

- [1] S. Hofmeyr. The implications of immunology for secure systems design. *Computers & Security*, 23(6):453-455, September 2004. [[bib](#) | [DOI](#)]

The immune system can be a powerful model for understanding and improving computer security. In this article we explore the analogy, starting with a description of early work at discovering “peptides” for computer systems in the form of sequences of system calls, and moving on to the implications of immunology for secure systems design. In particular, we discuss how the immune system tolerates errors, and how we can borrow these ideas to improve the robustness of our computer systems. We observe that a key aspect of the biology is that the immune system and the body have co-evolved so that the body is easier to protect; what we need is a similar co-evolution of computer systems and the methods we use to secure them.

- [2] M. Villalobos-Arias, C. A. C. Coello, and O. Hernández-Lerma. Convergence analysis of a multiobjective artificial immune system algorithm. In *Proceedings of the 3rd International Conference on Artificial Immune Systems (ICARIS)*, volume 3239 of *Lecture Notes in Computer Science*, pages 226-235. Springer-Verlag GmbH, January 2004. [[bib](#) | [DOI](#)]

This paper presents a mathematical proof of convergence of a multiobjective artificial immune system algorithm (based on clonal selection theory). An specific algorithm (previously reported in the specialized literature) is adopted as a basis for the mathematical model presented herein. The proof is based on the use of Markov chains.