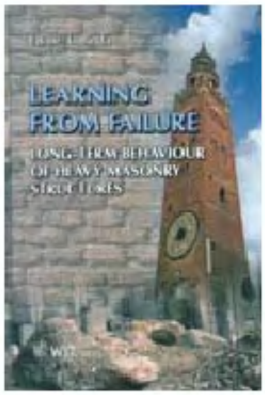
chapters are highly coordinated. It aims to explore whether hormesis can be used for healthy ageing of human beings and presents excellent and interesting information on hormesis with respect to ageing. The editors are leading researchers and popularly known for their longstanding contributions in the area of ageing and hormesis.

The book comprises ten well-written chapters covering a wide range of topics on hormesis and ageing. Each chapter is thoroughly discussed and provides new information. The first two chapters deal with detailed introduction of hormesis and ageing, the next five chapters discuss hormetic effects of various types of stresses, and the last three chapters are concerned with clinical applications of hormesis. The book concludes how hormesis can be useful for healthy ageing, though the underlying mechanism of action is not clearly understood.

The book begins with an excellent introduction and brief historical analysis of hormesis and ageing by the editors. The second chapter by Edward Calabrese, further explains the phenomenon of hormesis and focuses on its use in gerontological research. The third chapter written by Alexander Vaiserman, describes the beneficial effects of low-dose irradiation on the longevity of fruit flies, nematodes, rodents and human beings. The next chapter by Eric Le Bourg presents results of hormetic effects of hypergravity on ageing and longevity of *Drosophila melanogaster*. The following chapter by Jesper Sorensen and colleagues focuses on the use of extreme temperatures, either hot or cold, in *D. melanogaster*. The next chapter by the editor Suresh Rattan himself, describes the effects of mild stresses on human cells, mainly fibroblasts. Focusing on rodents and human beings, Li Li Ji shows that an increased physical activity can act as a mild stress with hormetic effects. The last three chapters are concerned with clinical applications of hormesis. Brian Morris discusses the use of hormetic compounds for health benefits. Pasquale Abete and Franco Rengo present evidences to show how mild stress can be used to protect the ageing heart from pathological insults. Akmal Safwat argues that low-dose whole-body irradiation enhances the efficiency of the immune system. In conclusion, all the authors emphasize the perspectives for human beings, mentioning that hormesis can be used as an effective anti-ageing, health-promoting and lifespan-extending strategy. The book is thought-provoking and opens an exciting new area for detailed study. It is highly useful for young researchers in biogerontology as well as for established biogerontologists to analyse their results in the light of hormetic effects. Thus the book is worth reading by not only biogerontologists, but by all those who are interested in understanding the hormetic approach for healthy ageing.

MAHENDRA K. THAKUR

Biochemistry and Molecular Biology Laboratory,
Department of Zoology,
Banaras Hindu University,
Varanasi 221 005, India
e-mail: mkt_bhu@yahoo.com



Learning from Failure – Long-term Behaviour of Heavy Masonry Structures. L. Binda (ed.). WIT Press, Ashurst Lodge, Ashurst, Southampton, S040-7AA, UK. 2008. 256 pp. Price: £84.00/US$ 168.00.

This book is an interesting compilation, which is completely dedicated to the study of long-term behaviour of historic masonry buildings. Decades of research experiences of several authors have been aptly divided into well-defined themes in nine chapters. The themes and the subjects of discussion in the book stem from the long-drawn studies conducted in understanding the collapse of centuries of old, heavy and tall masonry towers in Italy and other European countries. Walls of historical masonry structures are characterized by thick sections in order to reduce the intensity of stresses due to various types of loading actions. Safety against collapse of such masonry structures is generally taken for granted when the masonry is thick and under low intensity of stresses. Long-term progressive damage due to creep stresses/strains and cyclic nature of loading with time can lead to collapse of even the heavy masonry structures. This point has been clearly brought out and demonstrated through discussions on experimental work, progressive monitoring of structural deterioration of some old masonry towers, and through analysis and modelling using numerical tools.

Experimental work on collapsed and existing structures, analysis/prediction of collapse and creep stresses using numerical techniques, monitoring long-term damage, repair techniques and application of probabilistic model to study the long-term behaviour represent the main themes discussed in nine chapters. Mechanical tests on materials (bricks, mortars and masonry prisms) collected especially from the collapsed Civic Tower of Pavia (Italy) and other *in situ* tests on existing heavy masonry towers throw light on masonry strength, stress–strain relations, and deformation characteristics under fatigue and creep. A new method of *in situ* testing using flat-jack test technique is an innovative approach to understand the mechanical behaviour of masonry under compression. Assessing residual life of the masonry has also been highlighted.

Step-by-step in time technique has been demonstrated to investigate time-dependent creep effects on redistribution of stresses, which throws light on long-term damage due to creep in masonry structures. The importance of monitoring and generating quantitative data on response of masonry structures subjected to various actions (load, thermal actions, micro-tremors, wind, etc.) using both static and dynamic monitoring techniques is clearly brought out. Use of numerical tools in assessing structural health and devising the monitoring scheme has been illustrated through some case studies. Discussions pertaining to such monitoring methods and the usefulness of such data to assess the health of the structure provide helpful guidelines for remedial actions and conservation of historical masonry structures.

The counteraction of creep damage in historical masonry structures is a serious concern for suggesting conservation measures. Bed joint reinforcement technique

has been proposed to postpone/prevent collapse of ancient masonry structures. Exhaustive experimental results on this new technique have been discussed. The bed joint reinforcement technique leads to improved capacity for masonry in resisting lateral strains and stresses, and hence improved performance against creep damage. The experiences of using such techniques have been demonstrated through the discussion on real-life case studies on conservation. The book ends with a chapter on the illustration of simple checks/measures in assessing the health of old structures in order to prevent the collapse of historical masonry structures and a probabilistic model for the assessment of historic buildings. Compiling such a book is not possible without the commendable efforts from the editor and the authors of various chapters.

B. V. VENKATARAMA REDDY

Department of Civil Engineering,
Indian Institute of Science,
Bangalore 560 012, India
e-mail: venkat@civil.iisc.ernet.in

Annual Review of Cell and Developmental Biology, 2007. R. Schekman *et al.* (eds). Annual Reviews, 4139 El Camino Way, P. O. Box 10139, Palo Alto, California 94303, USA. Vol. 23. 731 pp. Price not mentioned.

Annual Review articles are meant to be written for students and therefore are supposed to focus more on key concepts, discoveries and the nature of the experiment rather than merely being an assembly of facts, and the latest in this series also fulfils the same. Teaching cell and developmental biology is always challenging due to the ever-increasing sophistication of the techniques and complexity of the subject. This treatise undoubtedly proves to be a valuable guide for students and established researchers alike, who wish to learn about the latest discoveries and conceptual developments in cell and developmental biology.

In accordance with the traditional format, the first chapter provides a perspective into the research career of Mary-Lou-Pardue, a pioneer in studies of the *Drosophila* polytene chromosomes and the expression of ribosomal and heat shock genes in fruit fly. Pardue narrates how the development of *in situ* hybridization technique revolutionized our understanding of chromosome function. Initially she exploited on the array-like organization of the polytene chromosomes with well-identified chromatin landmarks to study the distribution as well as the interphase chromatin structure of 'interesting' DNAs that did not code for proteins. Technological revolutions in the past few years have enabled us to answer questions regarding chromosomes at the level of the DNA sequence. However, the regions of repetitive DNA pose problems for sequence assembly and are poorly annotated in currently assembled genome databases. In very early days, Pardue realized the special contribution of repetitive DNAs towards chromosome structure and function. Her work using mouse satellite DNA and *Xenopus laevis* 5S RNA genes suggested that such sequences can affect chromosome structure and in turn their function. Thus, significant part of research in her laboratory was devoted to study various repeats and how their location reflects chromatin structural and functional states, e.g. hetero- and euchromatin. Finally, her group also found that *Drosophila* telomeres consist of and are maintained by special non-LTR retrotransposons.

Early heart formation has been the favourite model for developmental biologists to understand the morphological and molecular events that dictate organ development. However, there have been discrepancies in the literature, giving rise to a confusing picture. The review by Abi-Issa and Kirby makes a concerted effort in discussing ways to explain such discrepancies using available data and offers a comprehensive picture of major events involved in the formation of the heart tube from bilateral progenitor fields using the chick and mouse models. Vascular and neural systems have dominated the studies on developmental programmes. There are a number of reviews describing such systems, including those on the cell biology of semaphorins in axonal guidance, synaptic plasticity, and the three-dimensional complexity of the cerebellum.

Despite the large body of knowledge regarding the cellular basis of wound repair, the primary transcriptional regulators responsible for it have been identified only recently. The review by Schafer and Werner summarizes the knowledge on their regulation and function in the repair process. Wounding affects the expression of multiple transcription factors at the edge of the wound and their post-translational regulation. Interestingly, similarities are found in the signalling pathways and transcription factors that regulate dorsal closure in *Drosophila* embryos and wound healing in adult flies and mice. Evidence for interaction of various transcription factors at the wound site has been obtained very recently and suggests the existence of a complex transcriptionnal network that regulates efficient repair. Understanding such networks will allow the identification of novel targets for the treatment of wound-healing disorders. Another review describes the role of the glucosaminoglycan hyaluronan in tissue injury and repair. Turnover of extracellular matrix components is an important aspect of tissue repair and remodelling. The interactions between matrix component hyaluronan and its signalling receptors such as CD44 initiate inflammatory responses via toll-like receptors, maintain structural integrity of cells, and promote recovery from tissue damage. Much of these events has been studied using acute lung injury as a model and studies with other tissue injury models are awaited.

Animal models are preferred for studies on developmental systems and this fact has also reflected in the number of reviews dealing with plant systems. This volume has only two reviews on plant systems – one discussing the role of SNARE-domain proteins in plant biology and the second about embryonic patterning in *Arabidopsis*. Members of the superfamily of *N*-ethylmaleimide-sensitive factor adaptor protein receptor (SNARE)-domain-containing proteins are instrumental for vesicle-associated membrane fusion events during transport processes between individual compartments of the endomembrane system, inclusive of exocytosis and endocytosis. Recent genetic studies have indicated the role of SNAREs in essential developmental processes such as cytokinesis, autophagy and physiological responses such as shoot gravitropism, pathogen defence, symbiosis, and abiotic stress response has been discussed. Interestingly, there is increasing evidence for the existence of lipid rafts in plants and few SNARE isoforms seem to be associated with lipid raft-like plasma membrane microdomains opening exciting new avenues for research in this field.