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# Multilayered B Cell Immunity to Influenza Virus Infection

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Location: **COB2 170**

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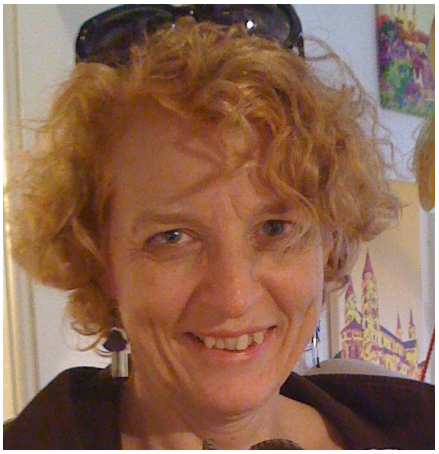
## ABSTRACT

B cell responses to influenza virus infection are complex and multi-layered and we are exploring the functions for each B cell response component. We found that preexisting antibodies, either natural or infection-induced, provide an early layer of immune protection, effectively reducing initial rapid viral replication and dissemination in the respiratory tract. CD5pos B-1a, but not CD5neg B-1b cells, in the plural cavity are one of the first responders to influenza infection. They migrate to the draining mediastinal lymph nodes (MedLN), where they accumulate in a CD11b-dependent manner, following activation by infection-induced Type I IFN. B-1a cells that differentiate to IgM-secretors in the MedLN change their phenotype and lose CD5, thus taking on a B-1b phenotype. Infection-induced IL-1-stimulated B-1a also enhances IgM production by conventional MedLN B-2 cells, thus becoming regulators of the adaptive immune response. The presence of early IgM production is required for maximal induction of antiviral IgG responses. Our ongoing work aims to explore the mechanisms by which secreted IgM enhances these responses and we have identified B cell-specific expression of the Fc  R to play a role in these processes.

## BIO:



Nicole Baumgarth, Ph.D, DVM is a Professor at the Center for Comparative Medicine at UC Davis. Dr. Baumgarth's work focuses broadly on the regulatory processes controlling successful and unsuccessful immune responses to infectious diseases. Her current work focuses on tissue-specific immune responses in the context of respiratory tract pathogen, influenza virus, and a chronic non-resolving systemic infection with Borrelia burgdorferi (Lyme Disease). Dr. Baumgarth earned her Ph.D. and D.V.M. from the University of Hanover, Germany. She previously completed postdoctoral work in the lab of Dr. Anna Kelso at the Walter and Eliza Institute of Medical Research in Australia, where she investigated T-cell responses to influenza, as well as in the Herzenberg Lab at Stanford, where she became interested in the role of B-cell responses and innate-like lymphocytes in immune responses to infection. Dr. Baumgarth is intimately involved in graduate education at UC Davis. She is the immediate past Chair of the Graduate Group in Immunology and a current Chair of Graduate Council. She has served on the Executive Committee of the "Animal Models of Infectious Diseases" T-32 training grant since its inception and has been the Director of the UC Davis "Comparative Medical Sciences T-32 Training Program for Veterinarians" since 2013.