







tive evidence. For example, direct binding and activation of isolated mast cells by enterotoxins must be investigated. It has been established that MHC class II antigens (see next section) serve as the receptors on nonlymphoid cells for the ~~antigen presenting~~ enterotoxins, and it is important to show that





microbial. It would seem then that the function of superantigens remains to be determined. Certainly, the nature of their receptors in the immune system and the power with which they activate it provide the impetus to determine the role and

19. Singh, B. R., Kokan-Moore, N. P., and Bergdoll, M. S. (1988) Molecular topography of toxic shock syndrome toxin I as revealed by spectroscopic studies. *Biochemistry* 27, 8730-8735
20. Muñoz, P. A., Warren, I. R., and Noelken, M. E. (1976)  $\beta$

importance of superantigens in the immune response to specific antigens, both self and foreign. FJ

Work by the authors was supported by National Institutes of Health grant AI 25904 and National Institutes of Health Training

structure of aqueous staphylococcal enterotoxin B by spectropolarimetry and sequence-based conformational predictions. *Biochemistry* 15, 4666-4671

21. Peavy, D. L., Adler, W. H., and Smith, R. T. (1970) Mitogenic effects of endotoxin and staphylococcal enterotoxin B on mouse

39. Fischer, H., Dohlsten, M., Lindvall, M., Sjögren, H. O., and Carlsson, R. (1989) Binding of staphylococcal enterotoxin A to HLA-DR on B cell lines. *J. Immunol.* **142**, 3151-3157
40. Herman, A., Croteau, G., Sekaly, R. P., Kappler, J., and Marrack, P. (1990) HLA-DR alleles differ in their ability to
- cations of molecular biology to structure-function relationships. *Biochemistry* **29**, 9495-9502
54. Brown, J. H., Jardetzky, T., Saper, M. A., Samraoui, B., Bjorkman, P. J., and Wiley, D. C. (1988) A hypothetical model of the foreign antigen binding site of class II histocompatibility

709-717

41. Scholl, P. R., Diez, A., Karr, R., Sekaly, R. P., Trowsdale, J., and Geha, R. S. (1990) Effect of isotypes and allelic polymorphism on the binding of staphylococcal exotoxins to MHC class II molecules. *J. Immunol.* **144**, 226-230
42. Lee, J. M., and Watts, T. H. (1990) Binding of staphylococcal enterotoxin A to purified murine MHC class II molecules in supported lipid bilayers. *J. Immunol.* **145**, 3360-3366
43. Mollick, J. A., Chintagumpala, M., Cook, R. G., and Rich, R. R. (1991) Staphylococcal exotoxin activation of T cells. Role of exotoxin-MHC class II binding affinity and class II isotype. *J. Immunol.* **146**, 463-468
44. Russell, J. K., Pontzer, C. H., and Johnson, H. M. (1990) The I-A<sub>β</sub><sup>b</sup> region (65-85) is a binding site for the superantigen,
55. Vroegop, S. M., and Buxser, S. E. (1989) Cell surface molecules involved in early events in T-cell mitogenic stimulation by staphylococcal enterotoxins. *Infect. Immun.* **57**, 1816-1824
56. Fleischer, B., Gerardy-Schahn, R., Metzroth, B., Carrel, S., Gerlach, D., and Köhler, W. (1991) An evolutionary conserved mechanism of T cell activation by microbial toxins. Evidence for different affinities of T cell receptor-toxin interaction. *J. Immunol.* **146**, 11-17
57. Gascoigne, N. R. J., and Ames, K. T. (1991) Direct binding of secreted T-cell receptor  $\beta$  chain to superantigen associated with class II major histocompatibility complex protein. *Proc. Natl. Acad. Sci. USA* **88**, 613-616
58. Gascoigne, N. R. J. (1990) Transport and secretion of truncated T cell receptor  $\beta$ -chain occurs in the absence of association with