
August Weismann's First Embryological Investigations 1861-1866

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Abstract

August Weismann is one of the most influential evolutionary biologists of the 19th century, generally considered second only to Darwin in importance. He was an uncompromising selectionist, challenging prevalent, seemingly self-evident ideas, the most significant of which was the inheritance of acquired characters. In this lecture I show that Weismann's theories were heavily dependent on the progress made in cytology, and that he based his far-reaching conclusions on his early embryological-cytological work on dipterans. I suggest that his two major discoveries in the field of dipteran embryology, the discovery of the imaginal disks, the precursors from which body parts of the adult muscids differentiated, and that of the pole cells, which sequester the formative material of the germline, were the crucial for the construction of his later ideas on development and evolution. In contrast to most modern scholars who have overlooked Weismann's early embryological studies, I argue that Weismann's most important ideas, such as developmental segregation, unequal nucleus division, particulate, pre-formative heredity, and the non-inheritance of acquired characters, are firmly related to his first microscopical investigations of dipteran embryogenesis.

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