Lead On!
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Eye Candy

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Anatomy of the Eye

There are 5 things that are needed to see:

1. Light (photons) Provides Information
2. Front of the Eye Focuses Information
3. Retina Translates Information
4. Optic Nerve Transmits Information
5. Brain Processes Information

Light:

We all need light to see. Light energy provides information.

The more light we have; the more information we have.

However, too much light gives us too much information.
Sclera:

Also known as the white of the eye, is the opaque, fibrous, protective, outer layer of the eye containing collagen and elastic fiber.

![Figure 1 Photo of a round eyeball with a blue iris](image)

Cornea:

The clear, front window of the eye. The cornea transmits and focuses light into the eye.

Edible: Candy Corns

![Figure 3 Photo of four Candy Corns](image)

Video:

[Keratoconus](#)

Iris:

The colored part of the eye. The iris helps regulate the amount of light that enters the eye.
**Pupil:**

The dark center in the middle of the iris. The pupil determines how much light is let into the eye.

Edible: Fruit Loop

![Figure 4 Photo of a green Fruit Loop](image)

**Aqueous Humor:**

A clear fluid between the cornea and the lens.

Edible: Milk

![Figure 5 Photo of splashing milk](image)

**Video: Glaucoma**

**Lens:**

The transparent structure inside the eye that focuses light rays onto the retina.

Edible: Peanut M&M

![Figure 6 Photo of a yellow peanut M&M with peanut exposed](image)
Video: Cataracts (30 seconds)

Vitreous:

The clear, jelly-like substance that fills the middle of the eye.

Edible: Rolo

Figure 7 Photo of Rolo candies and caramel

Retina:

The nerve layer that lines the back of the eye. The retina senses light information and creates codes that are sent through the optic nerve to the brain for processing.

Edible: Fruit Roll Up

Figure 8 Photo of a Fruit Roll-Up and wrapper

Video: Diabetic Retinopathy, Macular Edema / Macular Ischemia

Video: Macular Degeneration

Video: Stargardt’s Disease
Rods and Cones:

There are two main types of photoreceptors in the human retina, rods and cones.

- **Rods** are responsible for vision at low light levels and peripheral vision.
- **Cones** are responsible for the 3 C’s: color, clarity and center vision.
- Approximately 120 million Rods - low light and peripheral vision
- Approximately 6 million cones - color, clarity and center vision

Edible: Regular Chocolate M&Ms (brown = rods, red/blue/green = cones)

![Figure 9 Photo of regular chocolate M&Ms](image)

Optic Disc:

The optic disc should be a healthy pink, salmon color. A white optic disc indicates damage.

Edible: Life Savers

![Figure 10 Photo of a peach and a peppermint Life Saver](image)
Optic Nerve:

The optic nerve connects the eye to the brain; it contains approximately 1.2 million nerve fibers.

Edible: Twizzlers

Figure 11 Photo of Cherry Pull-N-Peel Twizzlers

Brain:

The visual cortex of the brain is a part of the cerebral cortex that processes visual information. It is located in the occipital lobe in the back of the head. Visual information coming from the eye goes through the lateral geniculate nucleus in the thalamus and then reaches the visual cortex.

Edible: Gummy Brain

Figure 12 Photo of a red and blue Gummy Brain

We see with our eyes, but our brain gives us vision!

Dilated Eye Exam

Video: [The Comprehensive Dilated Eye Exam](#)
What is Legal Blindness?

Can you have 20/20 vision and still be legally blind?

Visual Field - How much you see

Visual Acuity - How well you see

Social Security Definition of Legal Blindness:

a) The Act defines blindness as central visual acuity of 20/200 or less in the better eye with the use of a correcting lens. We use your best-corrected central visual acuity for distance in the better eye when we determine if this definition is met. (For visual acuity testing requirements, see 2.00A5.)

b) The Act also provides that an eye that has a visual field limitation such that the widest diameter of the visual field subtends an angle no greater than 20 degrees is considered as having a central visual acuity of 20/200 or less. (For visual field testing requirements, see 2.00A6.)

To view the rules please use the following links:

SSA: Disability Evaluation Under Social Security

SSA: Evaluation of Visual Impairments – Medical Equivalence Using the Humphrey Field Analyzer
Fractions vs Functions

Goal of the doctor is to improve the fraction (20/200, 20/400, 20/800)

Goal of the instructor is to improve the function (educational, vocational, social)

Figure 13 Photo of measuring wheel tool

Lowe's: Measuring Wheel

Cost $29.37
Accommodations

(Hollywood Version)

Mandy Patinkin - Keratoconus
Johnny Depp - Poor depth perception, very near-sighted
Bono from U2 - Glaucoma
Bono discusses Glaucoma
Queen Elizabeth - Cataracts
Dame Judi Dench - Macular Degeneration
2017 Oscar Ceremony Fiasco
2015 Miss Universe Pageant Disaster
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