
The individual, the organism, and the immune system

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Abstract

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In this paper, I explore the exact role of the immune system in shaping the individuality of an organism, and in particular in the delineation of its boundaries. A long tradition, in biology and philosophy of biology, has questioned the organism as a legitimate biological category. Yet this tradition tends to focus exclusively on evolutionary biology, and to ignore key biological domains that may contribute significantly to the understanding of biological individuality at the organism's level. Among these domains, which often pertain to what can be broadly defined as "physiology," immunology plays arguably a decisive role. Across phyla, the immune system ensures the cohesion of the organism through the integration or elimination of entities. This "surveillance" activity includes, but is not limited to, what has sometimes been described as "policing" mechanisms (e.g., Michod 1999, Godfrey-Smith 2009). As every organism is heterogeneous, that is, made of many initially foreign entities (especially symbiotic bacteria), it is crucial to understand how the immune system interacts with these heterogeneous constituents, and thus contributes decisively to unifying this plurality of entities (Pradeu 2012). Therefore, the immune system plays a key role in the constant construction of the organism, through the constant unification of heterogeneous constituents, and the contribution of immunology to the understanding of individuality cannot be overlooked.

References:

Godfrey-Smith P. (2009), *Darwinian Populations and Natural selection*. NY: Oxford University Press.

Michod R. (1999), *Darwinian Dynamics: Evolutionary Transitions in Fitness and Individuality*. Princeton: Princeton University Press.

Pradeu T. (2012), *The Limits of the Self: Immunology and Biological Identity*. NY: Oxford University Press.

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