

Host-dependent factors in the pathogenesis and persistence of *Salmonella* serovars in animals and humans

Serovars of *Salmonella* can show a wide range of host-specificity with regard to infections. Some serovars such as *Salmonella* Typhimurium and *S. Enteritidis*, have broad host ranges, infecting many animal species as well as humans. Other serovars are host-restricted, such as *S. Typhi*, which only infect humans and primates, or *S. Gallinarum/Pullorum* which only infect avian species, and other serovars show host-adaptation, such as *S. Choleraesuis* or *S. Dublin* which affect swine or cattle, respectively, but which can also cause severe infections in humans. *Salmonella* is therefore a pathogen of variable broad and restricted host-specificity. The zoonotic potential lies in the high adaptability of this pathogen. Studies on host-specificity and disease forms for many serovars of *Salmonella* remains limited, in part due to the lack of infection models.

Recent studies suggest that differences in host-specific immune responses play a decisive role in the ability for certain serovars to establish infections. While immune cells play a large role in both antigen presentation and clearance functions of intestinal pathogens, the initial infection by *Salmonella* is generally associated with intestinal epithelial cells, which are also capable of immune cell signalling. The intestinal innate immune response is therefore likely to play a large role in the outcome of infection in human and different animal species.

We are investigating the species-specific differences in the innate immune response to different bacterial serovars by comparing the functions of human, avian and swine immune response regulators to *Salmonella* infections. In addition to phenotypic characterization of adhesion, invasion and intracellular growth of different *Salmonella* serovars with different host species, we are also characterizing the host cell immune responses to infection in intestinal epithelial and macrophage cell lines of human and different animal origins.

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Funding/Grant Support:

Bundesministerium für Bildung und Forschung (BMBF) Grant "Zoonose"

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Selected Publications:

Gripp, E., D. Hlahla, X. Didelot, F. Kops, S. Maurischat, K. Tedin, T. Alter, L. Ellerboek, K. Schreiber, D. Schomburg, T. Janssen, P. Bartholomäus, D. Hofreuter, S. Woltemate, M. Uhr, B. Brenneke, P. Gruening, G. Gerlach, L. Wieler, S. Suerbaum and C. Josenhans (2011) Closely related *Campylobacter jejuni* strains from different sources reveal a generalist rather than a specialist lifestyle. *BMC Genomics* 12:584.

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