

Why we shouldn't think of genes as language

When we talk about genes, we often use expressions inherited from a few influential geneticists and evolutionary biologists, including Francis Crick, James Watson, and Richard Dawkins. These expressions depict DNA as a kind of code telling bodies how to form. We speak about genes similarly to how we speak about language, as symbolic and imbued with meaning. There is “gene-editing,” and there are “translation tables” for decoding sequences of nucleic acid. When DNA replicates, it is said to “transcribe” itself. We speak about a message—such as, build a tiger! or construct a female!—being communicated between microscopic materials. But this view of DNA has come with a price, argue some thinkers. It is philosophically misguided, they say, and has even led to scientific blunders. Scratch the surface of this idea, and below you'll find a key contradiction.

In fact, some philosophers argue that this confusion causes real problems—that, for instance, it is the reason scientists did not fully appreciate the significance of epigenetics until relatively recently. The focus on genes as carriers of semantic information discouraged scientists from looking for other influences on our biology, such as our environment. “Whereas genes are thus informational on this view, environments are not,” writes professor of bioethics Jason Scott Robert in his book *Embryology, Epigenesis and Evolution*. Epigenetics “was staring biologists in the face since the early 20th century but mostly swept under the rug as phenomena they couldn't explain,” says James Griesemer, a professor of philosophy at University of California, Davis. DNA sequences were vastly more important than, for example, DNA methylation in shaping an organism, according to this view. For decades, this blind spot has held back our understanding of questions where some researchers have recently been focusing on epigenetics—for example, cancer, dementia, and heart disease.

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