

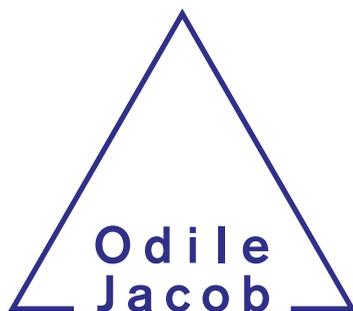
MARC DAËRON

L'IMMUNITÉ, LA VIE

Pour une autre immunologie



PRÉFACE D'ANNE MARIE MOULIN



Immunity or living with others

Marc Daëron

Conceived by XXth century immunologists to account for the protective immunity conferred by Pasteurian vaccinations, the immune system progressively turned into a physiological system assigned to the defense of organisms. It thus took place among major physiological systems assigned to other functions that are necessary for life. Such a system faces major problems.

For an immune system defined by its ability to discriminate self from non-self in order to spare self while discarding non-self, autoimmune diseases appear as fundamental contradistinctions. For an immune system conceived as a defense system against deadly pathogens, life-threatening allergies to innocuous environmental substances appear as aberrations. And for an immune system capable of enrolling a powerful army against microbes, the presence of several microbiotas within the organism is not understandable. Especially when microbiota microorganisms appear to control the immune system more than the immune system controls them. Are these "anomalies" a price to pay for the vital defense function conferred by the immune system or do they tell us that the immune system is not what we believe?

This essay aims at answering this question. It has three parts: 1) I examine first the historical roots that led to the elaboration of such a teleological self-defense system as a product of natural selection, 2) I then discuss the philosophical frames within which living organisms can be thought today, and 3) I finally try to rebuild an immune system with no mission to fulfill, no surveillance to ensure, no non-self to neutralize, a system freed of end causes that would be neither protective nor pathogenic *a priori*.

This immune system presents itself as a second system of relations. Like the nervous system controls the relations between the organism and the physical world, the immune system controls the relations between the organism and the living world. This system can perceive all macromolecules of the living world, whether exogenous or endogenous, whether from self or from non-self, whether from pathogens or from commensals, and it can respond to them without threatening us. Instead of defending us *against* others, such an immune system enables us to live *with* others.

Living with others is both unavoidable and necessary. It is unavoidable not only because of all these others that live around us, some of which make us sick when they do not kill us, but because of all those that live inside us and are a part of us. We are indeed "meta-organisms" that gather myriads of living beings in functional living entities. We are chimeras. Living with others is necessary because we need them to live as much as they need us to live. We are condemned to live together. Living with others is what the immune system enables by adapting us to them and by adapting them to us.

The immunity that results from this mutual adaptation is a lesser evil, it is a carefully negotiated compromise. Neither innate nor acquired because it is never established, such a permanently renegotiated dynamic immunity does not always prevent diseases; sometimes it even itself causes diseases. Diseases are the price to pay for immunity. Indeed, in spite of its high cost, what this immunity provides is much more essential than the defense of the organism, it is the very existence of the meta-organism. Much more than a protection, immunity is a condition of existence.

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