

Fighting the fight for healthy teeth

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It is known that teeth can protect themselves, to some extent, from attack by bacteria but that inflammation within a tooth can be damaging and, in extreme cases, lead to abscess or death of the tooth. New research published in BioMed Central's open access journal *BMC Immunology* shows that odontoblast cells are part of the immune system and fight to protect teeth from decay.

Inside a tooth odontoblast cells sit between the enamel and pulp and produce a layer of dentin to protect the pulp from wear and infection. This research shows that, when under attack from [bacteria](#), the odontoblast cells also orchestrate an immune response, producing antimicrobial peptides (defensins) to fight the infection directly, protein messengers (chemokines) which recruit white blood cells to the site of infection, and pro-inflammatory signalling proteins (IL-1 β , IL-1 α , and TNF- α) which, in turn, initiate an inflammatory response.

Dr Orapin Horst also found that the odontoblast layer produced proteins involved in the down-regulation of this inflammatory response, such as toll-interacting [protein](#) (TOLLIP), TGF- β , and IL-10, which help protect the underlying pulp from inflammatory damage.

Dr Horst says that "For the first time we now have targets to control irreversible inflammatory damage to teeth".

More information: Caries Induced Cytokine Network in the Odontoblast Layer of Human Teeth, Orapin V. Horst, Jeremy A. Horst, Ram Samudrala, Beverly A. Dale, *BMC Immunology* (in press).

Provided by BioMed Central

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