



EDITORIAL

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Advances in dentistry made in recent times are evident. Every year new and more efficient biomaterials are available, improving the results in a variety of clinical procedures used in all dental specialties. In addition to the physical, chemical and mechanical characteristics of their components, biological responses should be considered in all phases of the evaluation before being released to the dental market. Thus, in addition to professionals working in areas such as diagnosis, medicine and oral pathology, general dentists should be aware of all biological aspects involved in the treatments they perform.

Knowledge of biology applied to dentistry should start very early in professional training. As dentistry is an integral part of healthcare sciences, the basis of biology are traditionally taught in the first years of most undergraduate programs. Thus, students who begin their academic training have to learn about the general aspects of anatomy, histology, embryology, physiology, immunology and microbiology, as well as those specifically applied to dentistry.

Basic contents included in dental courses vary across colleges and universities. Only a small number of dental schools have their own permanent faculty specifically trained to teach these essential contents to their students. For that reason, in some cases, basic sciences are taught in medical schools, while others are studied in biology departments or research institutes at the same university or college¹.

However, a critical aspect is the one related to basic aspects studied and applied in dentistry such as head and neck anatomy, oral embryology and histology, oral microbiology, among others. All these topics can be included in a more integrated discipline called Oral Biology. In 1984, the American Association of Oral Biology (AAOB) defined Oral Biology as “the area of knowledge that deals with the structure, development, and function of the oral tissues, their interrelationships, and their relation to other organ systems in both health and disease”².

In the following years, both the AAOB as the Asso-

The current role of Oral Biology in Dentistry.

ciation for Dental Education in Europe (ADEE), after several experiences in their affiliated dental schools, concluded that most of the teams responsible for teaching and researching in oral biology should be made up of dentists with specialized training or masters and doctorate in basic sciences and with expertise and experience in experimental research, especially in the field of structural biology^{2,3}. Unfortunately, finding these types of professionals is difficult, especially in Latin America. Regarding the teaching process, dentist teachers with specialization in basic sciences offer pedagogical advantages for their students, as they are able to provide a better correlation between biological aspects and clinical procedures, which is difficult to achieve when contents are delivered only by general biologists. The same problem arises when basic research applied to dentistry is analyzed: clinical application is particularly important when planning and carrying out research projects. The much-valued “translational research” needs professionals trained in dentistry to succeed, that is, people who can envision the application of their basic researches in the procedures performed in general clinical practice or in different dental specialties.

Technological advances applied to clinical practice have been substantial in recent years, and advances in basic sciences, especially cellular and molecular biology, have also been impressive. Nowadays, modern techniques can be used to complement clinical procedures, resulting in modern dentistry. This leads to the need of implementing research laboratories in Oral Biology, which will allow the design of projects and the application of the tests needed in dental clinical practice. As an example, the widespread use of saliva in recent years as a means of diagnosis of various disorders, not only oral cavity disorders, but also systemic conditions can be mentioned. One of the reasons is easy sample collection. However, we must remember that saliva is, indeed, the result of the secretions of all major and minor salivary glands, which flow into the oral cavity. Knowledge of the structure and



function of the different salivary glands, and their type of secretion, is one of the factors that can positively or negatively influence the interpretation of the results obtained from the salivary tests.

Regarding the oral hard tissues, we can mention the osseointegration, a field that involves aspects such as general bone biology and specific characteristics of oral tissues. Although the bone of jaws meets the same biological principles of other bones of the body, the constant stimulation occurring physiologically during mastication, make these bones subject to high remodeling, that is, many areas of jaw bone, especially the alveolar process, are reabsorbing and neoforming. Biomechanical and biological aspects together may thus contribute to the design of implants specially adapted to the area of the alveolar process where they will be installed. Clinical treatments such as orthodontic movement also have their scientific basis on bone biology, along with the corresponding tissue reactions in the periodontal ligament. Treatments attempting regeneration of tissues, such as

the well desired periodontal regeneration, have their foundations on biological aspects, including the development of new biomaterials that can induce neoformation, mainly of the cement that covers the root surface. More recently, the “boom” reached by stem cell research, especially in the last decade, certainly envision its application in regeneration processes in dentistry.

In summary, when the clinical treatments are considered in relation with the structures and tissues involved, the high importance of Oral Biology in dentistry can be easily recognized. Consequently, teaching Oral Biology at undergraduate and graduate levels, as well as at researches should be encouraged. Hence, a technically-sophisticated and biologically-supported dentistry will be beneficial for all patients.

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