

The next challenges of dentistry: Between interdisciplinary training and precompetitive scientific research.

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Dentistry is a branch of medicine that has always been characterized by evident peculiarities, so that this specialty has been often considered independent from the contexts of general medicine. Generally, dental sciences seem to be structured so to reverse the classic “top-down” learning processes, leading to a hyperspecialization of the clinicians through a “bottom-up” learning process; this approach aims at obtaining multidisciplinary, and multi-specialist dental professionals.

Nowadays, the medical and dental faculties are continuously subjected to a “cultural metamorphism”, and some concepts such as “evidence-based medicine” and “biologically-guided regeneration” are becoming in-

creasingly important; the figure of the modern dentist can be considered as a “two-faced Janus”, constantly looking at the solid bases of traditional dentistry and at the complex clinical pathways involving the basic sciences, such as cell biology, histopathology, cytogenetics and pathophysiology.

In this evolutionary journey, the proper way to combine daily clinical needs and basic medical sciences becomes urgent: a promising strategy consists in deconstructing the clinical problem, understanding the synergistic biological, metabolic, or molecular causes of every aspect related to the clinical sign and to the patient’s symptoms.

To date, the regenerative procedures, the scaffold surface functionalization, and all the most innovative applications of tissue engineering are still considered as treatments scarcely applicable to the clinical protocols. Nonetheless, we need to understand that the forthcoming dentistry will be evaluated through criteria other than the “Albrektsson criteria”, which are based on the mere clinical-instrumental evidence of findings that are often objectivable very late with respect to the pathogenesis that has generated them. In the near future, we will see the advantages in using cutting-edge metamaterials, or nanotechnologies, developed by the virtuous interaction of clinicians

and researchers. In fact, pre-competitive research is certainly essential to overcome in a multidisciplinary and speculative way the next impacting clinical challenges of medicine and dentistry.

Eraclito said "*panta rei*", everything is continuously changing, and he was right. Anecdotically, in the 1960s, the development of knowledge was promoted through the creation of research infrastructures and advanced technologies; today, the investments in innovation are directed towards the human capital. Undoubtedly, the training to improve skills, and

the enhancement of precompetitive research, have shifted the weight of scientific research on the quality of the researchers and the clinicians.

In conclusion, the merging of the figures of future dentist and "research manager" will be a prerequisite for a better ability to face European and international challenges in the field of innovation.

Dentistry must now accept this challenge, overcoming the limit of sterile concepts, and promoting a real "Dental Renaissance".