

Proteomics as it pertains to oral pathologies and dental research

Francesco Chiappelli^{1*}, Ugo Covani², Luca Giacomelli²

¹UCLA School of Dentistry, Division of Oral Biology and Medicine; ² Tirrenian Stomatologic Institute, Lido di Camaiore (Lucca), Italy; Francesco Chiappelli- Email: fchiappelli@dentistry.ucla.edu; *Corresponding author

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Genomics has promised to change the practice of dentistry. Since the complete sequencing of the Human Genome, the development of mass-scale research tools in this field, such as DNA microarrays, has greatly improved [1]. Recent studies have employed microarray technology to monitor gene expression in periodontal patients, strain diversity of oral microflora implied in periodontitis, and the effect of oral microflora on the expression of chemokine genes [2-7]. Similar studies have been conducted also in other diseases, such as oral lichen planus (OLP) [8].

However, if compared with other areas of medicine, the progresses in oral pathology achieved using purely genomic approaches have been overall limited [9]. Other “-omics” disciplines, such as proteomics and metabolomics, should therefore be applied to achieve a more comprehensive view of the molecular mechanisms underlying oral disorders [1]. To date, some proteomic studies have been conducted in the field of oral pathology, and have led to the identification of risk factors and therapeutic targets at a molecular level [10, 11].

Further advances in the application of proteomics to dental research and oral pathology appear in any case advocated. These include, but are not limited to, the identification of other molecules and molecular pathways involved in oral diseases, the limitation of the inflammatory response after dental procedures, and the possible programming of cellular and tissue response upon the placement of restorative materials or implants.

This special issue of Bioinformatics presents some new insights in this challenging and stimulating field, authored by some leading scientists working in this area.

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