Preface

JBBTE is one of the few journals in the biomaterials and tissue engineering realm that publishes both research papers and review papers, and this journal spans the diverse but closely interrelated fields of Biomimetics, Biomaterials, and Tissue Engineering. This volume (volume 15) comprises eight papers, all of which have a unique contribution to make to the interconnected fields of biomimetics, biomaterials, and tissue engineering.

1. Staudt, Saxe, Schmied, Soeur, Böhme, and Baumgartner (Germany) present a fundamental **biomimetics** study of the sandfish, a lizard capable of moving through desert sand in a swimming-like fashion. The epidermis of this lizard combines high abrasion resistance with low friction to sand, outperforming steel, due to the chemical composition of the scales (glycosylated β-keratins). The friction, the microstructure, the glycosylation of the β-keratin proteins and β-keratin coding DNA of the sandfish are studied in comparison to other reptilian species.

2. Hao, Shen, Ma, Li, Ren, and Gu (China, UK) present a **biomimetics** study of the foot, using CT scans to investigate the metatarsal structure of the foot with the goal of analysis of foot biomechanics during walking or other activities.

3. Mehzabeen, Sureshkumar, Thangavel, Chong, Guazzato, and Boughton (Australia) present a **biomimetics** study involving the design and clinical evaluation of a novel six-chamber biomimetic dental wear system with multi-axis mechanical, thermal, chemical, and biologic control capabilities, for *in vitro* dental wear testing.

4. Hosseinnejad, Fooladi, Hafezi, Mafi, Amiri and Nourani (Iran) present a truly integrated **biomimetics, biomaterials, and tissue engineering** study on bone, involving detailed analysis of compact and cancellous rabbit bone which was then used to develop and evaluate physically and biologically a biomimetically inspired bone scaffold made from bioglass and gelatin.

5. Chow, Baume, Lok, Cao, Coleman, Ruys and Boughton (Australia) present a **tissue engineering** study involving a bioresorbable polyester-based scaffold developed for biologic skin grafts and supportive fillers for non-healing chronic wound ulcers. This study investigates the scaffold as a drug delivery vehicle for antibiotics to enhance its viability as a skin scaffold.

6. Hosseini, Amjadi, and Haghighipour (Iran) present a **tissue engineering** study on cartilage, involving hydrogels based on poly vinyl alcohol and chitosan, investigating the effect of the freeze-thaw cycles and glutaraldehyde on the hydrogel properties.

7. Ehsani, Ruys, and Sorrell (Iran) present a two-part **biomaterials** study on hot isostatic pressing of fibre-reinforced hydroxyapatite ceramic matrix composites. Part 1 explores alumina fibre reinforcement.

8. Ehsani, Ruys, and Sorrell (Iran), **biomaterials study** part 2 which explores zirconia powder and zirconia fibre reinforcement of hot isostatically pressed of fibre-reinforced hydroxyapatite ceramic matrix composites.

All of these papers document cutting edge research in the interrelated disciplines of biomaterials and tissue engineering. The first three papers are biomimetics studies. Paper 4 is a truly integrated biomimetics, biomaterials, and tissue engineering study. Papers 5 and 6 focus on tissue engineering, and papers 7 and 8 are biomaterials studies. Thus Volume 15 of the Journal of Biomimetics, Biomaterials, and Tissue Engineering presents a broad cross-section of research papers bridging the three inter-related disciplines of Biomimetics, Biomaterials, and Tissue Engineering.

Professor Andrew Ruys
Editor in Chief: JBBTE
September 2012