
Understanding Life: It's Not All Genes; An Examination of the Work and Thought of Daniel Mazia

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Abstract

The cell biologist Daniel Mazia (1912-1996) was best known for his work elucidating the structure of the mitotic apparatus as he investigated the general problem of cell reproduction. Mazia was concerned with understanding life at the most fundamental level and brought a deeply philosophical approach to his life in the laboratory. For many years genetics has dominated the thinking in understanding a variety of biological problems from evolution to cancer. Embryology was essentially left out of the evolutionary synthesis. This is supposedly being rectified by evo-devo. But even this field has been dominated by looking at what gene gets turned on at what stage. Yet what is responsible for turning on those genes, what causes a cell to differentiate? Cancer at its most fundamental level is a problem of unregulated cell growth, i.e. a disturbance of the cell cycle. In exploring the "origin of twoness" in cell reproduction Mazia suggested that the cycle be thought of as a bicycle with a growth wheel and a reproductive wheel. He brought attention to the importance of the centrosome and thought that elucidating the underlying structure of the cell would provide insight to development. Although much of Mazia's work involved identifying molecules that were critical to the various stages of cell division he advocated the importance of microscopy: THINK WITH THE EYES AND SEE WITH THE BRAIN. I argue that much can be learned from his approach in furthering our understanding of life.

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