

# Erasing Birth Defects

MOLECULAR BIOSCIENCES, RESEARCH, SCIENCE IN MOTION

UT Austin is at the forefront of research linked to the causes and prevention of birth defects called neural tube defects (NTDs).

## 1941: Discovery of Folic Acid

75 years ago in the original Welch Hall, UT biochemist Esmond Snell discovered folic acid (Vitamin B9), which was later shown to prevent NTDs like spina bifida. It took four tons of spinach to isolate enough folic acid for Snell's analysis.

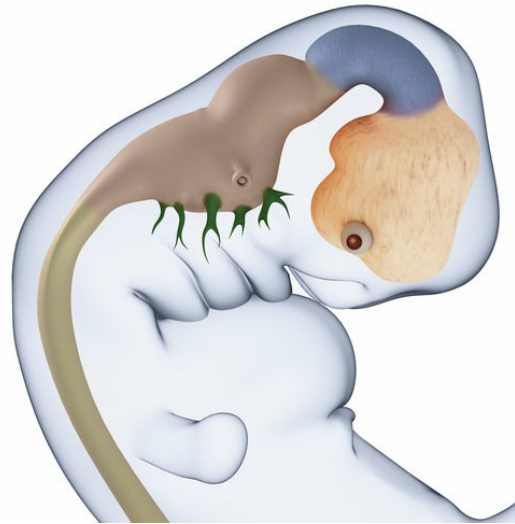
## 1990s: Public Health Victory

The U.S. and other countries started fortifying foods with folic acid, prompted in part by research from teams that included UT Austin's Dean Appling and Richard Finnell. (Appling calls Snell an "academic grandfather": Snell's former graduate student was Appling's postdoctoral adviser.) A dramatic drop in neural tube defects followed, preventing thousands of child deaths and disabilities.

## 2013: A Genetic Link

Scientists aren't sure why folic acid reduces birth defects, but Appling's team made a discovery that provides important clues. They found a gene that, when functioning improperly in mice, causes all of the embryos to have NTDs.

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**Next Steps:** Grants from the National Institutes of Health (NIH) will allow UT researchers to determine whether folic acid prevents NTDs by reducing the rate of spontaneous mutations in our genomes, as well as whether a different dietary supplement could prevent some of the 30 percent of cases where folic acid

supplements do not prevent NTDs. Appling, Finnell and molecular biologists John Wallingford and Seema Agarwala are all participating in research that holds promise for prevention and for therapy.

[Hear our podcast featuring a scientist investigating the cause of one child's NTD.](#)



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