

# Sequence 3: seeing colors



## Fiches de synthèse mobilisée (collection en français) :

- Fiche n°3 : la vision des couleurs



## Sommaire des activités ETLV :

- ACTIVITY 1: what happens when we see a beach ball?
- ACTIVITY 2: brain diagram

### ACTIVITY 1: what happens when we see a beach ball?

Watch video <https://www.amnh.org/explore/ology/brain/seeing-color> on the American Natural History Museum website. Courtesy of the American Natural History Museum.

#### ■ Keywords:

After watching it a couple of times, write down the **keywords** that you hear:

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#### ■ Fill in the blanks:

Do not activate the transcript and try to fill in the missing words:

#### DOCUMENT 1: seeing color

What makes the ocean blue? Why does sand look tan? To understand color, we need to know a little bit about light. Light is a kind of wave, just like radio waves. The only difference between radio \_\_\_\_\_ and \_\_\_\_\_ is the wavelength. X-rays, radio waves, and \_\_\_\_\_ are all part of the same \_\_\_\_\_ spectrum. But only certain wavelengths can be detected by the human eye. Each of these wavelengths is a different color.

Light from the sun may not seem to have any color. But in fact, every color of the rainbow is already in sunlight. Together they make white light. Sunlight is a mixture of different colors or \_\_\_\_\_. This mix of colors and white light is what lets us see colored objects. When sunlight hits a beach ball, we see only the light that bounces off of it. Different parts of the ball reflect different colors. The yellow side reflects \_\_\_\_\_. The blue side reflects blue light. The wavelengths that don't bounce off get \_\_\_\_\_ as heat. Only the colors that bounce off reach your eyes.

The color of light coming from an object is what gives it color. Light travels into the \_\_\_\_\_ to the \_\_\_\_\_ located on the back of the eye. The retina is covered with millions of \_\_\_\_\_ cells called \_\_\_\_\_ and \_\_\_\_\_. When these cells detect light, they send signals to the brain. Cone cells help \_\_\_\_\_ colors. Most people have three kinds of cone cells. People without all three see fewer colors, sometimes called \_\_\_\_\_.

**DOCUMENT 1: seeing color (end of transcript)**

Some cones respond more strongly to blue light. Others pulse faster in response to green. Every color stimulates more than one cone. Their combined response produces a unique signal for each color. Millions of different colors can be distinguished this way. Each cell detects a different part of the picture. Nerve signals from the eye are sent to the brain along the optic nerve.

The brain will decode these nerve signals to create a mental image. The optic nerve carries these nerve signals to the visual cortex on the back of the head. The nerve signals arrive in the visual cortex, where an image begins to form. Various parts of the brain analyze color and shape, movement and location, and a conscious perception is created.

■ **Expressing yourself:**

Write a short essay explaining how our brain perceives color on a beach ball?

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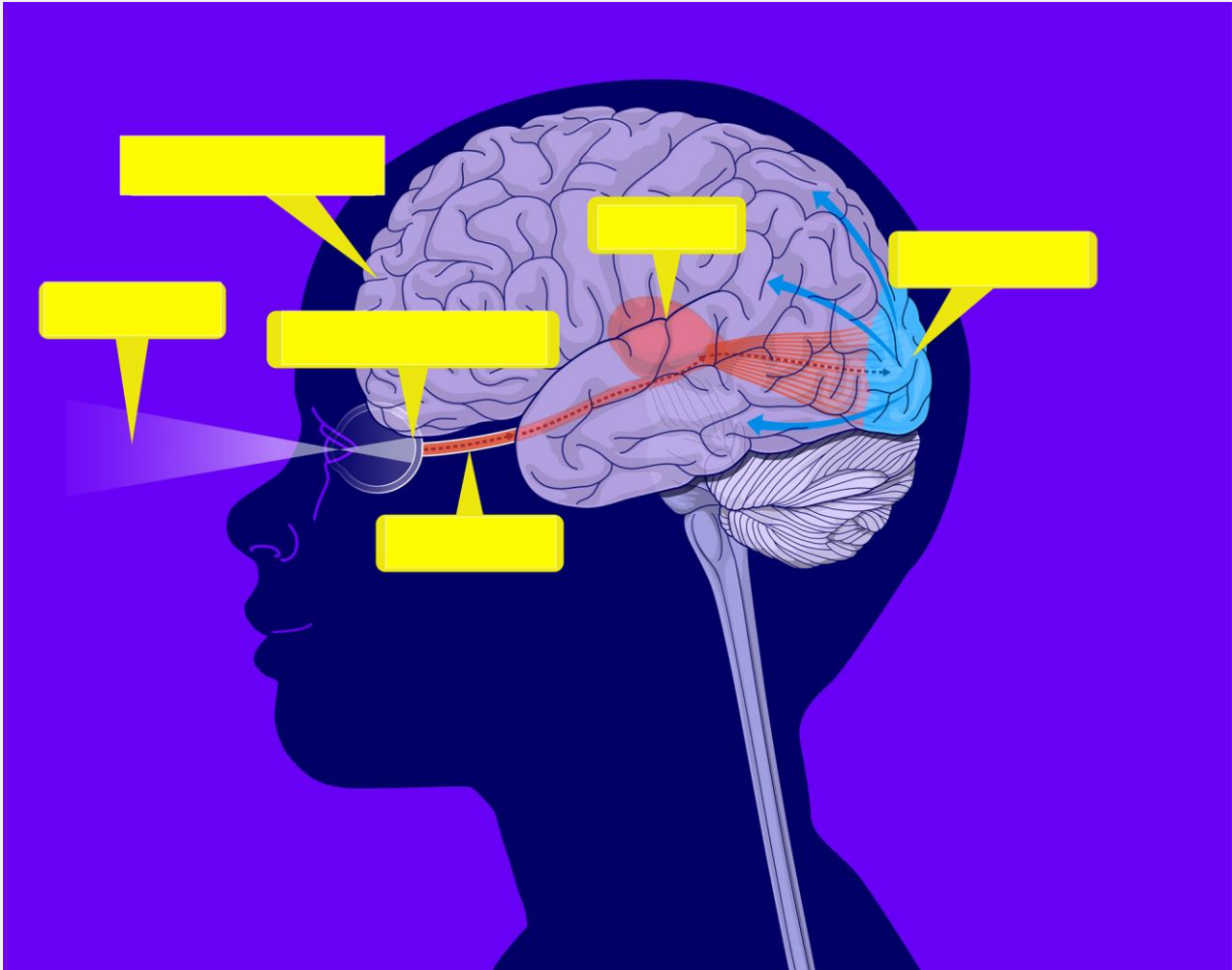
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## ACTIVITY 2: brain diagram

Place the correct vocabulary in document 2.

### DOCUMENT 2: brain diagram

Vocabulary: prefrontal cortex – light waves – retina, rods and cones – optic nerves – visual cortex - thalamus



Source: American Museum of Natural History

# Connaissances et capacités à maîtriser

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## Ce qu'il faut savoir faire :

| Compétences | Capacités à maîtriser   | Où dans cette séquence ? |
|-------------|---|--------------------------|
| APP         | Utiliser du vocabulaire spécifique  | Activités 1 à 2          |
|             | Lire et comprendre des documents scientifiques  | Activités 1 à 2          |
| ANA         | Mettre en lien des documents pour émettre des hypothèses en réponse à une question scientifique | Activité 1               |
| COM         | S'exprimer à l'écrit en utilisant le vocabulaire adapté   | Activité 1               |