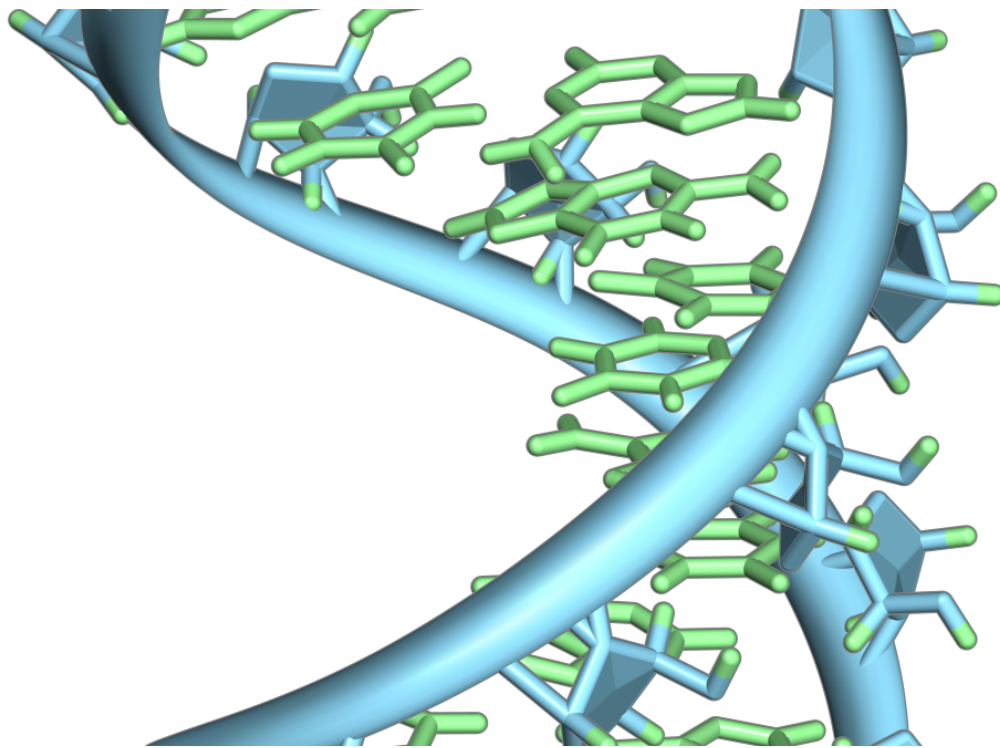


# Research: Genes are transcribed differently in childhood, have health impacts in adulthood

February 11 2020, by Bob Yirka

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A hairpin loop from a pre-mRNA. Highlighted are the nucleobases (green) and the ribose-phosphate backbone (blue). Note that this is a single strand of RNA that folds back upon itself. Credit: Vossman/ Wikipedia

A team of researchers from the University of California, the University of Zürich, Vanderbilt University and the University of North Carolina at

Chapel Hill has found that environmental conditions during childhood can impact the way genes are transcribed, resulting in health issues during adulthood. In their paper published in *Proceedings of the National Academy of Sciences*, the group describes their study of genetic markers in a database and what they learned from them.

Prior research has shown that [traumatic events](#) during a person's childhood can have an impact on their well-being later on in life. Physical or sexual abuse of children, for example, can lead to obesity or suicidal tendencies in later life. In this new effort, the researchers wondered whether the events that happen during childhood might also have an impact on [gene transcription](#).

In their work, the researchers looked at two main types of genes that are known to respond to stress and the way they are transcribed: those related to inflammation and those related to [immune response](#). To find out if such transcriptions occurring during childhood might have an impact on people later on in life, they obtained data from the National Longitudinal Study of Adolescent to Adult Health—a long-term study of adolescent health in the United States launched in 1994. The researchers focused only on only those individuals who had grown to adulthood. In addition to studying [genetic information](#) for each person in the database, the researchers also looked at their demographic backgrounds, which included information such as race and economic situation.

The team looked at 19 genes related to inflammation and 32 related to immune response searching for instances of what they describe as "conserved transcriptional response to adversity." The data showed what the team describes as significant differences in the ways that the two types of [genes](#) are transcribed for people of different socioeconomic backgrounds. Those who lived through stressful events during childhood went through periods of gene transcriptions that often led to negative health outcomes later in life—such as a higher risk of developing heart

disease when they reached their 30s.

**More information:** Steven W. Cole et al. Population-based RNA profiling in Add Health finds social disparities in inflammatory and antiviral gene regulation to emerge by young adulthood, *Proceedings of the National Academy of Sciences* (2020). [DOI: 10.1073/pnas.1821367117](https://doi.org/10.1073/pnas.1821367117)

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Citation: Research: Genes are transcribed differently in childhood, have health impacts in adulthood (2020, February 11) retrieved 20 April 2024 from <https://medicalxpress.com/news/2020-02-genes-differently-childhood-health-impacts.html>

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