Chapter XV
Digital Library for Dental Biomaterials

Anka Letic-Gavrilovic
International Clinic for Neo-Organs – ICNO, Italy

ABSTRACT

In this chapter, the author will demonstrate and describe a project to develop a unique database with multilingual information and knowledge resource for biomedical dental materials and their properties. The database will be populated with high-quality, peer-reviewed information, equipped with an original search engine which would include all necessary information to (1) do standardization of therapeutic treatments (2) understand, the tissue response to biomaterials; (3) identify biomaterials and tissue matrix environment, to allow deeper understanding of the underlying relationship which allow more effective device design and engineering; (4) develop enabling tools by improvements in high-throughput assay and instrumentation, imaging, modalities, fabrication technologies, computational modelling and bio-informatics;(5) promote scale up, translation and commercialisation.

INTRODUCTION

The digital revolution affects our lives daily. The introduction of computer technology has greatly affected the way the restorative dentist practices, and the evolution of cyber technologies in dentistry are no longer a fantasy. Adhesive dentistry has replaced the manner in which we prepare, restore, and bond restorations to teeth. The entire field of ceramics and methods of fabricating aesthetic restorations are entering a new era. The exceptional prognosis of various implant systems has changed the way we think about maintaining hopeless teeth. Through tissue engineering

(TE), the 21st century may be revolutionary in the way we replace missing teeth and lost tooth structure.

Further on, in today's globalized world, scientific discoveries are introduced and swiftly absorbed into clinical practice. In dentistry, new products are launched daily, most of which are used in oral and dental surgery. When these products or biomaterials, are used, they come into direct contact with living tissues, such as dentin, pulp, the alveolar bone and periodontal tissue, and sometimes stay in contact for prolonged periods (Figure 2a).

In order to gather together huge knowledge from this interdisciplinary field, we will try to help in this work, organizing **digital library for dental biomaterials,** its long-term preservation, accessibility and usability. Consequently, our tem plan to create new digital library which will be designed to cover the following aims, as presented in Road map at Figure 1.

- Allowing content and knowledge to be produced, stored, managed, personalized, transmitted, preserved and used reliably, efficiently and at low cost;
- Allowing making the management and production tools for digital resources easier and more cost- effective, to create and reuse;
- Allowing more creative approaches to content and knowledge, enabling creators to design more participative and communica-

Figure 1. System architecture of digital library for dental biomaterials
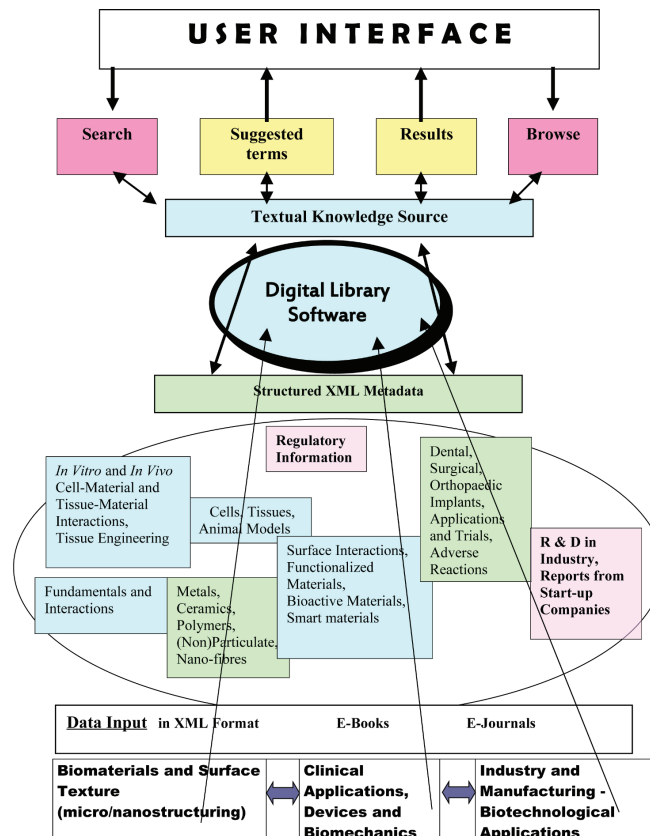
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