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Mucosal vaccination with accessory antigens provides surprisingly robust protection against early SIV replication: Underappreciated role of location and immunodominance in vaccination against chronic infection

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It is well established that T cells are critical for initial control of acute viral replication, and in the case of HIV, the later set-point of chronic phase viremia. What appears to be overlooked is naturally failing as well as fast and successful control of experimental chronic infection, is associated with massive T cell expansion beyond anything realistically maintained by conventional vaccine induced T cells. With this futility in mind, the next best thing would be if T cell based vaccines facilitates the timely generation of effective immunity after infection. To study the best ways of eliciting post-infection response breadth, we established effective control of chronic infection in mice using either subdominant or dominant antigens. We discovered that subdominant antigens were effective in promoting a broader acute response and could facilitate post infection protective immunity most likely mediated by responses against dominant antigens. A similar vaccination approached in non-human primates established that mucosal vaccination with subdominant antigens could elicit could elicit protective SIV specific immunity associated with improved gag specific responses. Lastly, we showed that immunodominance also critically influences, prime-boost vaccination regimens. These results pinpoints key challenges in generating effective T cell based vaccines as well as potential solutions.

Biography

Peter Johannes Holst has expertise in developing viral vectored vaccines, genetic adjuvants and animal models. He works at the University of Copenhagen involved in the development of novel vector technologies. An important inspiration has been the technical requirements needed to explore new anti-HIV, which have let to both new T cell and B cell adjuvant technologies.

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