



Gunpreet Oberoi- Curriculum vitae

Affiliation

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Academic Milestones

10/2017 to current- PhD, Medical University of Vienna

07/2017 to 12/2017- Research fellow, University Clinic of Dentistry, Medical University of Vienna

01/2016- 06/2017- Affiliate Associate Fellow, American Academy of Implant Dentistry, Chicago, United States

02/2016- 12/2016- Mastership in Dental Lasers, University Clinic of Dentistry, Medical University of Vienna

11/2015-02/2016- Clinical Assistant, Delhi University, MAIDS, India

08/2009- 09/2014- Bachelor of Dental Surgery, Delhi University, MAIDS, India

Research area

I am a dental surgeon specialising in implantology. I am currently finishing my PhD focusing on investigating the additive manufacturing workflow in research, medical and craniomaxillofacial applications. My initial years in research were spent in establishing **complex shaped three-dimensional oral macro-tissues** as an *in vivo* like platform for biocompatibility testing of 3D printing materials. I analysed the cellular pathways and contraction dynamics of these tissues to use them directly as building blocks in bioprinting. Next I was involved in establishing **4D (smart) and 3D printed** animal and human **anatomical models** to replace, reduce and refine pre-clinical and clinical experiments. These models are used for designing and developing medical devices, surgical planning and skills training in human and veterinary medicine. Currently I am actively working with the Department of Neonatology, to create **3D neonatal simulation models** for skills training in critical cases. In parallel, I am constantly endeavouring to combat the problem of **Cleft lip and palate** (1:700 live births) in children belonging to low-economic areas of Asia, Africa and Europe. To address this issue, we developed a cheap and physiological oral prosthesis '**Smart Obturator**'. Ultimately, my aim is to use **3D printing** in providing standard **healthcare** to the masses and escalating **patient-safety**.

Previous Research achievements

Publications:

- [1] **Oberoi G**, Müller A, Moritz A, Shokoohi-Tabrizi HA, Kurzmann C, Agis H. Titanium dioxide-based scanning powder can modulate cell activity of oral soft tissue - Insights from in vitro studies with L929 cells and periodontal fibroblasts. *J Prosthodont Res* 2019. doi:10.1016/j.jpjor.2019.05.001.
- [2] **Oberoi G**, Janjic K, Müller AS, Schädl B, Moritz A, Agis H. Contraction dynamics of dental pulp cell rod microtissues. *Clin Oral Investig* 2019. doi:10.1007/s00784-019-02917-w.
- [3] **Oberoi G**, Janjic K, Müller AS, Schädl B, Andrukhov O, Moritz A, et al. Contraction Dynamics of Rod Microtissues of Gingiva-Derived and Periodontal Ligament-Derived Cells. *Front Physiol* 2018;9:1683. doi:10.3389/fphys.2018.01683.
- [4] **Oberoi G**, Nitsch S, Edelmayer M, Janjic K, Müller AS, Agis H. 3D Printing-Encompassing the Facets of Dentistry. *Front Bioeng Biotechnol* 2018;6:172. doi:10.3389/fbioe.2018.00172.
- [5] Agis H, Kurzmann C, Janji K, Shokoohi-Tabrizi H, **Oberoi G**, Edelmayer M, et al. Resins for stereolithographic 3D printing - the impact on L929 cells and human oral fibroblasts. *Clin Oral Implants Res* 2018;29:209–209. doi:10.1111/clr.94_13358.
- [6] Müller AS, Janjić K, **Oberoi G**, Pensch M, Kurzmann C, Moritz A, et al. Deferoxamine but Not Dimethyloxalyglycine, L-Mimosine, or Cobalt Dichloride Can Interfere with the MTT Assay. *Biomed Res Int* 2018;2018:5872865. doi:10.1155/2018/5872865.
- [7] **Oberoi G**, Nitsch S, Edelmayer M, Janjić K, Müller AS, Agis H. Materializing! what can dentists do with 3D printers? *Front Young Minds* 2019;7. doi:10.3389/frym.2019.00088
- [8] **Oberoi G**, Janjić K, Agis H. Healing the tooth: important advances in tooth repair. *Front Young Minds* 2019;7. doi:10.3389/frym.2019.00108.
- [9] **Oberoi G**, Chaudhry S, Yadav S, Talwar S, Verma M. Correction of gummy smile using digital smile designing in conjugation with crown lengthening by soft-tissue diode laser. *J Dent Lasers* 2017;11:14. doi:10.4103/2321-1385.208947.
- [10] Chaudhry S, Yadav S, **Oberoi G**, Talwar S, Verma M. Evaluation of root-end cavity preparation using erbium, chromium:yttrium, scandium, gallium, and garnet laser, ultrasonic retrotips, and conventional burs. *J Dent Lasers* 2016;10:43. doi:10.4103/2321-1385.196989.

Conference papers:

- [1] **Oberoi G**, Rausch I, Moscato F, Ewald U. Additively manufactured 4D human head model with tongue movement. *Clin Oral Implants Res* 2019;30:168–168. doi:10.1111/clr.126_13509.
- [2] Unger E, Rosenauer B, Königshofer M, **Oberoi G**. Reinforced models with additively manufactured macro structure. *Clin Oral Implants Res* 2019;30:198–9. doi:10.1111/clr.157_13509.
- [3] Unger E, **Oberoi G**, Moscato F Artificial eye simulator for gonioscopy n.d. <https://journals.infinite-science.de/index.php/ammm>. doi:10.18416/AMMM.2019.1909S04T01

[4] **Oberoi G**, Moscato F, Unger E, Additive manufacturing: A growing platform to replace, reduce and refine animal experiments n.d. <https://journals.infinite-science.de/index.php/ammm>. doi: 10.18416/AMMM.2019.1909S12T02

Patent

International Application No. PCT/IB2019/061457

Title of invention: “*Obturator for covering a defect of the hard palate and soft palate*”

Inventors: Gunpreet Oberoi (50%), Ewald Unger (50%)

Awards:

[1] 05.04.2019- **3rd Prize** in Scientific paper presentation at RDPM Conference Brunel University, London, titled “*Additive Manufacturing: A growing platform to Replace, Reduce, and Refine Animal Experiments*”

[2] 28.11.2018- **2nd Prize** Poster Presentation Additive Manufacturing in Medicine- 1st Symposium, Medical University of Vienna, titled, “*3D Printed Rabbit model- Embracing Reduction in Humane Experimental Technique*”

[3] 28.11.2018- **2nd Prize** Poster presentation Additive Manufacturing in Medicine- 1st Symposium, Medical University of Vienna, titled, “*The impact of Vero Clear, Vero Pure White and Med610 on L929 cells and human oral fibroblasts*”

[4] 03.2017- **1st Prize** Oral Presentation at Annual Conference of American Academy of Implant Dentistry, Bangalore, India, Scientific paper presentation, titled “*Implants behind the curtains*”

Recent Research Support:

[1] **CCP Starter Grant** (2019-2020)- €7.000,00 (CCP Innovation Lab & 3D RETENTION: 3D-pRinted pEdiaTric and nEoNatal models for simulaTion and skills acquisitiON)

Role- Co-investigator (Research Assisstant)

[2] **INSPIRE Grant** (2020-2021)- \$29.997,00 (3D printed Paediatric and Neonatal Models for Simulation and skills acquisition)

Role- Co-investigator

Reviewer activities:

2019- PLOS ONE

2018-2020- BMC Oral Health