Aims & Scope:
Dentistry and oral and maxillofacial surgery are medical disciplines using various forms of biomaterials and biotechnologies in almost all clinical situations and therapeutic strategies. These biomaterials and biotechnologies represent a considerable market, a huge field of research and development for innovative products and therapeutic strategies, and probably one of the largest parts of the dental literature. The characteristics of these materials define their potential use and the available therapeutic solutions. In oral and maxillofacial surgery, biomaterials are mostly implantable materials such as implants, prosthetic materials and bone grafting substitutes, but it also includes various forms of bioactive pharmacological products (platelet concentrates for surgical use, termed Platelet-Rich Plasma (PRP) and Platelet-Rich Fibrin (PRF), mouthwashes and gels, antibiotics). Many other pharmaceutical biotechnologies are combined in daily practice, particularly to optimize clinical results in complex clinical situations. The development of optimized biotechnologies is the source of a considerable literature. To understand the present and future of this field, it is mandatory to understand the molecular, cellular and pharmaceutical aspects of all these biomaterials and technologies. In this special issue, the impacts of these materials and technologies in key clinical situations are reviewed and discussed by an international group of researchers. This issue is insisting particularly on the molecular and cellular mechanisms and on the pharmaceutical functioning of these products (implants, bone substitutes, mouthwash, PRP/PRF) in a wide range of oral applications (extraction sockets, implant surgery, bone augmentation, periodontal surgery), particularly in some pathological situations (osteoporosis, infections, peri-implantitis). The overview of this field is a considerable task that requires to highlight the key mechanisms and to extract the rationale of the current biomaterials and biotechnologies, in order to develop new solutions and treatment strategies.

Keywords:
Biomaterials, bone grafting, bone substitutes, dental implants, maxillofacial surgery, oral surgery, peri-implantitis, platelet-rich plasma (PRP).

Subtopics:

1/ Molecular, cellular and pharmaceutical aspects of filling biomaterials during the management of extraction sockets. By Prof. Antonio Barone (Department of Surgical, Medical and Molecular Pathology, University of Pisa, Italy) et al.

2/ Molecular, cellular and pharmaceutical aspects of biomaterials for preimplant onlay bone grafting. By Prof. Hom-Lay Wang (Department of Periodontics and Oral Medicine, University of Michigan, School of Dentistry, Ann Arbor, Michigan, USA) et al.

3/ Molecular, cellular and pharmaceutical aspects of synthetic bone substitute materials for oral and maxillofacial graft: evolutions of hydroxyapatite and nanoscaled materials. By Prof. Werner Götz (Oral Biology Research Laboratory, Center of Dento-MaxilloFacial Medicine, Faculty of Medicine, University of Bonn, Bonn, Germany) et al.

4/ Molecular, cellular and pharmaceutical aspects of platelet concentrates (Platelet-Rich Plasma - PRP and Platelet-Rich Fibrin - PRF) for surgical use in periodontology, oral
surgery, esthetic and implant dentistry. By Prof. Tomasz Bielecki (Department and Clinic of Orthopaedics and Trauma Surgery, Trauma Center Hospital and Medical University of Silesia, Sosnowiec, Poland) et al.

5/ Do different implant materials and surface topographies affect etiology and treatment of peri-implantitis? A molecular, cellular and pharmaceutical approach. By Prof. Jamil Awad Shibli (Department of Periodontology and Oral Implantology, Dental Research Division, University of Guarulhos, Guarulhos, Sao Paulo, Brazil) et al.

6/ Impact of different implant surface chemistry, micro- and nanotopographies on human bone. Molecular, Cellular and Pharmaceutical Aspects. By Prof. David M. Dohan Ehrenfest (South Korea) and Prof. Jamil Awad Shibli (Brazil).

7/ Molecular, cellular and pharmaceutical aspects of osteoporosis as risk factor for implant-supported restoration: rationality of the debate. By Prof. Jamil Awad Shibli (Department of Periodontology and Oral Implantology, Dental Research Division, University of Guarulhos, Guarulhos, Sao Paulo, Brazil) et al.

8/ Molecular, cellular and pharmaceutical aspects of Candida and oral pathogens infection related to the biomaterials used in prosthdontics. By Prof. David M. Dohan Ehrenfest (Department of Periodontology and Oral Implantology, Dental Research Division, University of Guarulhos, Guarulhos, Sao Paulo, Brazil) et al.

9/ Molecular, cellular and pharmaceutical aspects of mouthwash solutions and oral gels in Dentistry and Oral and Maxillofacial Surgery. By Prof. David M. Dohan Ehrenfest (Department of Periodontology and Oral Implantology, Dental Research Division, University of Guarulhos, Guarulhos, Sao Paulo, Brazil) et al.

10/ Molecular, cellular and pharmaceutical aspects of bone grafting materials and membranes during maxillary sinus-lift procedures. By Prof. Adriano Piattelli (Department of Periodontology, University of Chieti-Pescara, Chieti, Italy) et al.

11/ Antibiotic release from Calcium Phosphates materials in oral and maxillofacial surgery. Molecular, Cellular and Pharmaceutical Aspects. By Prof. Juan Carlos Prados-Frutos (Head of the Department of Stomatology, Faculty of Health Sciences, University Rey Juan Carlos, Madrid, Spain) et al.

12/ Molecular, cellular and pharmaceutical aspects of bone grafting materials and membranes during periodontal surgeries. By Prof. Nelson R. Pinto (Department of Periodontology, Faculty of Odontology, University of the Andes (UANDES), Santiago, Chile) et al.

13/ Molecular, cellular and pharmaceutical aspects of autologous grafts for peri-implant hard and soft tissue defects. By Prof. Zou DeRong (Shanghai JiaoTong University, Shanghai, China) et al.

14/ Molecular and pharmaceutical aspects of novel methods and materials for the prevention of tooth structure loss. By Prof. Laurence J. Walsh (School of Dentistry, The University of Queensland, Brisbane, Australia) et al.

Approximate Schedule:
Manuscript Submission Deadline: 30/08/2014
Peer Review Due: 15/10/2014
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Notification of Acceptance by the Guest Editor: 15/12/2014
Final Manuscript Due: 30/12/2014
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