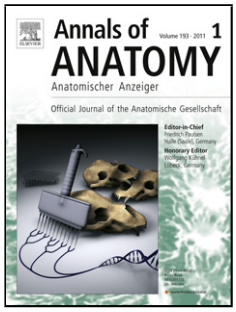

Title: MOLECULAR BASIS OF DENTAL SENSITIVITY: THE ODONTOBLASTS ARE MULTISENSORY CELLS AND EXPRESS MULTIFUNCTIONAL ION CHANNELS

Authors: A. Solé-Magdalena, M. Martínez-Alonso, C.A. Coronado, L.M. Junquera, J. Cobo, J.A. Vega

PII: S0940-9602(17)30126-7
DOI: https://doi.org/10.1016/j.aanat.2017.09.006
Reference: AANAT 51187

To appear in:

Received date: 17-4-2017
Revised date: 22-8-2017
Accepted date: 10-9-2017

Please cite this article as: Solé-Magdalena, A., Martínez-Alonso, M., Coronado, C.A., Junquera, L.M., Cobo, J., Vega, J.A., MOLECULAR BASIS OF DENTAL SENSITIVITY: THE ODONTOBLASTS ARE MULTISENSORY CELLS AND EXPRESS MULTIFUNCTIONAL ION CHANNELS.Annals of Anatomy https://doi.org/10.1016/j.aanat.2017.09.006

MOLECULAR BASIS OF DENTAL SENSITIVITY:
THE ODONTOBLASTS ARE MULTISENSORY CELLS AND EXPRESS MULTIFUNCTIONAL ION CHANNELS

A. Solé-Magdalena[1]*, M. Martínez-Alonso[1*], C.A. Coronado[2],
L.M. Junquera[3,4], J. Cobo[3,5], J.A. Vega[1,2]

[1]Departamento de Morfología y Biología Celular Universidad de Oviedo, Spain
[2]Facultad de Ciencias Médicas, Universidad Autónoma de Chile, Chile
[3]Departamento de Especialidades Médico-Quirúrgicas, Universidad de Oviedo, Spain
[4]Servicio de Cirugía Maxilofacial, Hospital Universitario Central de Asturias, Oviedo, Spain
[5]Instituto Asturiano de Odontología, Oviedo, Spain

*These authors contributed equally to this paper

*To whom all correspondence should be addressed

José A. Vega, M.D., Ph.D.
Departamento de Morfología y Biología Celular
Facultad de Medicina y Ciencias de la Salud
C/ Julián Clavería, 6
33006 Oviedo, Spain
Email: javega@uniovi.es

Abstract.- Odontoblasts are the dental pulp cells responsible for the formation of dentin. In addition, accumulating data strongly suggest that they can also function as sensory cells that mediate the early steps of mechanical, thermic, and chemical dental sensitivity. This assumption is based on the expression of different families of ion channels involved in various modalities of sensitivity and the release of putative neurotransmitters in response to odontoblast stimulation which are able to act on pulp sensory nerve fibers. This review updates the current knowledge on the expression of transient-potential receptor ion channel and acid-sensing ion channels in odontoblasts, nerve fibers innervating them and trigeminal sensory neurons, as well as