

Acquired Traits Revisited On-Line Supplements

Although today IAC is an exception to the general rule that acquired traits are not inherited, it appears to be gaining empirical evidence in its favor and is being presented to the general public in popular science magazines and TV documentaries. The 56-minute NOVA program “Ghost in Your Genes” (<http://www.pbs.org/wgbh/nova/genes/>) is available in DVD format from the PBS website (<http://shop.wgbh.org/product/show/29967>). It explains how environmental factors can turn genes on or off during embryological development and presents evidence that some epigenetic traits can be inherited. If you go to this website, you can watch a 2½-minute videoclip from the program, view two slide shows, access a teachers guide, and other information about epigenetics. In the segment *Ask the Expert*, “Randy Jertle answers questions about how our lifestyles, via epigenetics, can impact the health of our children, and more” (<http://www.pbs.org/wgbh/nova/genes/expert.html>). These questions reveal a wide range of interests in epigenetics among the general public. They also are very likely to be the kinds of questions our students might ask after being exposed to the subject of epigenetics in their biology classes or after having seen the program on TV. Many of these questions appear to be germane to the statements in the “A Survey to Evaluate Student’s Understanding of Reproduction, Heredity, Ontogeny, and Acquired Traits.” Examples follow.

- Q: It sounded from the show as if epigenetics is quite successful in treating life-threatening diseases. Which hospitals are using epigenetic therapies, and are trials still going on? Also, how does one qualify for the treatment? If it's this successful, why aren't we treating all cancer patients this way?
- Q: Can a person manipulate his or her environment in such a way as to maximize his or her IQ and minimize his or her genetic disposition for mental illness? Also, have scientists been able to reverse a negative gene expression brought on by epigenetics such as the one expressed in the twin mice?
- Q: How long do scientists think it takes for a given environmental factor or factors—for instance, heavy smoking or overeating—to alter someone's epigenetic profile?