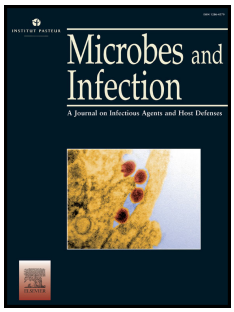
Accepted Manuscript



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PII: S1286-4579(17)30230-7

DOI: 10.1016/j.micinf.2017.12.008

Reference: MICINF 4545

To appear in: *Microbes and Infection*

Received Date: 3 November 2017

Accepted Date: 11 December 2017

Please cite this article as: O. Rasid, J.-M. Cavaillon, Compartment diversity in innate immune reprogramming, *Microbes and Infection* (2018), doi: 10.1016/j.micinf.2017.12.008.

Compartment diversity in innate immune reprogramming

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ABSTRACT

Pathogens or endogenous molecules can reprogram innate immunity. This process can take the form of priming or tolerance depending on the activating signal, and favors enhanced resistance of infection and other insults, by modulating inflammation. Similarly to their organ-specific properties, reprogramming of macrophages and NK cells, is also compartmentalized.

Key words: BCG; β-glucan; cytokines; DAMPs; endotoxin; innate memory; PAMPs; zymosan.

1. From endotoxin tolerance to innate immune reprogramming

Classically viewed as the first line of defense, cells of the innate immune system were considered as early, non-specific and naïve responders. However, observations from the early 1940s suggested there might be more to the innate immune system than meets the eye. The concept of endotoxin tolerance emerged in 1946, after Paul Beeson showed that repeated injection of typhoid vaccine led to reduced fever in rabbits [1]. Reduced fever in response to endotoxin (lipopolysaccharide, LPS) or killed bacteria as compared to controls was later found in patients recovering from malaria [2], typhoid or paratyphoid fever [3] or with pyelonephritis [4]. In the following decades, pre-treatment with endotoxin was shown to be