



**European Society of Endodontology
Annual Research Grant 2014**

Award 20,000 Euros

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The European Society of Endodontology (ESE) awards an annual research grant to support a pilot research project or to purchase equipment for research in the field of Endodontology.

Project

A novel optical methodology for quantifying the removal of a biofilm from lateral morphological features of the root canal

When the root canal system is infected, biofilm is present on the root canal wall, in lateral canals, fins and isthmuses. For healing of apical periodontitis, removal of biofilm from the root canal system is important. Biofilms are visco-elastic hydrogels which are structured by a matrix of extracellular polymeric substance (EPS), which provides the biofilm its visco-elastic properties. These visco-elastic properties determine the mechanical and chemical removal of biofilm. Presently, there is no information available on the effect of irrigant flow on the mechanical removal of biofilm and the diffusion of antimicrobials in the biofilm during root canal irrigation procedures.

Recently, a new research model has been introduced to evaluate the mechanical and chemical effects on a biofilm mimicking hydrogel placed in lateral morphological features of the root canal. In this study, the hydrogel used in the above mentioned study will be replaced by an *in vitro* biofilm which demonstrates visco-elastic properties of an *in vivo* oral biofilm because it is grown in a

constant depth film fermentor under special conditions. This procedure can standardise biofilm conditions and results in a more compact biofilm structure.

The aims of this study are a) to replace the biofilm-mimicking hydrogel used in a root canal model by an *in vitro* biofilm with visco-elastic properties comparable to an *in vivo* oral biofilm, b) to visualize and provide an understanding of the mechanical and chemical effect of fluid flow of different endodontic irrigants on a biofilm structure during syringe irrigation at different flow rates.

Career

Luc graduated in 1985 at the Academic Centre Dentistry Amsterdam (ACTA), the Netherlands, where he successfully completed the postgraduate endodontic program in 1993 under the guidance of Prof. Dr. P.R. Wesselink. He received his PhD degree in 2007. Since 1993 until 2010, Luc worked in a practice limited to Endodontics and held a position in research and teaching at the Department of Cariology, Endodontology and Pedodontology of ACTA. From 2010 until 2012, Luc worked as professor at the University of Toulouse (France). Actually Luc leads the Department of Conservative Dentistry of the Center for Dentistry and Oral Health at the University of Groningen in the Netherlands and is Principal Investigator at the Kolff Institute (University of Groningen). He has published over 50 articles in the top journals of his field. Furthermore, he is (co) author of book chapters in international text books. Luc is frequently invited as invited lecturer on international conferences. The current focus of his research is the disinfection of the carious lesion and root canal system, which he systematically investigates with specialists in biofilm research, fluid dynamics and (sono) chemistry.