



Eye Cancer Research in Humans

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EDITORIAL

Eye cancer can refer to any cancer that starts in the eye. Cancer starts when cells begin to grow out of control. The most common type of eye cancer is melanoma. But there are other types of cancer that affect different kinds of cells in the eye. The eyeball (globe) that is mostly filled with a jelly-like material called vitreous humor and has 3 main layers (the sclera, the uvea, and the retina). The orbit (the tissues surrounding the eyeball) the adnexal (accessory) structures such as the eyelids and tear glands.

Cancers that affect the eye itself are called intraocular (within the eye) cancers. Cancers that start in the eye are called primary intraocular cancers, and secondary intraocular cancers if they start somewhere else and spread to the eye.

Melanoma (Intraocular melanoma is the focus of our information on eye cancer). Non-Hodgkin lymphoma (See Non-Hodgkin Lymphoma (NHL) for more information on primary intraocular lymphoma). Retinoblastoma, a cancer that starts in cells in the retina (the light-sensing cells in the back of the eye). Medulloepithelioma (This is the second most common, but is still extremely rare).

Secondary intraocular cancers (cancers that start somewhere else in the body and then spread to the eye) are not truly “eye cancers,” but they are actually more common than primary intraocular cancers. The most common cancers that spread to the eye are breast and lung cancers. Most often these cancers spread to the part of the eyeball called the uvea. Intraocular melanoma is the most common type of cancer that develops within the eyeball in adults, but it is still fairly rare. Melanomas that start in the skin are much more common than melanomas that start in the eye. Melanomas develop from pigment-making cells called melanocytes. When melanoma develops in the eye, it is usually in the uvea (*uveal melanomas*) and rarely in the conjunctiva (*conjunctival melanomas*).

The iris is the colored part of the eye (most often blue or brown).

It surrounds the pupil, the small opening where light enters the eyeball. The choroid is a thin, pigmented layer lining the eyeball that nourishes the retina and the front of the eye with blood. The ciliary body contains the muscles inside the eye that change the shape of the lens so that the eye can focus on near or distant objects. It also has cells that make aqueous humor, the clear fluid in the front of the eye between the cornea and the lens.

About 9 out of 10 intraocular melanomas develop in the choroid or ciliary body. Choroid cells make the same kind of pigment as melanocytes in the skin, so it's not surprising that these cells sometimes form melanomas. Most of the other intraocular melanomas start in the iris. These are the easiest for a person (or their doctor) to see because they often start in a dark spot on the iris that has been present for many years and then begins to grow. These melanomas usually are slow growing, and they rarely spread to other parts of the body. For these reasons, people with iris melanomas generally have a good prognosis.

The conjunctiva is a thin clear covering over the sclera. (The sclera is the tough, white covering over most of the outside of the eyeball. In the front of the eye it is continuous with the cornea, which is clear to let light through). These melanomas are extremely rare. They tend to be more aggressive and grow into nearby structures. Because they can spread through the blood and the lymph system, they can also spread to distant organs like the lungs, liver, or brain where the cancer can become life-threatening.

Cancers of the orbit and adnexa develop from tissues such as muscle, nerve, and skin around the eyeball and are like cancers in other parts of the body.

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