Clonal analysis of Salmonella-specific effector T cells reveals serovar-specific and cross-reactive T cell responses - DTU Orbit (27/07/2019)

Clonal analysis of Salmonella-specific effector T cells reveals serovar-specific and cross-reactive T cell responses

To tackle the complexity of cross-reactive and pathogen-specific T cell responses against related Salmonella serovars, we used mass cytometry, unbiased single-cell cloning, live fluorescence barcoding, and T cell receptor sequencing to reconstruct the Salmonella-specific repertoire of circulating effector CD4+ T cells, isolated from volunteers challenged with Salmonella enterica serovar Typhi (S. Typhi) or Salmonella Paratyphi A (S. Paratyphi). We describe the expansion of cross-reactive responses against distantly related Salmonella serovars and of clonotypes recognizing immunodominant antigens uniquely expressed by S. Typhi or S. Paratyphi A. In addition, single amino acid variations in two immunodominant proteins, CdtB and PhoN, lead to the accumulation of T cells that do not cross-react against the different serovars, thus demonstrating how minor sequence variations in a complex microorganism shape the pathogen-specific T cell repertoire. Our results identify immune-dominant, serovar-specific, and cross-reactive T cell antigens, which should aid in the design of T cell vaccination strategies against Salmonella.

General information
Publication status: Published
Organisations: Department of Bio and Health Informatics, Cancer Genomics, University of Oxford, Agency for Science, Technology and Research, University of Liverpool, Wellcome Trust Sanger Institute, University of Basel, Oxford University Clinical Research Unit
Number of pages: 13
Pages: 1-13
Publication date: 2018
Peer-reviewed: Yes

Publication information
Journal: Nature Immunology
Volume: 19
Issue number: 7
ISSN (Print): 1529-2908
Ratings:
BFI (2018): BFI-level 2
Scopus rating (2018): CiteScore 14.71 SJR 13.3 SNIP 4.302
Web of Science (2018): Impact factor 23.53
Web of Science (2018): Indexed yes
Original language: English
DOIs: 10.1038/s41590-018-0133-z
Source: FindIt
Source-ID: 2435576579
Research output: Contribution to journal › Journal article – Annual report year: 2018 › Research › peer-review