Theorising and representational practices in genetics

Marion Vorms*†[1]

[1]Institut d'Histoire et de Philosophie des Sciences et des Techniques (IHPST) – IHPST – 13 rue du Four 75006 Paris, France

Abstract

This paper is meant as a contribution both to the history of biology and to the general philosophy of science. As a general philosopher of science, I wish to challenge theory-biased approaches to scientific knowledge, by arguing for a study of theorising, as a cognitive activity, rather than of theories, as abstract structures independent from the agents' understanding of them. Such a study implies taking into account the scientists' reasoning processes, and their representational practices. Here, I analyse the representational practices of geneticists in the 1910s, as a means of shedding light on the content of classical genetics. Most philosophical accounts of classical genetics fail to distinguish between the purely genetic, or Mendelian level, and the cytological one. I distinguish between them by characterising them in terms of their respective associated representational practices. I then present how the two levels were articulated within Morgan's theory of crossing-over, and I describe the representational technique of linkage mapping, which embodies the "merging" of the Mendelian and cytological levels. I propose an analysis of the mapping scheme, as a means of enlightening the conceptual articulation of Mendelian and cytological hypotheses within classical genetics. Finally, I present the respective views of three opponents to Morgan in the 1910s, who had a different understanding of the articulation of cytology and Mendelism, and entertained different views concerning the role and proper interpretation of maps. I propose to consider these diverging perspectives as instantiating what I call different "versions" of classical genetics.

*Speaker

†Corresponding author: mvorms@gmail.com