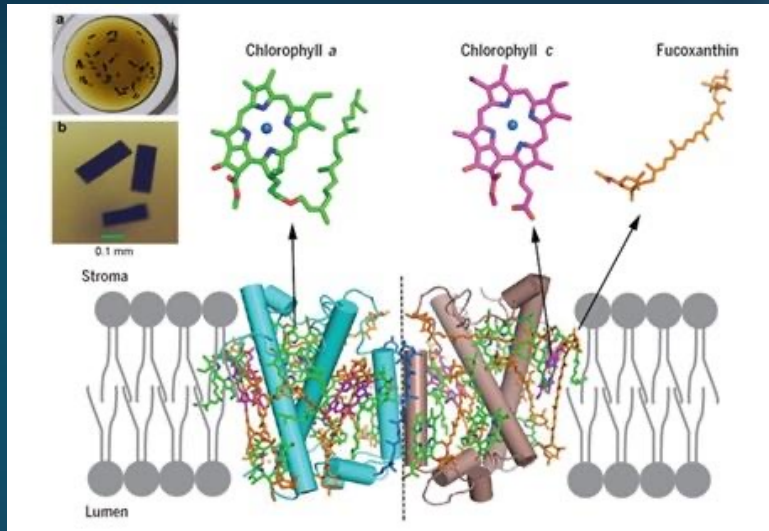
*Chlorophyllide a*

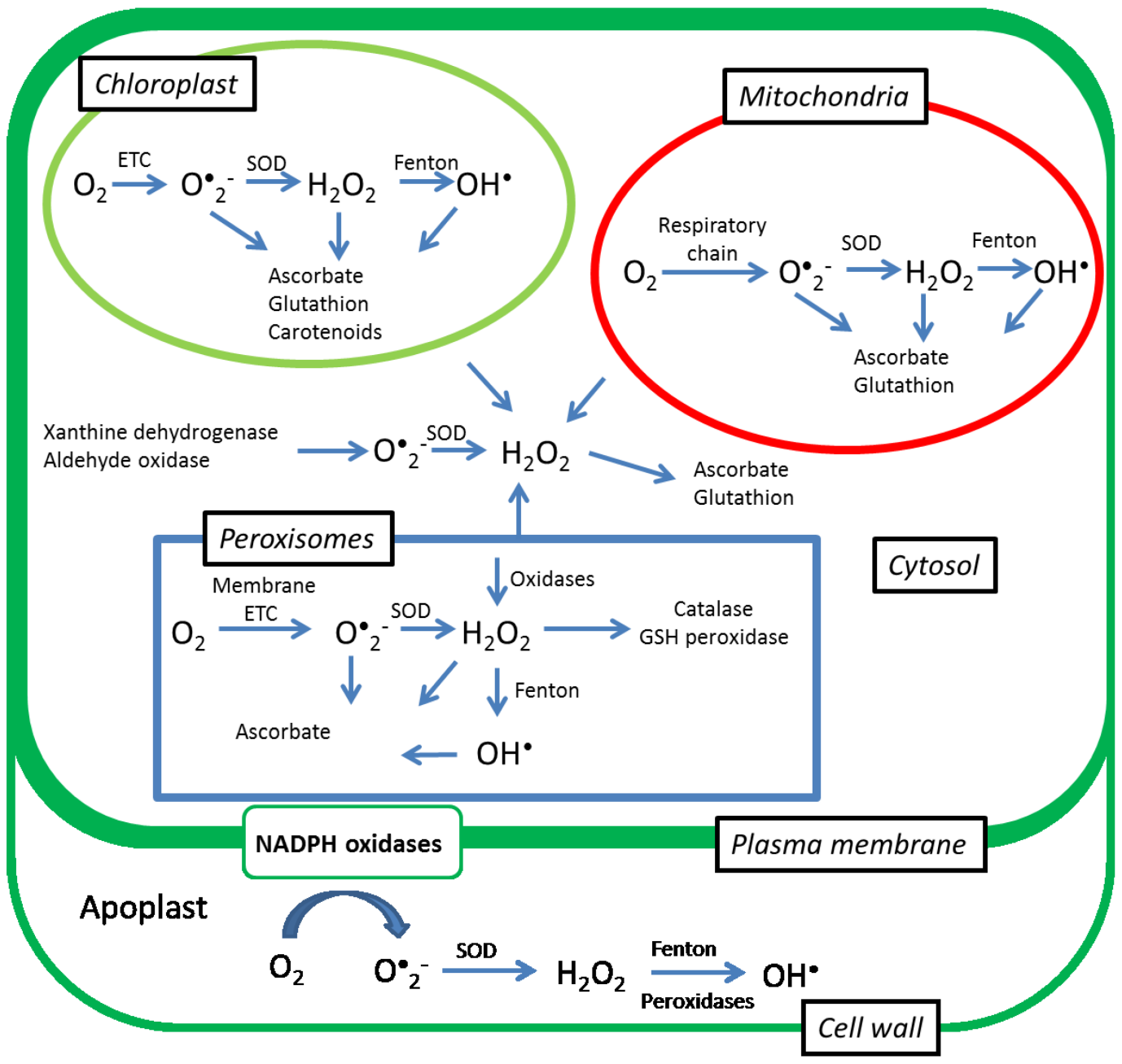


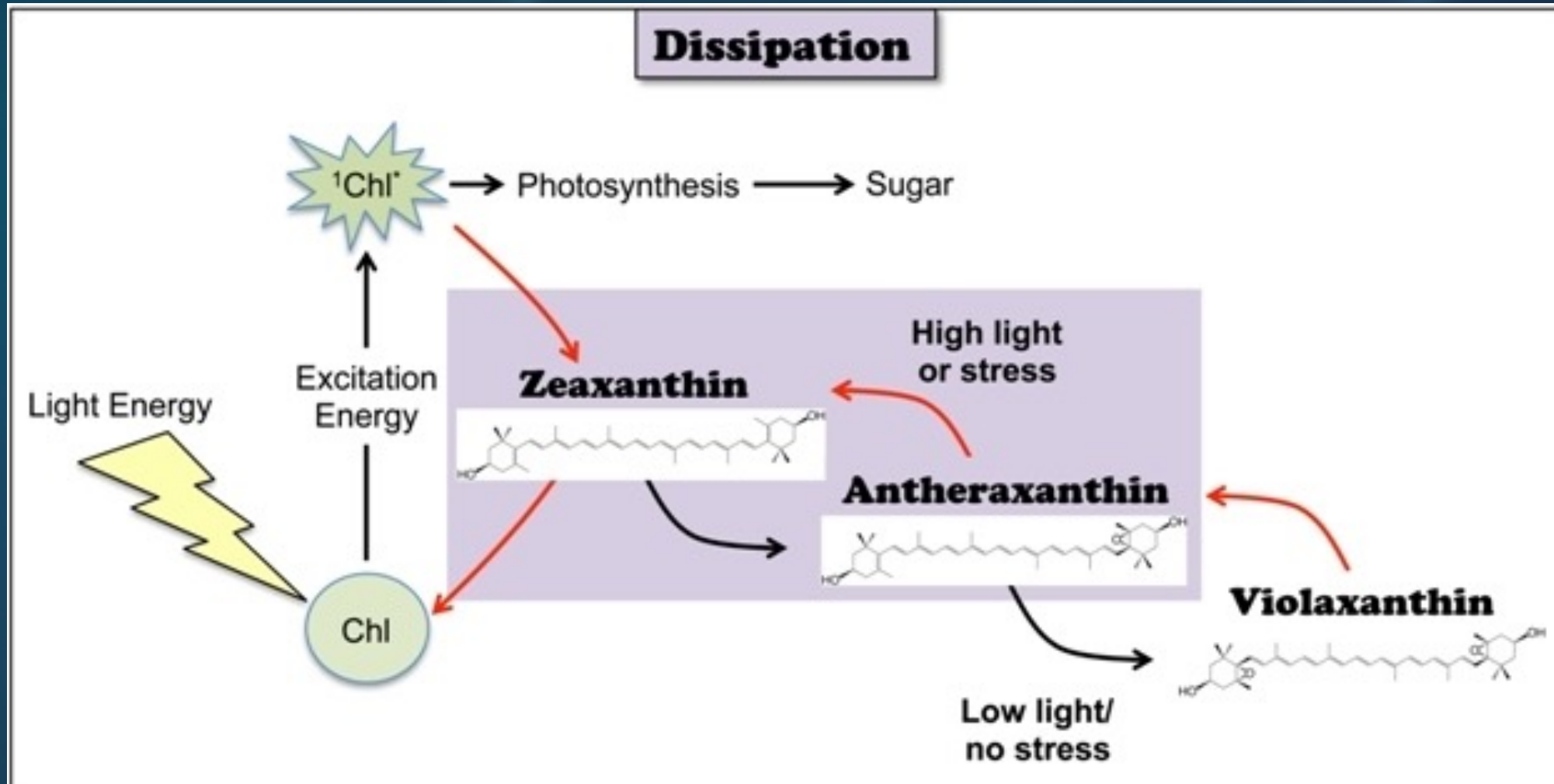
*Pheophytin a*

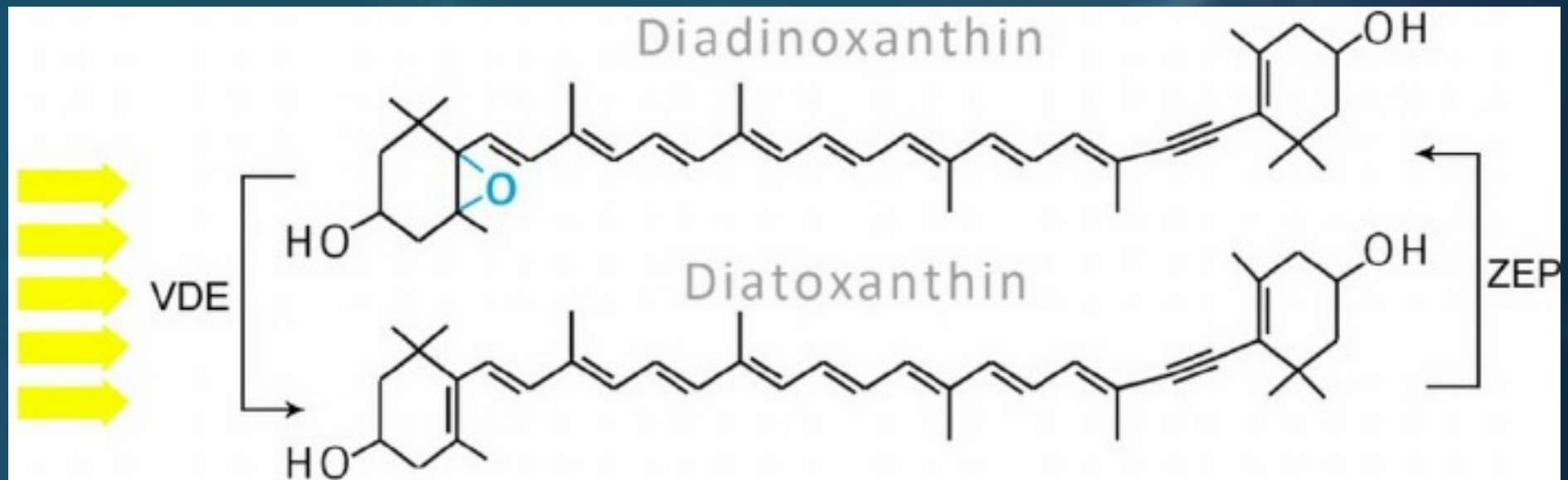


# FUCOXANTHIN LIGHT HARVESTING



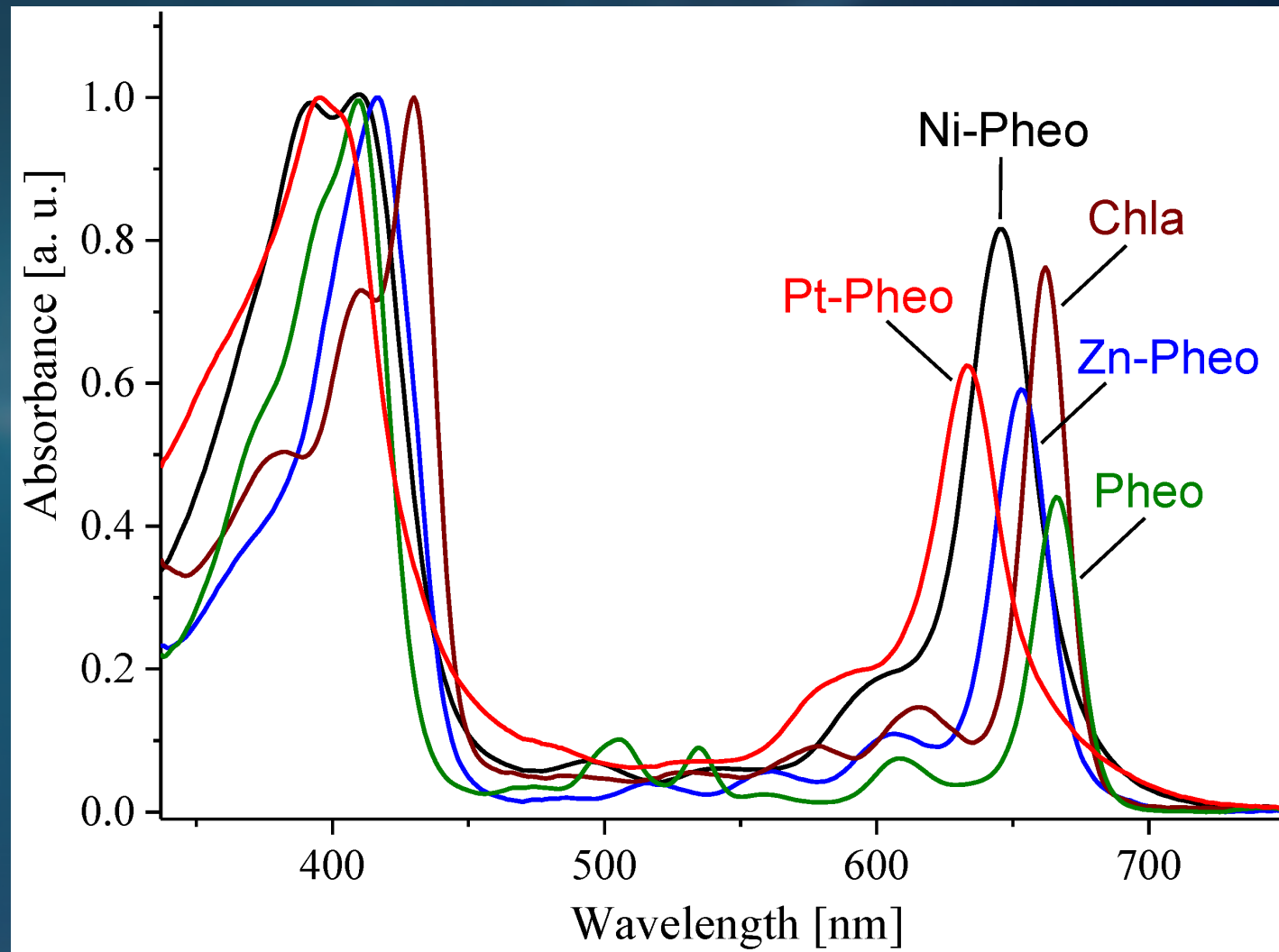
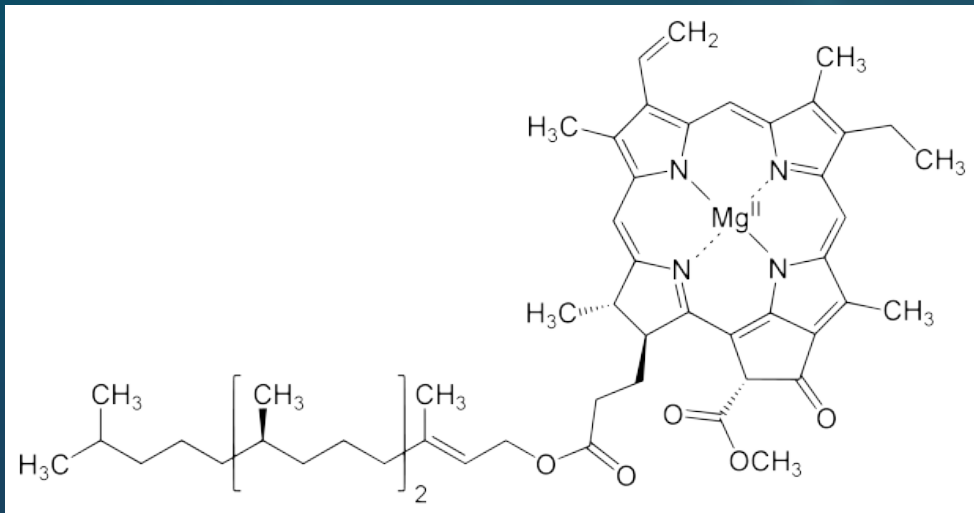




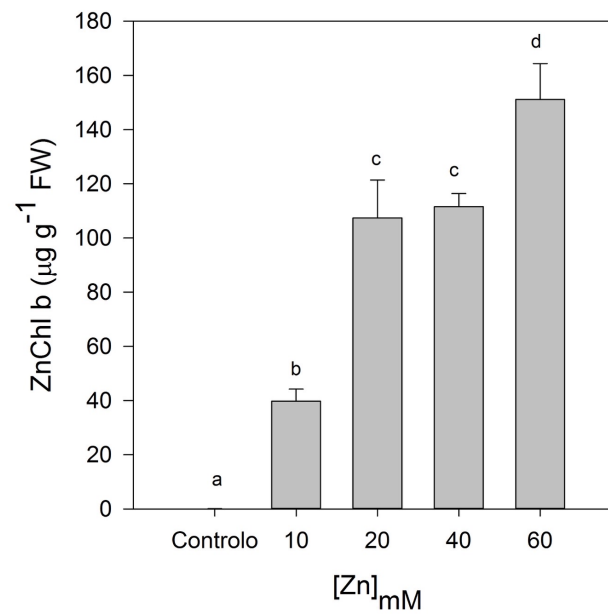
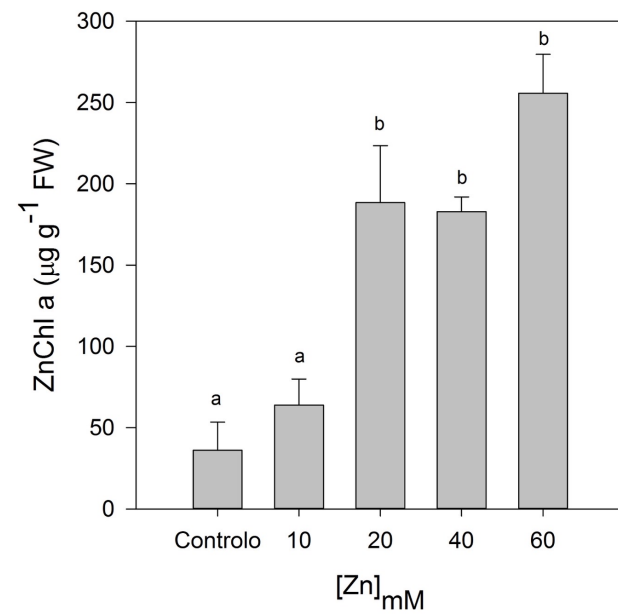
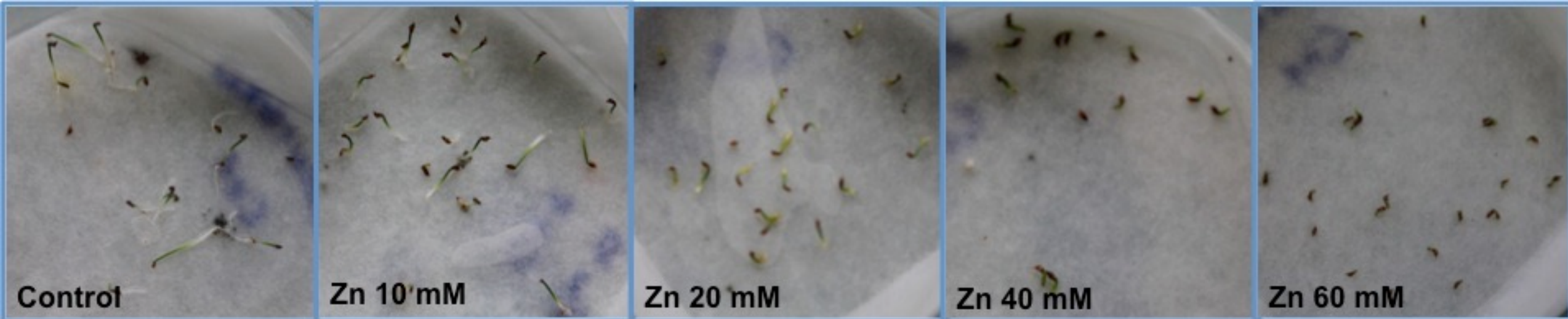




# HM-SUBSTITUTED CHLOROPHYLLS



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