

part of major histocompatibility complex class I molecules. The role of these molecules is to display peptides derived from proteins within the cell, for surveillance by killer T cells. The molecular interactions involved in peptide binding to major histocompatibility complex molecules are described in an accompanying review by L. D. Barber and P. Parham. These studies have important implications for vaccine development, treatment of autoimmune diseases and graft rejection. A specific class of bacterial and viral antigens called 'superantigens' have the unusual ability to stimulate a high frequency of T cells by unconventional mechanisms, and these have been reviewed by M. T. Scherer and co-authors. Several possible avenues for use of superantigens in diagnosis and therapy have been pointed out by the authors.

Cell-cell interactions play a major role in the determination of cell fate and regulation of differentiation, morphogenesis and growth. C. Birchmeier and W. Birchmeier have reviewed the biology of mesenchymal-epithelial interactions, with special emphasis on signalling factors such as cell adhesion molecules and tyrosine kinase receptors. Abnormal cell-cell interactions result in tumour metastasis. W. G. Stetler-Stevenson and co-authors have described recent findings on tumour cell invasion and metastasis. These have become useful in developing new targets for therapy by disruption of tumour cell attachment by peptide analogues of cell adhesion molecules and the use of protease inhibitors to limit extracellular matrix proteolysis required for tumour cell invasion. K. Drickamer and M. E. Taylor have documented the different types of animal lectins that have been discovered recently. As yet there is little understanding of the functions of most of these lectins in animal cells.

The role of the cytoskeletal framework of the cell in diverse phenomena is dealt with in three reviews. E. D. Schejter and E. Wieschaus have focussed on the emerging role of the cytoskeleton as a mediator of morphogenesis in the early *Drosophila* embryo. Aspects of organelle transport, functional compartmentalization of the cytoplasm, interactions between cytoskeletal networks, and cell division have been highlighted. J. Condeelis has described our current understanding on the formation of cell

protrusions, and proposed a model for this process based on nucleation and growth of new actin filaments followed by actin cross-linking and further actin polymerization. The erythrocyte plasma membrane continues to be a favourite for studying the membrane skeleton. V. Bennett and D. M. Gilligan have reviewed the role of spectrin, ankyrins and accessory proteins in the organization of the plasma membrane and proposed a function for these proteins in the assembly and maintenance of specialized domains on the cell surface.

Finally, C. T. Esmon has described the mechanisms that control blood coagulation. This well-studied process continues to yield new insights, with hopes for better therapeutic agents to control coagulation and prevent thrombosis.

This volume truly reflects the amazing advances in our understanding of biological processes in recent years. Most authors have tried to build up a composite picture of the phenomena they have described. Some gaps are evident but these are bound to occur in a description of 'life at the leading edge'. An essential book for all libraries and research groups in biology.

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**The Physics of Karma.** V. Dwaraknath Reddy. MAPIN Publications Pvt. Ltd. Chidambaram, Ahmedabad 380 013. India 1992. 167 pp. Price not indicated

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Some scientists feel an urge to explain the 'unmanifested' in terms of the laws of physics deduced through experiments, measurements and mathematical analysis. The book under review is the product of such an urge. It has 38 chapters, each consisting of two to four pages.

The literal meaning of the word *Karma* is action – as envisaged in the word *Karmachari*, an unskilled labourer. In its spiritual context *Karma* represents the resultant effect of all the actions carried out by a particular *Jiva* (the life spirit) during the past several lives while occupying different physical, material bodies, human or animal. Often this resultant effect is also connotated by the word 'fate'. The logic presented by the author for the continuation of this *Karma* from one life to another of the same *Jiva* has a semblance to the

logic employed in physics. Hence the title of the book: *The Physics of Karma*. This logic is expounded in pages 113 to 143 of the book. Deaths and re-incarnations are only stages in the endless pursuit of happiness. Enduring happiness is achieved only when the finite *Jiva* merges with the Absolute, variously called *Brahman*, *Paramatman*, *Supreme Consciousness*, etc.

Our *Upanishads* deal with time, space, creation of this manifested universe accessible to human senses, the *Jivas* habiting the human and other bodies, *Karma*, death, re-incarnation, *Brahman*, etc. They are dealt with in cryptic language and require detailed commentaries and explanations by scholars like Adi Sankara or seers like Shri Ramana Maharshi.

Shri V. Dwaraknath Reddy M Sc (Louisiana USA), the author, has been a successful industrialist. After retirement he settled at Ramanashram, Tiruannamalai, South India, in 1983. At Ramanashram, he has pondered over the Upanishadic thoughts and deductions with the help of the expositions and personal life of Shri Ramana Maharshi, all available in the atmosphere of the Ashram. In the book under review Shri Dwaraknath brings a scientific, rational approach to the intricate Upanishadic expositions, using terms of physics, leading the reader to conclusions arrived at by the author. The reader is called upon to evaluate them in terms of his/her personal experience. Terms occurring in physics like energy, potential, mass, relativity, gravitation, acceleration, continuity, dynamics, particles, etc are employed sometimes as analogies and often as physical entities, in the expositions.

A proper comprehension of the book requires a good familiarity with the literature on Upanishads, the Bhagavad Gita, and the Brahma Sutra. It can be had through the commentaries on them in Sanskrit by Adi Sankara, or in English by Dr S. Radhakrishnan, the late President of India.

The book has several illustrations by Rajny Krishnan, artist and sculptress. They hold aloft many of the ideas presented by the author verbally.

In keeping with the reputation of MAPIN Publishers, the printing and the get up of the book are good.

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