

What you are about to see is DNA's most extraordinary secret. How a simple code is turned into flesh and blood. It begins with a bundle of factors assembling at the start of a gene. A gene is simply a length of DNA instructions stretching away to the left. The assembled factors trigger the first phase of the process -- leading off the information that will be needed to make the protein. Everything is ready to roll! 3-2-1 Go! The blue molecule racing along the DNA is reading the gene. It's unzipping the double helix and copying one of the two strands. The yellow chain snaking out of the top is a copy of the genetic message and it's made of a close chemical cousin of DNA called RNA. The building blocks to make the RNA enter through an intake hole. They are matched to the DNA letter by letter to copy the A's, C's, T's and G's of the gene. The only difference is that in the RNA copy, the letter T is replaced with a closely related building block, known as U. You are watching this process called transcription in real time. It's happening right now in almost every cell in your body.