Bjorn Steffensen, D.D.S., M.S., Ph.D.

Professor, Department of Periodontics and Biochemistry
Location: 3.514U DTL
Phone: (210) 567-3564
Fax: (210) 567-6858
E-mail: SteffensenB@uthscsa.edu
Web links: http://www.steffensen.uthscsa.edu

Research focus of the laboratory

The laboratory investigates the biology of the extracellular matrix associated with health and disease. The central focus areas are the interactions between extracellular matrix components, the roles of these molecules in modifying cell behavior, and the contributions of their structural domains and modules to their overall functions. Our working hypothesis is that cells contacting structurally altered matrix molecules modify their behavior. Whereas such modifications may contribute in a positive way to normal homeostasis, they could also form the basis for negative events such as delayed wound healing and contribute to cancer cell invasion. Molecules of special interest are matrix metalloproteinases (MMPS), collagens, and fibronectin. Within this framework, we are addressing a number of research questions (*See Web page for further details)*.

Location and facilities

Our laboratory is located in the Department of Periodontics at the University of Texas Health Science Center at San Antonio (UTHSCSA). The building is physically structured such that we are directly connected to the other departments and schools of the institution, including the Schools of Medicine and Graduate School of Biomedical Sciences (Biochemistry, Physiology, Cell and Structural Biology). This facilitates and provides ample opportunities for collaborations. Our laboratory is well equipped for cell and molecular biology as well as biochemical research projects. Additional access to specialized equipment and core facilities is available as needed at the Heath Science Center. With support from NIH and other agencies, we are currently in a strong position to pursue our research goals.

Recent publications

*Stanley, C., Wang, Y., Pal, S., Klebe, R.J., Harkless, L.B., Xu, X., Chen, Z., **Steffensen, B**. Fibronectin-fragmentation is a feature of both periodontal disease sites and diabetic foot and leg wounds and modifies cell behavior. J. Periodontol. *79: 861-875, **2008***

*Cortez, D.M., Feldman, M.D., Mummidi, S., Valente, A.J., **Steffensen, B**., Vincenti, M., Barnes, J.L., Chandrasekar, B. Interleukin-17 Stimulates MMP1 Expression in Primary Human Cardiac Fibroblasts via p38 MAPK and ERK1/2-Dependent C/EBPβ, NF-κB, and AP-1 Activation. Am J Physiol Heart Circ Physiol 293(6): H3356-H3365, **2007**

*Xu, X., Chen, Z., Wang, Y., Bonewald, L., **Steffensen, B**. Inhibition of MMP-2 gelatinolysis by targeting exodomain-substrate interactions. Collagen-like peptide blocks gelatin positioning by the collagen-binding domain. *Biochem. J. 406*: 147-155, **2007**

*Xu, X., Chen, Z., Wang, Y., Yamada, Y., **Steffensen, B.** Functional basis for the overlap in MMP-2 and MMP-9 ligand interactions and substrate Specificities. Biochem J. 392: 127-134, **2005**