



About EnChroma

The mission of EnChroma is to enable those with color blindness to experience more of the joy that color brings. An estimated 350 million people suffer from red-green color vision deficiency (CVD).

Our Story

A Frisbee and Some Cool Shades

It all started in 2002 in Santa Cruz, California during an Ultimate Frisbee game. Don McPherson, serial inventor and Ultimate Frisbee enthusiast with a Ph.D. in glass science, wore a pair of specialty eyewear he invented to protect the eyes of surgeons from lasers while performing surgeries. A teammate tried them on.

“Dude! I can see the cones!” he called out in amazement. His friend was severely color blind and couldn’t see the bright orange cones marking the game boundaries until that moment. A light bulb went on and Don’s curiosity sparked an initiative that would eventually improve the lives of thousands.

Dr. McPherson applied for a grant from the National Institutes of Health (NIH) to explore why his glasses helped the color blind better see colors. He partnered with Andrew Schmeder, a UC Berkeley-trained mathematician who helped crack the code behind the accidental discovery. The duo spent years perfecting the lens technology to create EnChroma, stylish optical-grade glasses that reveal color that is vibrant, clear and distinct.

Research & Science

Following the support of two National Institutes of Health (NIH) SBIR funded studies on the feasibility of correcting color vision deficiency, EnChroma officially launched in 2010. Based on a rigorous scientific and research foundation, EnChroma used the latest understandings of the genetic basis of color vision deficiency to create a sophisticated computer-based model of human color vision. The founders then developed patent-pending design methods to create special spectral filters to assist color vision in a wide variety of applications.

[An August 2020 study](#) by world-renowned color vision scientists at the University of California, Davis, and [France’s INSERM Stem Cell and Brain Research Institute](#), demonstrated the effectiveness of EnChroma’s lens filter technology. The research was published in the scholarly journal *Current Biology*.

Proudly based in Berkeley, California, today EnChroma offers a complete collection of high-performance eyewear that combines the latest in color perception neuroscience



and lens innovation to enable red-green color blind people around the world to see clear, vibrant color.

How Many People are Color Blind?

There are an estimated 350 million people in the world with color vision deficiency (CVD). The trait is inherited genetically and carried recessively on the X-chromosome, affecting about one in 12 men (8%) and one in 200 women (.5%). The colloquial term “color blindness” most commonly refers to deutan-type or protan-type CVD, which are both types of red-green color blindness.

What are the Causes and Challenges of Color Blindness?

In the eyes of color blind individuals, the red and green photoreceptors' sensitivities have a more pronounced overlap. This causes confusion for color blind people and for them to struggle to correctly interpret many colors with red or green in them. While people with normal color vision see over one million shades of color, those with color vision deficiency are estimated to see about 10% of hues and shades.

To the color blind, the world appears less vibrant or “washed out,” and some colors are indistinguishable; like purple and blue. Pink may look gray; red and green stoplights look “white-ish;” red looks brown and peanut butter looks green. Many color blind people find their occupational, sports or artistic pursuits limited by their condition. While color blindness is often considered a mild disability, studies have found that two-thirds of people with CVD feel it is a handicap. To find out if EnChroma glasses can help them, color blind people can take our color vision test at enchroma.com/test.

How EnChroma Glasses Work

EnChroma created specially engineered lenses that enable red-green color blind people to see color more clearly, distinctly and vibrantly. They contain special optical filters that remove small slices of light where the problematic overlap occurs. This helps compensate for the excessive overlap in the photopigments in the eye and enhances the vibrancy and saturation of colors while facilitating color discrimination, depth and detail perception for the color blind. *See the “Deeper Science of How EnChroma Glasses Work” below for additional detail.*

Importantly, EnChroma strives to ensure that consumers, media and eyecare professionals understand that our glasses are *not* a cure for color blindness. They are an optical assistive device for those with color blindness. The glasses are effective for approximately nine out of 10 red-green color blind people and do not provide 100% color vision. Results vary depending on a person’s type and extent of color vision deficiency. A user's typical acclimation takes about 5 to 15 minutes the first few times the glasses are worn, but for about 30% of users the effect is instant.



About EnChroma Color Blind Glasses

EnChroma glasses for color blindness are available for men, women and children with outdoor and indoor lenses that can also be customized for prescription. The lenses are made with Trivex® material, a high-performance optical-grade resin that offers the triple benefits of clarity, lightness, and durability. The glasses range in price from \$189 to \$429 and are available in lifestyle, sports and kid's frames.

EnChroma sells directly to consumers via [EnChroma.com](https://www.enchroma.com). Our glasses are also available at nearly 350 authorized eye care professionals at authorized retailer locations throughout the U.S. and worldwide, primarily optometry practices.

Low Vision and Aging Eye Solutions

Building upon its technology for color vision, the EnChroma Lx Series launched to support functional vision for people with low vision and other age-related impairments. The glasses reduce the disabling effects of glare and improve color contrast across multiple lighting conditions. According to the World Health Organization, over 285 million people in the world suffer from severe forms of visual impairment, with roughly 246 million qualifying as low vision.

Awards

U.S. Small Business Administration - Tibbetts Award

EnChroma received the 2016 Tibbetts Award from the U.S. Small Business Administration in recognition of the firm's innovative impact on the human experience through technology.

American Association for the Advancement of Science – Invention Ambassador

EnChroma's Co-founder and Chief Science Officer was named a 2018-2019 AAAS-Lemelson Invention Ambassador by the prestigious American Association for the Advancement of Science (AAAS) and The Lemelson Foundation.

East Bay Innovation Award – Life Sciences

Out of 200 organizations, EnChroma was [named the winner](#) of the prestigious 2020 East Bay Innovation Award in the highly competitive Life Sciences category by the [East Bay Economic Development Alliance](#).

Photonics Media - Beacons of the Photonics Industry Award

EnChroma received the 2017 Beacons of the Photonics Industry Award in recognition of advancing light-based technologies in the scientific, business, academic and consumer communities.



Executive Bios

Erik Ritchie

CEO

Ritchie brings 25 years of success in organizational strategy, brand management, performance marketing, merchandising, talent management, and eCommerce operations. He served as Chief Commercial Officer for Zenni Optical, the largest online provider of prescription eyewear, where he led all merchandising, marketing, UX/UI, and IT functions. As a consultant, Ritchie has led branding, advertising and communications campaigns for Fortune 500 brands such as Microsoft, Google, Blue Shield, Red Bull, Ticketmaster and others.

Don McPherson, Ph.D.

Chief Scientist & Co-founder

Don McPherson received his Ph.D. in Glass Science from Alfred University in 1988. He is the published author of 14 scientific papers, authored six patents and has been awarded five NEI, NIH and National Cancer Institute research grants. Dr. McPherson has also served as President of Bay Glass Research, Inc., Vice President of R&D for Vetrazzo, Inc., and as Founder and CEO of Counter Production, LLC.

Contacting EnChroma

For media inquiries, please contact Kent Streeb at pr@enchroma.com. For sales, partnerships or more information about EnChroma, please call 510-497-0048, email info@EnChroma.com or visit EnChroma.com.

Deeper Science: How EnChroma Glasses Work

Most color blind people are not actually “blind” to color, but have trouble seeing certain colors and hues. Normal color vision is based on light entering the eye and activating three photopigments sensitive to different parts of the visible spectrum (blue, green and red). In a normal eye, the green and red photopigments overlap. For the color blind, this overlap is more pronounced, causing distinct hues to become virtually indistinguishable.

The absorption of light by the three photopigments in the eye is critical to color perception. EnChroma created a special patent-pending optical technology that removes small slices of light where the red and green cones overlap the most. This helps compensate for the excessive overlap in the photopigments in the eye so color blind people experience enhanced color vibrancy, clarity, depth and detail perception and better differentiate hues of colors.



Trademarks

EnChroma is a registered trademark of EnChroma, Inc.

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