

In Darwin Family, Evidence of Inbreeding's Ill Effects

By [NICHOLAS WADE](#) [The New York Times](#) May 3, 2010

[Charles Darwin](#), the author of the theory of evolution, may have been right to worry that his children's health had been affected by the inbreeding in his own family, especially that of his wife, Emma Wedgwood, who was his first cousin.

A calculation based on first-cousin marriages over four generations of the two dynasties suggests that Darwin's children had a mild degree of inbreeding, measured by the chance of inheriting the same version of a gene from both parents. Possible consequences of inbreeding can be seen in the children's illnesses and degree of infertility, three researchers report in the [current issue of BioScience](#).

Darwin, after discovering the lack of vigor in inbred plants, worried that first-cousin marriages like his own might have adverse genetic effects, and that his own children might be affected.

Tim M. Berra, an author of the new report, is a zoologist at [Ohio State University](#) who has a deep interest in Darwin. After reading a recent article about inbreeding in the Hapsburgs, the European royal family that nearly bred itself into extinction, Dr. Berra wondered if Darwin had good reason to be concerned. He wrote to the authors of the Hapsburg report, Gonzalo Alvarez and Francisco C. Ceballos of the University of Santiago de Compostela in Spain, asking if they would apply their computer program to the Darwin-Wedgwood pedigree.

The degree of inbreeding among Darwin's children, while not excessive, was enough to increase the risk of recessive diseases — ones that occur if a harmful version of a gene is inherited from both parents. Three of his 10 children died before age 10 — 2 of bacterial diseases. Childhood mortality from bacterial infections is associated with inbreeding. So, too, is infertility, and three of Darwin's children who had long marriages left no children. Dr. Berra and his colleagues concluded that Darwin's fears of consanguinity's effect on his children's health “appear to have been justified.”

Darwin himself had notoriously ill health, but his mystery illness, whatever it was, was unrelated to inbreeding, according to the new calculations. “Darwin's illness had nothing to do with consanguinity,” Dr. Berra said. Darwin's symptoms included severe digestive problems and a skin disease that made shaving so painful that he grew his distinctive beard. A vigorous industry in historical post-mortems has produced at least three diagnoses of Darwin's malady.

The first ascribes it to [Chagas disease](#), a parasitic ailment spread by the vinchuca bug. Darwin recorded being bitten by one in Argentina in March 1835. A second theory holds that he suffered from [Crohn's disease](#), although that leaves his skin symptoms largely unexplained. A third theory is that Darwin suffered from the psychosomatic stress of knowing that his theory of evolution would distress his dear wife and the God-fearing Victorian public.