Abstract

The volume of digital data is increasing every day. So there is need to develop new memory
Potential Applications of Proteins in IT

architectures to provide more cost-effective storage capacity, processing speed and data transfer bandwidth. For many years, researchers have been studying organic molecules and their potential applications in information technology, such as the use of biological molecules to encode, manipulate and retrieve information. There are existing biological molecules whose two stable states of their atomic structure can be controlled. These states represent the logic states of 0 and 1 by benefiting from the photo cycle of these photosensitive proteins. A number of alternative methods to integrated circuit information storage have surfaced recently. The most promising of the new alternatives is protein-based optical memory storage using Bacteriorhodopsin (bR). In this paper we study about bR (unit of protein memory), process of protein extraction, photocycle, its application and limitations. Various computational methods like – Write-data, Read-data, Erase-data and Refresh-memory with emphasis on Bacteriorhodopsin are studied. We also throw light on potential areas of application of protein memory.

References

- Felix T. Hong, ”Bacteriorhodopsin as an Intelligent Material, A Nontechnical Summary” in Molecular Computing Overview (Jan. 1, and Jan. 15, 1996, issues of 21st ) .

**Index Terms**

Computer Science

Information Technology

**Keywords**

- Optical storage
- protein based memory
- two photon absorption (TPA)
- Bacteriorhodopsin (bR)
- 3-D matrix
- photocycle