
Concepts of dominance in 20th century genetics pedagogy

Annie Jamieson*¹

¹University of Leeds – Woodhouse Lane ; Leeds ; LS2 9JT, United Kingdom

Abstract

Various writers have raised concerns about the concept of dominance in current high school and undergraduate genetics teaching. The emphasis, in foundational teaching, on the traditional Mendelian dominant/recessive dichotomy can instil in students an overly deterministic view of genetics that is at odds with the much more interactionist conception we see in 21st century genetics and genomics research. Recent textbooks largely continue to promote Mendel's peas as the type-specimen of genetic action, with all else being amendments or exceptions to Mendel's laws. Moreover, the simple patterns of inheritance shown in Mendel's peas – smooth vs. wrinkled, yellow vs. green, for example – encourage the linear view that one gene controls one trait. But this was not always the case; many early 20th century authors presented a much more flexible and nuanced view both of dominance and of the nature and range of action of the gene. So, when and why did this hard-line, reductionist view begin to appear and how did it become the received view in textbooks? This paper will explore representations of dominance in a range of textbooks and monographs from the first half of the 20th century (prior to the discovery of the structure of DNA) and explain how intellectual and conceptual developments, like the New Synthesis, the rise of 'environmental eugenics', or the bio-social programme of, for example, Lancelot Hogben and Julian Huxley, affected these representations.

*Speaker