

Editorial

Frontiers in Restorative Dentistry Biomaterials and Endodontic Instruments

Claudio Poggio ^{1,*}  and Simone Gallo ^{2,*} 

¹ Unit of Restorative Dentistry, Department of Clinical, Surgical, Diagnostic and Pediatric Sciences, Section of Dentistry, University of Pavia, 27100 Pavia, Italy

² Unit of Orthodontics and Pediatric Dentistry, Department of Clinical, Surgical, Diagnostic and Pediatric Sciences, Section of Dentistry, University of Pavia, 27100 Pavia, Italy

* Correspondence: claudio.poggio@unipv.it (C.P.); simone.gallo02@universitadipavia.it (S.G.)

Restorative dentistry deals with the prevention, diagnosis, and treatment of pathological conditions affecting the teeth, to restore their function and aesthetics.

Teeth are complex structures made of unique hard tissues in the body, i.e., the enamel, dentin, and cementum, surrounded by soft tissues and the alveolar bone. The enamel constitutes the outer part of the dental crown, and owing to its hardness, as the hardest tissue in the body, it represents the first barrier from external harmful agents such as bacterial pathogens and acidic substances, which might compromise tooth integrity [1].

In addition to the preservation of the external surface of the tooth, every effort should be made to maintain the condition of the inner part of the tooth, i.e., dental pulp, where a unique connective tissue guarantees vascularization and innervation. Deep decay and dental trauma are generally the most frequent conditions affecting dental pulp, as a result of which tooth vitality can be compromised. In these cases, in fact, crown restoration can be performed only after removing pulp tissues from the tooth and filling the pulpal space with specific endodontic materials [2].

Since the integrity of the tooth should be the primary goal for both the patient and the dentist, the major focus should be on preventive strategies against caries development [3–5]. In particular, the use of sealants to fill the pits and fissures of first permanent molars is regarded as one of the most relevant preventive measures in addition to topical prophylaxis with fluoride.

Nevertheless, dental caries, periodontal diseases, traumatic injuries, and conditions resulting from genetics, such as amelogenesis imperfecta or molar–incisor hypomineralisation (MIH), represent important factors that could cause partial damage to the dental structure or eventually tooth loss at any age. Thus, the need arises for clinicians and researchers to develop new strategies based on innovative biomaterials able to mimic lost dental tissues with the highest respect to the residual tooth structure [6–10].

Against the backdrop of these considerations, this Special Issue entitled “Frontiers in Restorative Dentistry Biomaterials and Endodontic Instruments” aims to collect studies, including in vitro investigations, clinical trials, case series, case reports, and reviews, that contribute new knowledge to the field of dental biomaterials in restorative dentistry and endodontics. The topics considered in this Special Issue include, but are not limited to, the following themes: new adhesive strategies, bioactive materials, sealants, composite resins, ceramics, enamel and dentin pretreatments, endodontic instruments, endodontic materials, regenerative dentistry, and dental tissue engineering.

Author Contributions: The Authors equally contributed to this work.

Institutional Review Board Statement: Not applicable.

Informed Consent Statement: Not applicable.



Citation: Poggio, C.; Gallo, S. Frontiers in Restorative Dentistry Biomaterials and Endodontic Instruments. *Materials* **2023**, *16*, 475. <https://doi.org/10.3390/ma16020475>

Received: 29 December 2022

Accepted: 31 December 2022

Published: 4 January 2023



Copyright: © 2023 by the authors. Licensee MDPI, Basel, Switzerland. This article is an open access article distributed under the terms and conditions of the Creative Commons Attribution (CC BY) license (<https://creativecommons.org/licenses/by/4.0/>).

Data Availability Statement: Not applicable.

Conflicts of Interest: The authors declare no conflict of interest.

References

1. Arola, D.D.; Gao, S.; Zhang, H.; Masri, R. The Tooth: Its Structure and Properties. *Dent. Clin. N. Am.* **2017**, *61*, 651–668. [[CrossRef](#)] [[PubMed](#)]
2. Zero, D.T.; Zandona, A.F.; Vail, M.M.; Spolnik, K.J. Dental caries and pulpal disease. *Dent. Clin. N. Am.* **2011**, *55*, 29–46. [[CrossRef](#)] [[PubMed](#)]
3. Butera, A.; Pascadopoli, M.; Pellegrini, M.; Trapani, B.; Gallo, S.; Radu, M.; Scribante, A. Biomimetic hydroxyapatite paste for molar-incisor hypomineralization: A randomized clinical trial. *Oral Dis.* **2022**. [[CrossRef](#)] [[PubMed](#)]
4. Scribante, A.; Poggio, C.; Gallo, S.; Riva, P.; Cuocci, A.; Carbone, M.; Arciola, C.R.; Colombo, M. In Vitro Re-Hardening of Bleached Enamel Using Mineralizing Pastes: Toward Preventing Bacterial Colonization. *Materials* **2020**, *13*, 818. [[CrossRef](#)] [[PubMed](#)]
5. Butera, A.; Pascadopoli, M.; Gallo, S.; Lelli, M.; Tarterini, F.; Giglia, F.; Scribante, A. SEM/EDS Evaluation of the Mineral Deposition on a Polymeric Composite Resin of a Toothpaste Containing Biomimetic Zn-Carbonate Hydroxyapatite (microRepair®) in Oral Environment: A Randomized Clinical Trial. *Polymers* **2021**, *13*, 2740. [[CrossRef](#)] [[PubMed](#)]
6. Lehmann, A.; Nijakowski, K.; Drożdżyńska, A.; Przybylak, M.; Woś, P.; Surdacka, A. Influence of the Polymerization Modes on the Methacrylic Acid Release from Dental Light-Cured Materials-In Vitro Study. *Materials* **2022**, *15*, 8976. [[CrossRef](#)] [[PubMed](#)]
7. Zafar, M.S.; Amin, F.; Fareed, M.A.; Ghabbani, H.; Riaz, S.; Khurshid, Z.; Kumar, N. Biomimetic Aspects of Restorative Dentistry Biomaterials. *Biomimetics* **2020**, *5*, 34. [[CrossRef](#)]
8. Soares, D.G.; Bordini, E.A.F.; Swanson, W.B.; de Souza Costa, C.A.; Bottino, M.C. Platform technologies for regenerative endodontics from multifunctional biomaterials to tooth-on-a-chip strategies. *Clin. Oral Investig.* **2021**, *25*, 4749–4779. [[CrossRef](#)] [[PubMed](#)]
9. Sezer, B.; Kargul, B. Effect of Remineralization Agents on Molar-Incisor Hypomineralization-Affected Incisors: A Randomized Controlled Clinical Trial. *J. Clin. Pediatr. Dent.* **2022**, *46*, 192–198. [[CrossRef](#)] [[PubMed](#)]
10. Butera, A.; Gallo, S.; Pascadopoli, M.; Scardina, G.A.; Pezzullo, S.; Scribante, A. Home Oral Care Domiciliary Protocol for the Management of Dental Erosion in Rugby Players: A Randomized Clinical Trial. *J. Clin. Med.* **2022**, *11*, 4893. [[CrossRef](#)] [[PubMed](#)]

Disclaimer/Publisher’s Note: The statements, opinions and data contained in all publications are solely those of the individual author(s) and contributor(s) and not of MDPI and/or the editor(s). MDPI and/or the editor(s) disclaim responsibility for any injury to people or property resulting from any ideas, methods, instructions or products referred to in the content.