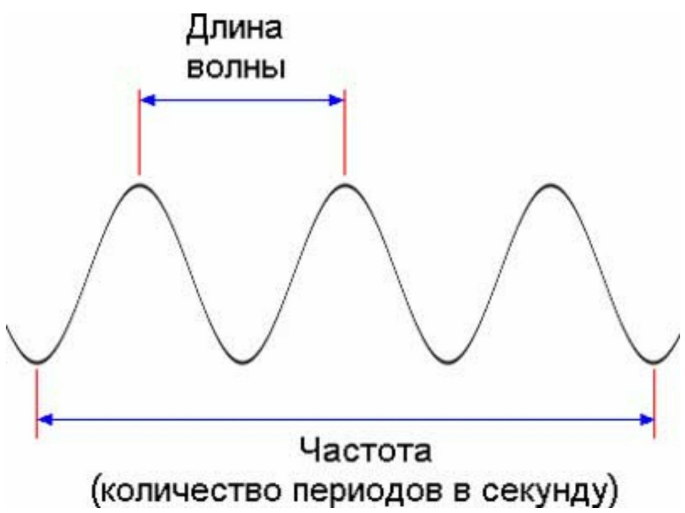
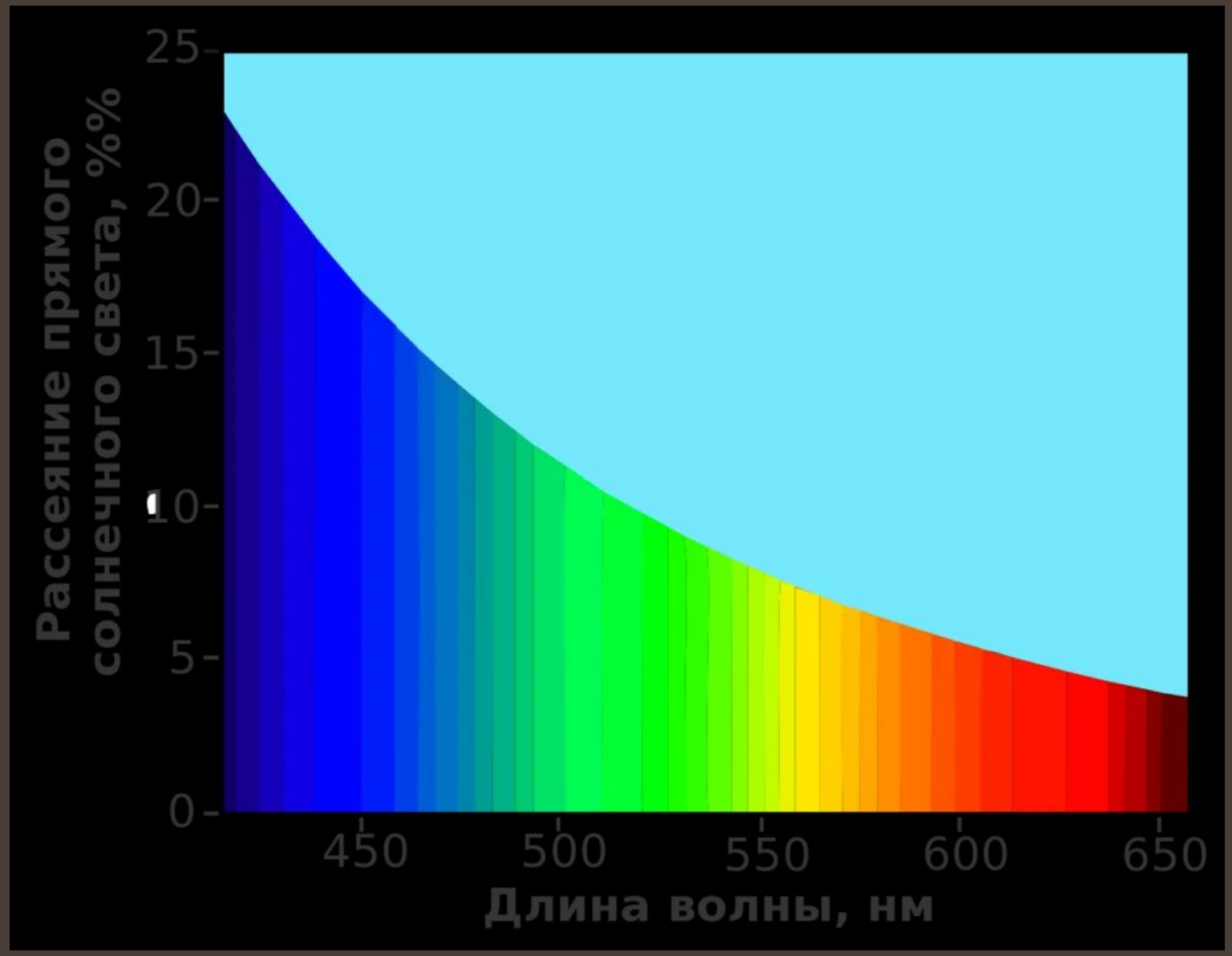
Свет и цвет

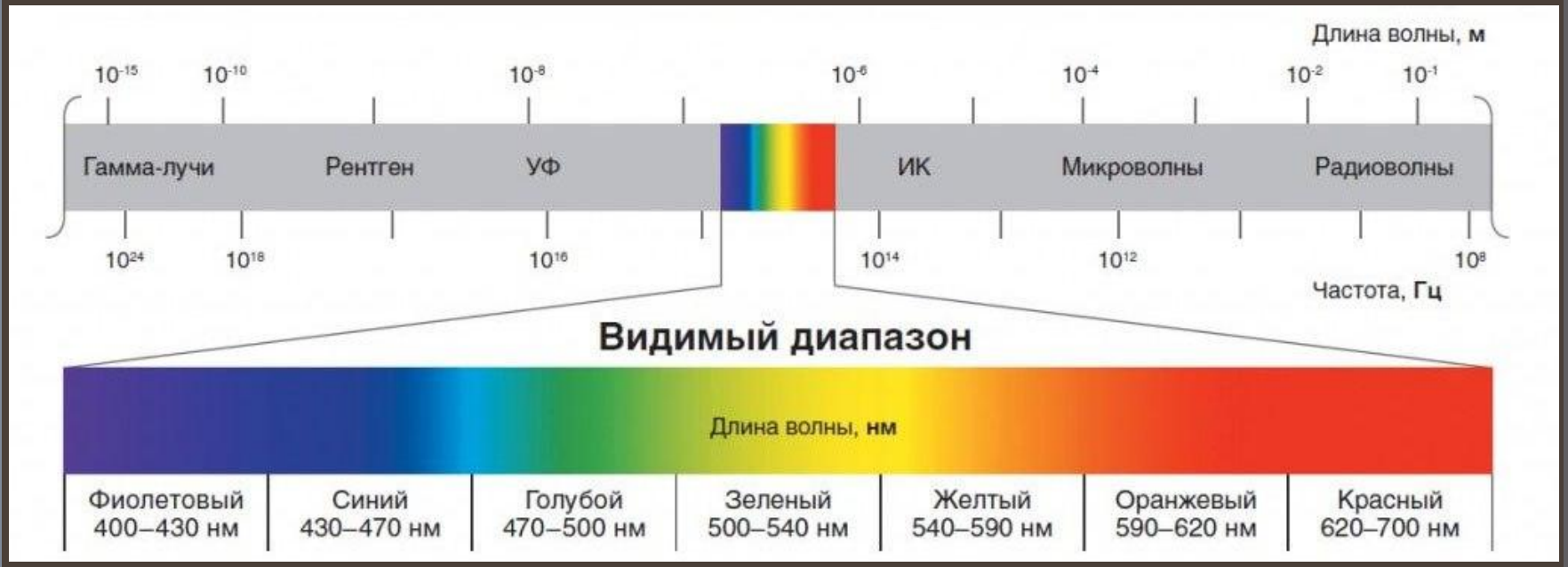
Естествознание, 10 класс

Спектр излучения Солнца

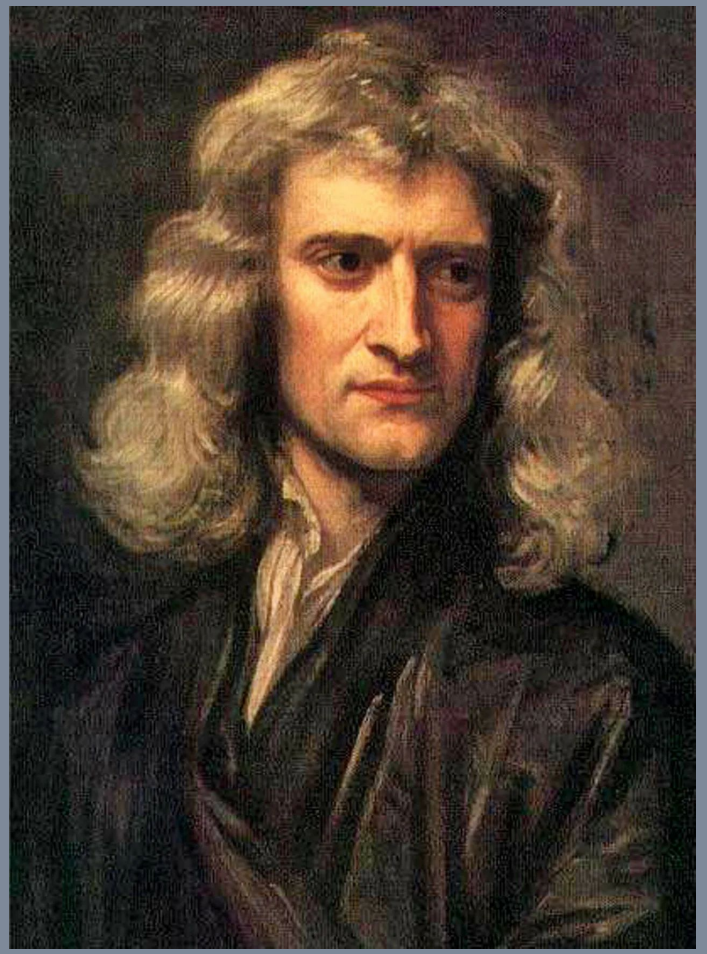


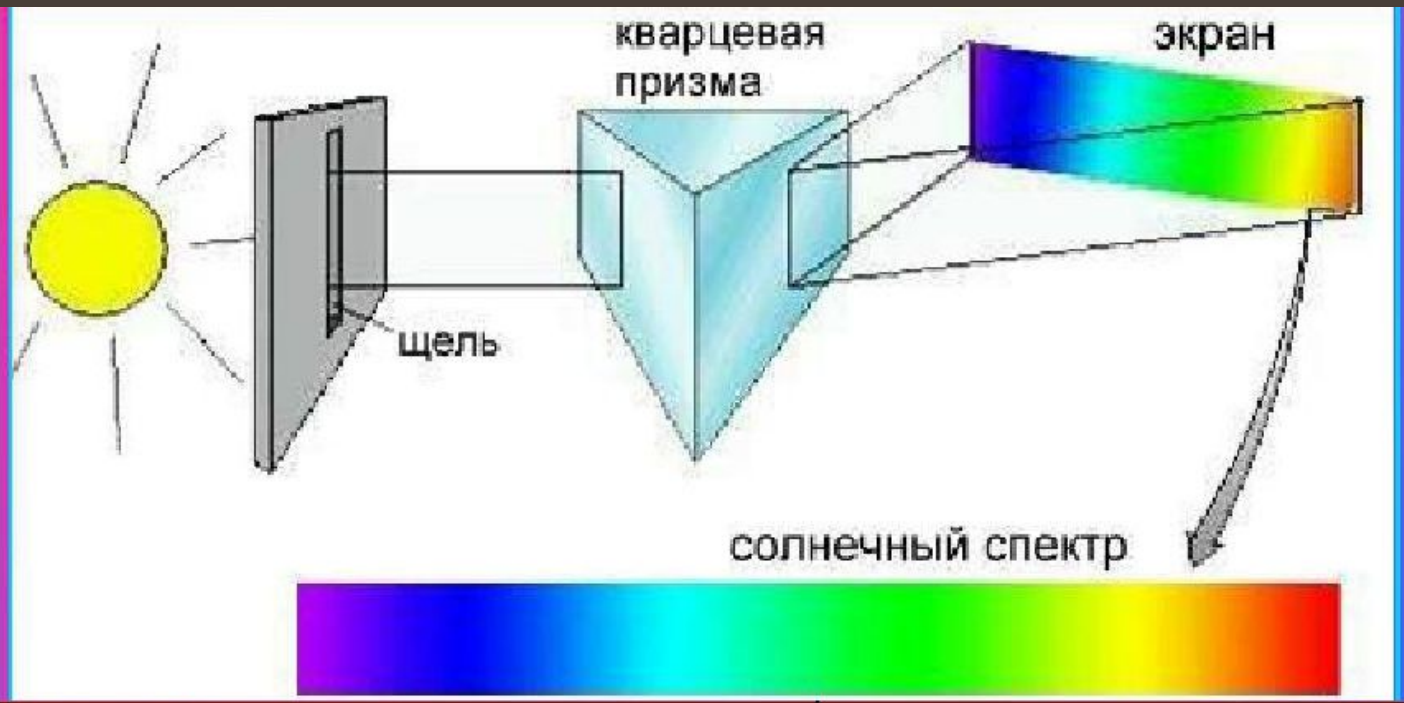


Шкала электромагнитного излучения



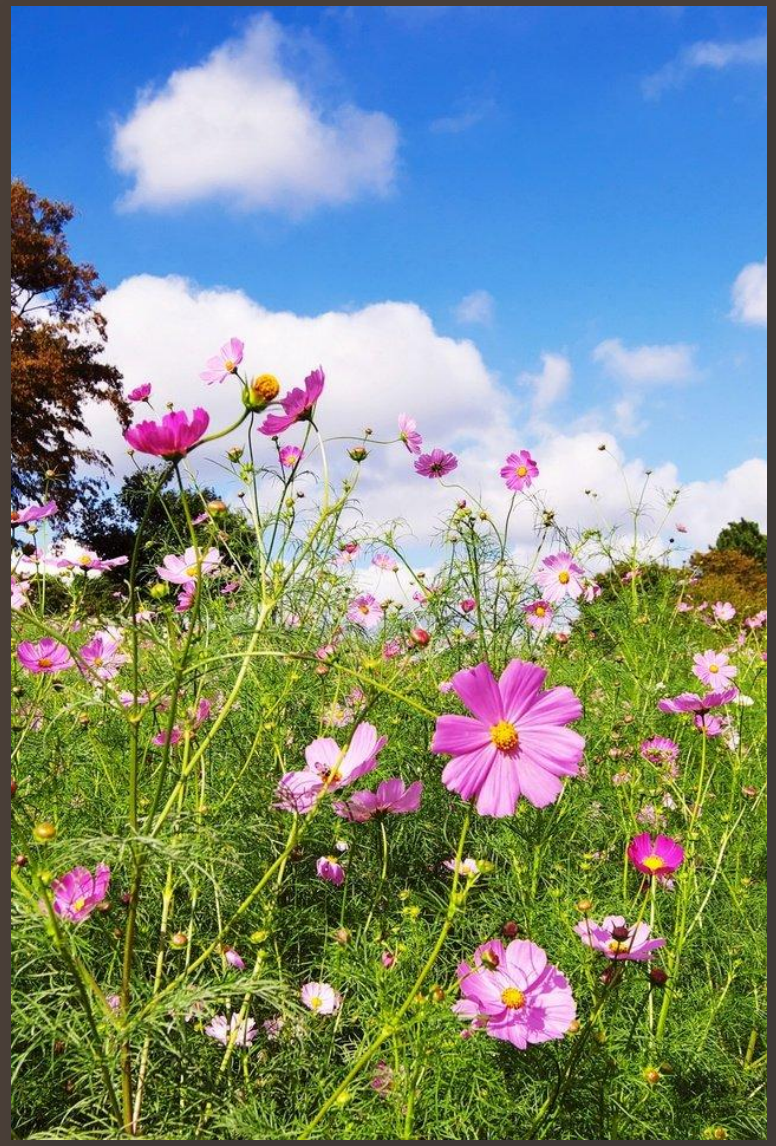
Исаак Ньютон



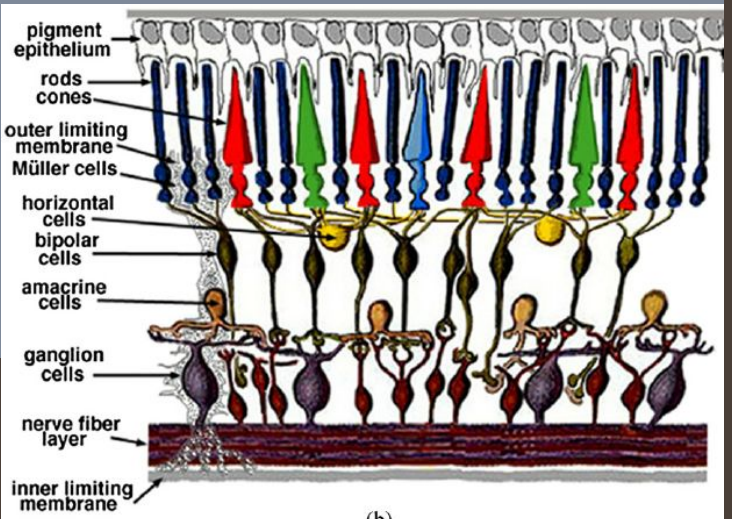


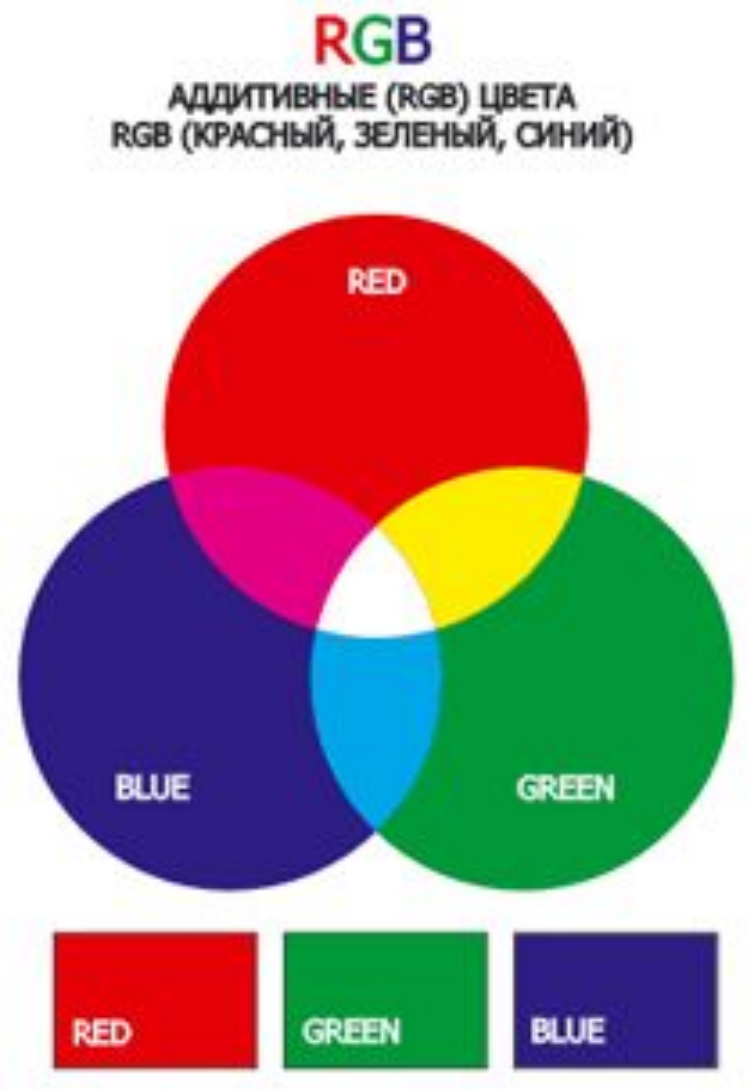
Красный	625 – 740
Оранжевый	590 – 625
Желтый	565 – 590
Зеленый	500 – 565
Голубой	485 – 500
Синий	440 – 485
Фиолетовый	380 – 440

Почему мы видим цвета?



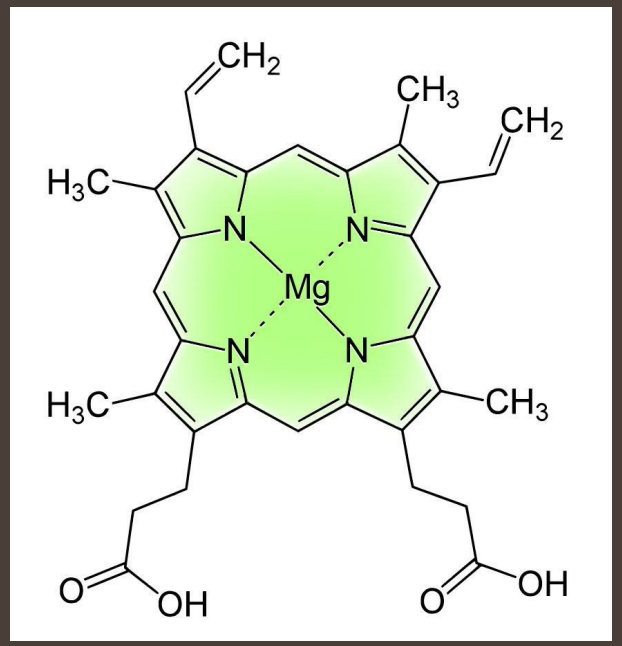
Восприятие цвета Сетчатка

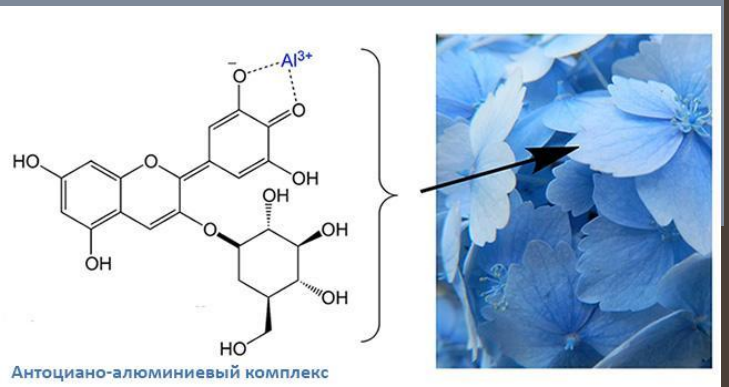


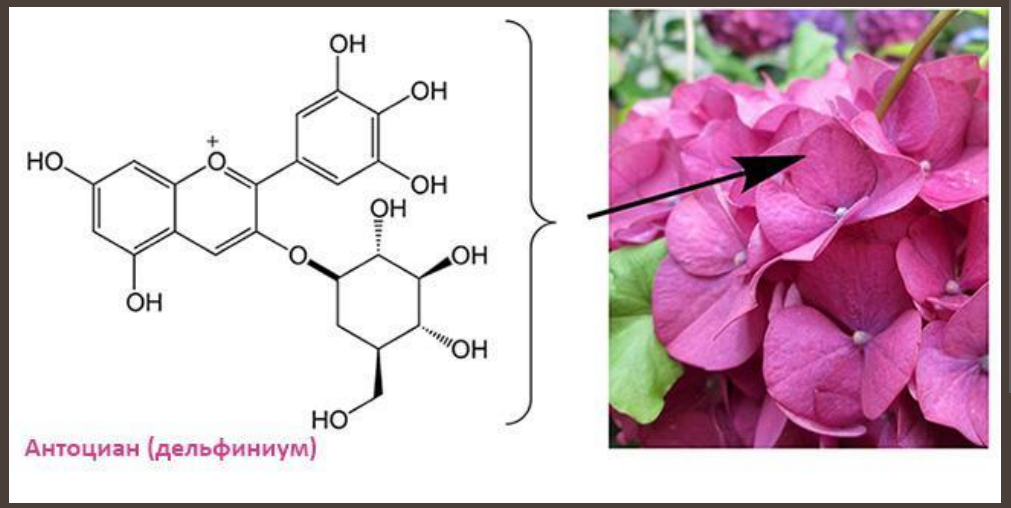


Важно – химический состав пигмента

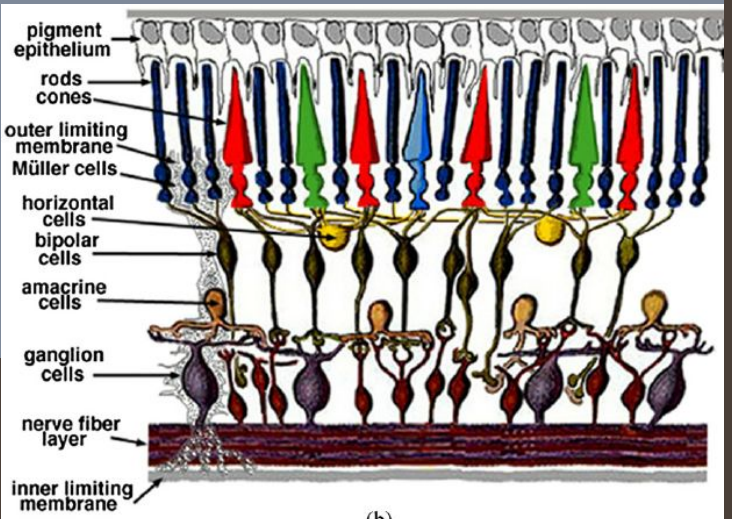
Химия цвета

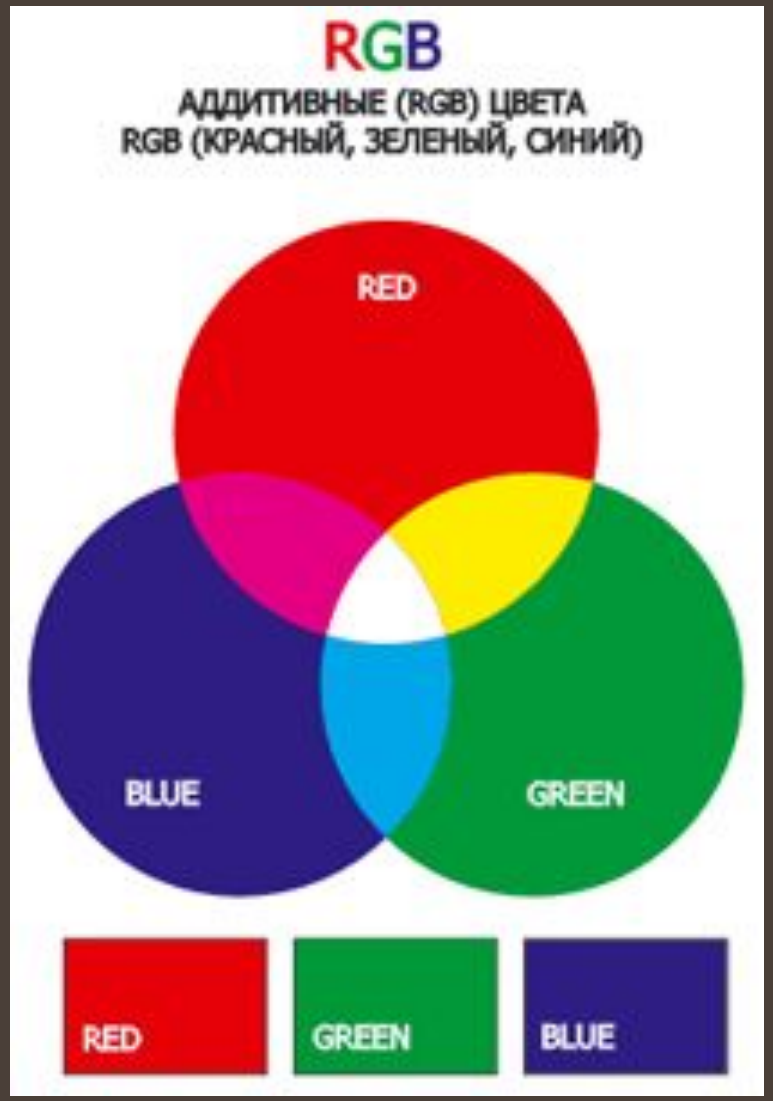

CH2
CH3
CH2
H3C
N
N
Mg
N
N
H3C
CH3
O
OH
O
OH


Al3+
HO
OH
OH
OH
OH
HO
Антоциано-алюминиевый комплекс


OH
OH
HO
OH
OH
OH
OH
OH
HO
Антоциан (дельфиниум)

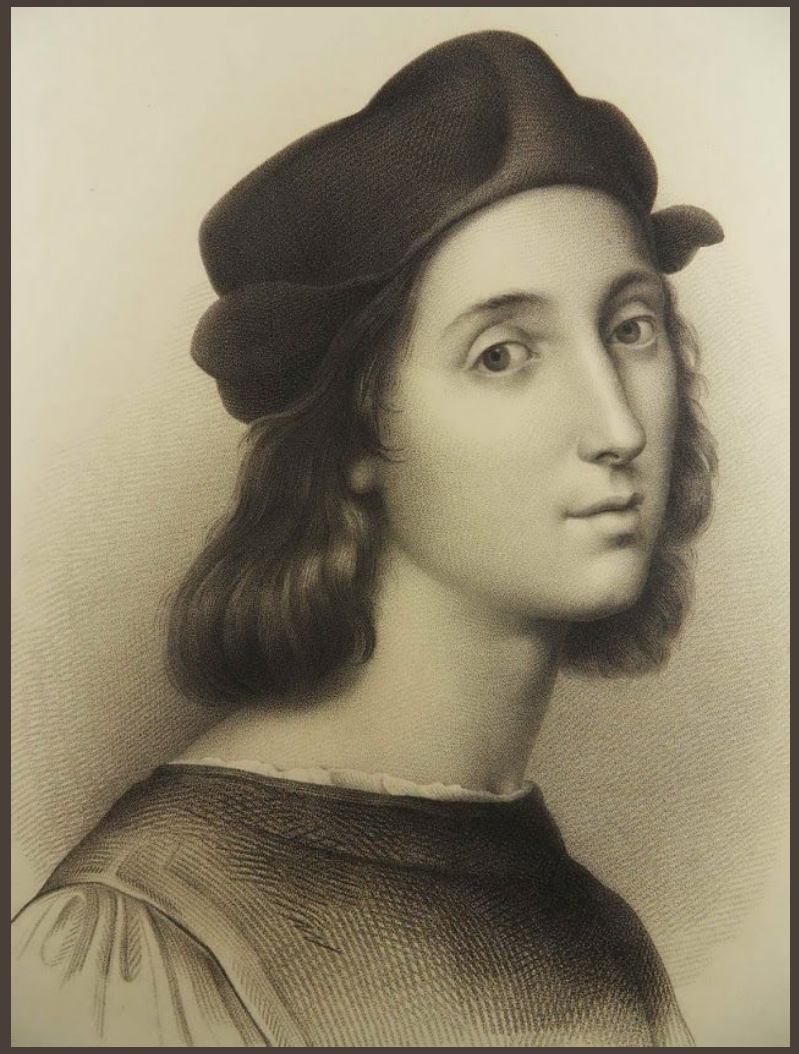
Восприятие цвета Сетчатка



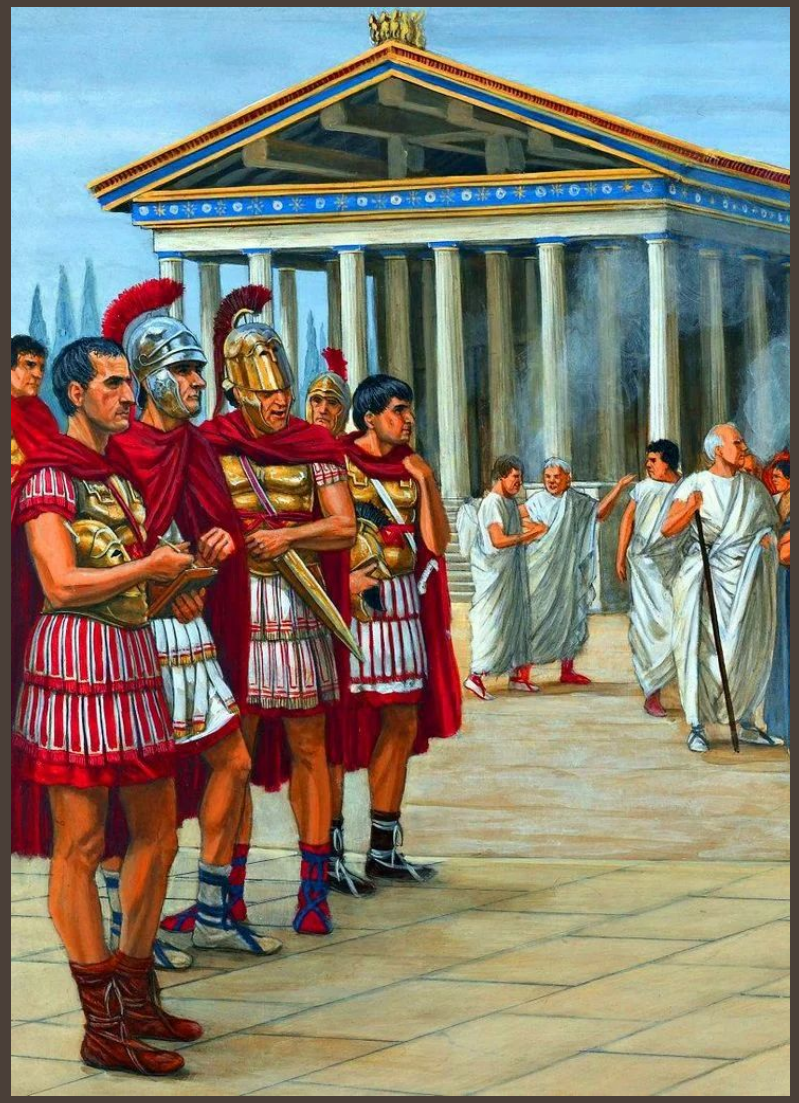


Важно – взаиморасположение частиц, создающих покров

Статусные цвета



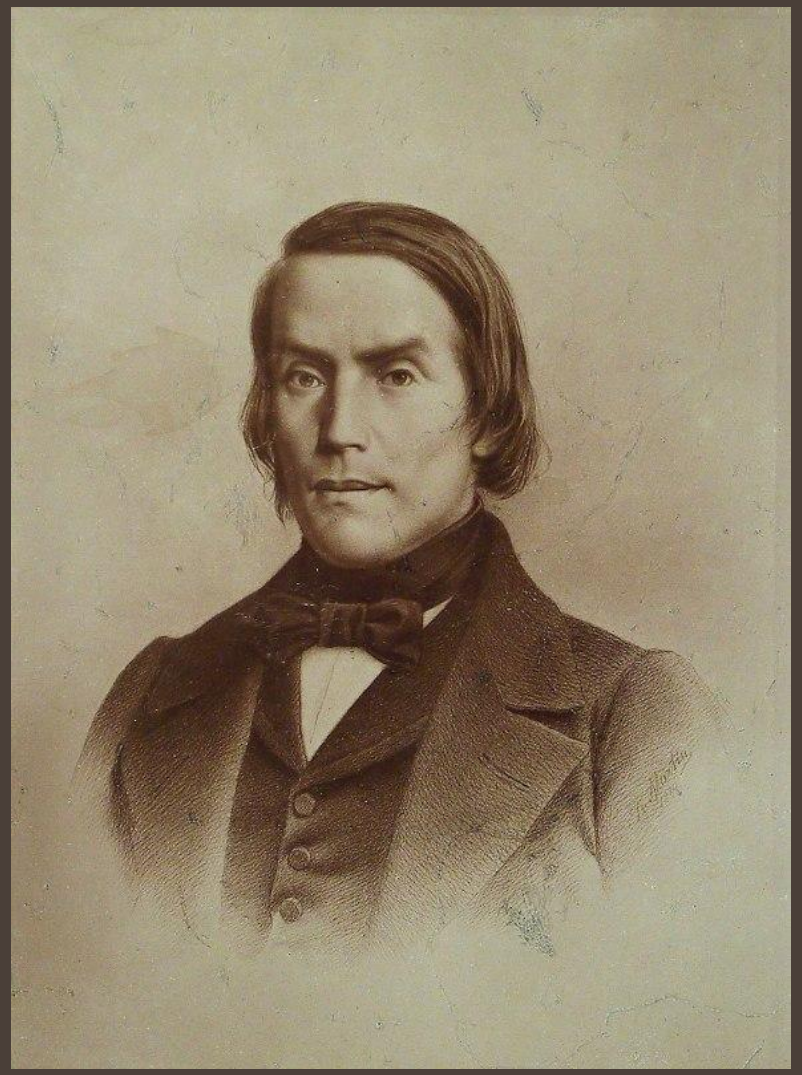
ИНДИГО



Невидимое излучение

Иоганн Риттер

Уильям Гершель



Ультрафиолет и инфракрасное излучение

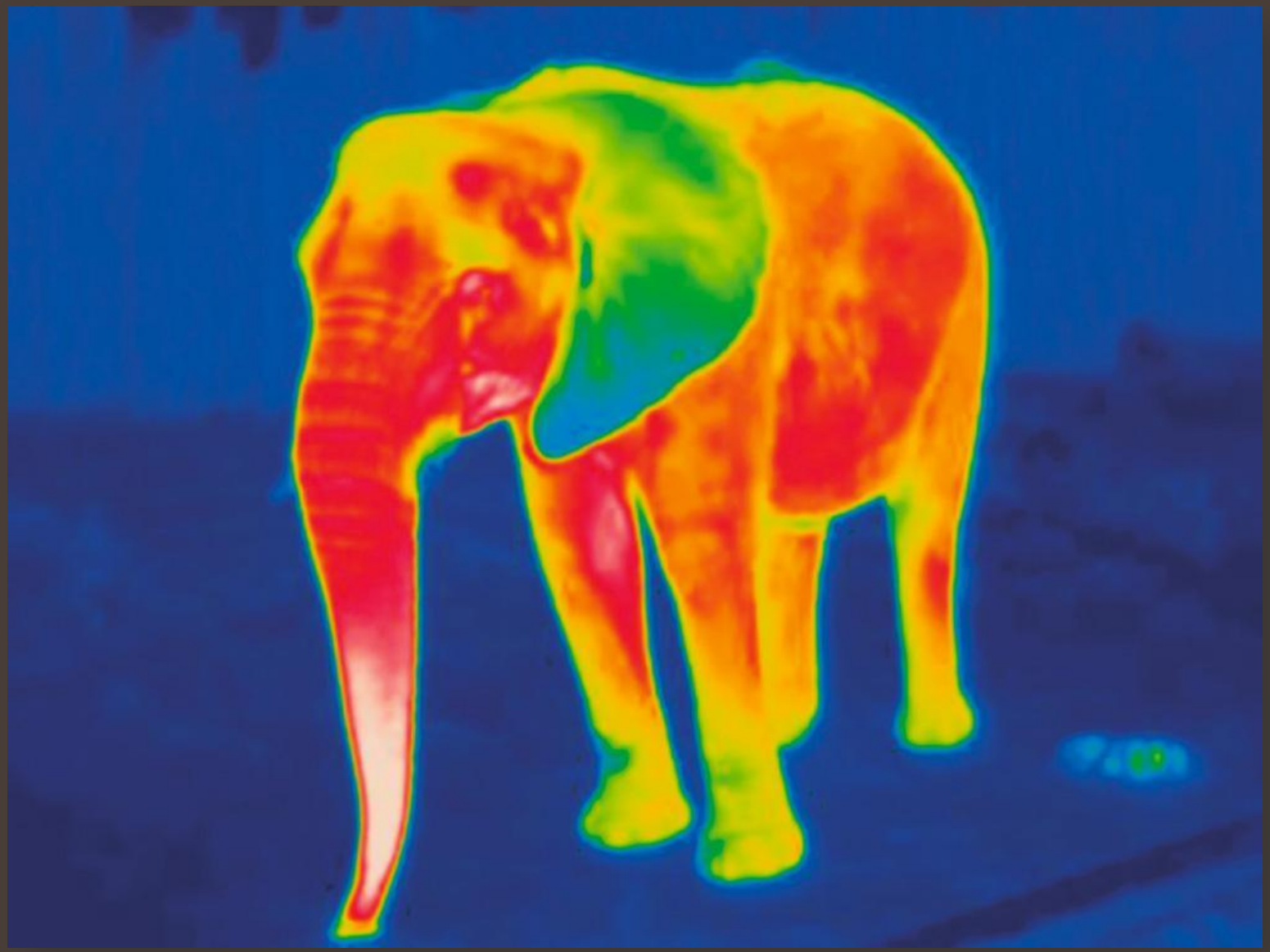
Насекомые и ультрафиолет

Пустельга и мышь

Ультрафиолет

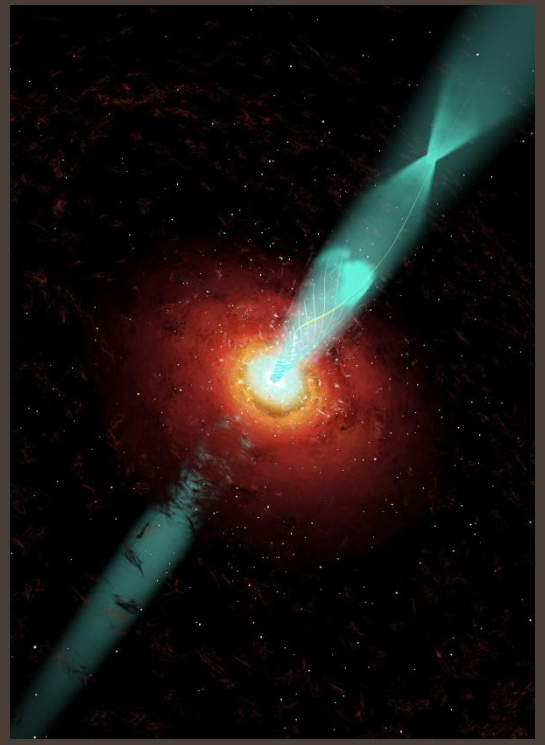
Моча мышей отражает ультрафиолет

Для чего слону нужны уши?



Красный – тепло; Синий – холод

Невидимое излучение



Рентгеновское излучение, гамма-излучение, микроволны