

## Evolution of materials: From biocompatibility to regeneration

In the last decade from the concept of integration of a biocompatible material inside the human body, we have moved to the concept of bioactivity, and repair and regeneration of tissues.

In this development a major role is played by nanotechnology which introduced nanostructured biocompatible and bioactive materials, opening the way for regenerative dentistry.

The three basic ingredients of dentistry and regenerative medicine are represented by the stem cells, the scaffolds and the growth factors. The evolution of materials has created in the laboratory scaffolds designed at the nanoscale, in which the properties of the material can be tailored by manipulating its microstructural features (custom made). The importance of having a regular and three-dimensional structure of the material resides in the fact that the cells have more information and contacts with the same material, which in turn can be activated by growth factors.

Research in vitro and in vivo has had and has the goal of nanostructuring materials and refining methods to use adult stem cells in order to regenerate the tooth substance, with controllable structure and morphology.



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Graduated in Medicine and Surgery at the University of Naples in 1978 with honors. He specialized in Dentistry at the Postgraduate School of the same university.

He played welfare functions from 1982 until 1988 at the Institute of Dentistry of the Federico II Faculty of Medicine and Surgery of Naples. It took over the substitute teaching of Dental Materials at the Federico II Faculty of Medicine of the University of

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He is now Full Professor and Chairman of Conservative Dentistry in the Faculty of Medicine and Surgery of the University of Naples "Federico II" from 1992 to date.

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He was the Director of the School of Specialization in Orthodontics at the Faculty of Medicine of the University of Naples "Federico II" from 2003 to 2005.

He is author of over one hundred publications in national and international journals, and co-author of several text books.

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