You can look at that quilt your cat is curled up on and see a patchwork of greens, blues, and yellows. Your cat, however, cannot see color variation in the quilt.

**Why can humans see color and cats cannot?**

Both humans and cats depend on the back layer of [the eye](http://indianapublicmedia.org/amomentofscience/why-we-cry-chemistry-tears/), which is called the retina, to sense light and to distinguish between colors. The retina is made up, in part, of nerve cells that convert color and light into messages they send to the brain.

**Rods and cones**

There are two types of cells:[rods and cones](http://indianapublicmedia.org/amomentofscience/star-light-star-white/).

Rods are very sensitive to light, though they are not used in color vision. Cones on the other hand are not very sensitive to light but can be used in color vision.

Because cats have more rods than humans, they use these light-sensitive cells to see in even very dim light. Likewise, because [cats](http://indianapublicmedia.org/amomentofscience/cats_and_string/)have fewer cones than humans, they cannot distinguish between colors the way humans can.

**Cats do distinguish…**

But cat eyes do have some cones, and with work cats can learn how to distinguish between colors.

In experiments, scientists have taught cats to discriminate between two symbols when the only [difference between them is their color](http://indianapublicmedia.org/amomentofscience/monkey-see-in-full-color/).

Cats have learned how to make this discrimination, but only when the objects used were very large and the difference between the colors very pronounced. It’s not likely you’ll be able to teach your own cat how to tell the difference between two colors unless you are very patient.

Even under controlled laboratory conditions, cats do not learn how to differentiate between two colors until after making over 1,400 attempts.

**An unused ability**

These experiments showed researchers that though cats technically have the ability to tell the difference between two colors, they don’t use that ability in their daily lives.

你可以看看你的猫被卷起来的被子，看到绿色，蓝色和黄色拼凑而成。然而，你的猫看不到被子的颜色变化。

### 为什么人类会看到颜色而猫不能？

人和猫都依赖于[眼睛](http://indianapublicmedia.org/amomentofscience/why-we-cry-chemistry-tears/)的背层，称为视网膜，以感知光线并区分颜色。视网膜部分由神经细胞组成，神经细胞将颜色和光转换成它们发送到大脑的信息。

### 杆和锥体

有两种类型的细胞：[杆和锥体](http://indianapublicmedia.org/amomentofscience/star-light-star-white/)。

杆对光非常敏感，但它们不用于色觉。另一方面，锥体对光不是很敏感，但可以用于色觉。

因为猫的杆比人类多，所以它们使用这些光敏细胞甚至可以看到非常昏暗的光线。同样地，因为[猫](http://indianapublicmedia.org/amomentofscience/cats_and_string/)的锥体比人类少，所以它们无法像人类那样区分颜色。

### 猫确实区别了......

但猫眼确实有一些锥体，而工作猫可以学习如何区分颜色。

在实验中，科学家们已经教过猫在区分两个符号时，[它们之间](http://indianapublicmedia.org/amomentofscience/monkey-see-in-full-color/)的唯一[区别就是它们的颜色](http://indianapublicmedia.org/amomentofscience/monkey-see-in-full-color/)。

猫已经学会了如何进行这种鉴别，但只有当使用的物体非常大并且颜色之间的差异非常明显时。除非你非常耐心，否则你不可能教你自己的猫如何区分两种颜色。

即使在受控的实验室条件下，猫也不会学习如何区分两种颜色，直到超过1,400次尝试。

### 未使用的能力

这些实验表明，虽然猫在技术上有能力分辨两种颜色之间的差异，但他们在日常生活中并没有使用这种能力。