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35<sup>th</sup> NATIONAL CONGRESS  
OF THE ITALIAN SOCIETY  
OF HISTOCHEMISTRY***

***S. Margherita di Pula, June 12-14, 2013***

***Centro Congressi Hotel Flamingo***

**President**

***Paola Sirigu***

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under the auspices of  
the University of Pavia, Italy





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# European Journal of Histochemistry

The *European Journal of Histochemistry* was founded in 1954 by Maffo Vialli and published until 1979 under the title of *Rivista di Istochimica Normale e Patologica*, from 1980 to 1990 as *Basic and Applied Histochemistry* and in 1991 as *European Journal of Basic and Applied Histochemistry*. It is published under the auspices of the University of Pavia and of the Ferrata Storti Foundation, Pavia, Italy.

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## POSTER SESSION

### AN IMMUNOHISTOCHEMICAL STUDY OF COLLAGEN I, IV, FIBRONECTIN AND VEGF ON HUMAN PERIODONTAL LIGAMENT AFTER APPLICATION OF ORTHODONTIC FORCES

G. Santoro, A. Centofanti, D. Milardi, G. Vermiglio, A. Favalaro, G. Cutroneo

*Department of Biomedical Sciences and Morpho-functional Images, University of Messina, Messina, Italy*

Orthodontic tooth movement (OTM) is the result of a biological response to interference in the equilibrium of dental complex by externally applied force; it is characterized by remodeling changes in dental and periodontal tissues. The periodontal ligament, which lies between the hard tissues of alveolar bone and root surface, serves to anchor the tooth to the alveolus and functions as a cushion between these hard tissues to migrate occlusal force during mastication. Prolonged application of external mechanical force, exceeding bio-elastic limits of tooth supporting structures, induces an increase in remodeling of PDL and alveolar bone and induces tooth movement. On this basis, we have studied the different modification of periodontal ligament (PDL) during OTM, both in pressure and tension side, evaluating the expression of different proteins as collagen I, collagen IV, fibronectin and VEGF, by immunohistochemical techniques. Our results have shown that the staining pattern level of all tested proteins depends on the time of forces application and on the pressure and tension side. In general, it is possible to observe two different phases: a response phase to the applied forces, which determines major modification in proteins staining pattern; finally, we observe a remodeling phase where the proteins staining pattern return to be similar to the protein pattern of ligament in normal condition. All these results suggest that the periodontal ligament is a tissues characterized by plasticity which easily adapt to application of external forces.

### SARCOGLYCAN SUB-COMPLEX IN GINGIVAL TISSUE

F. Trimarchi, G. Isola, D. Di Mauro, F. Speciale, G. Vaccarino, A. Centofanti, L. Magaouda

*Department of Biomedical Sciences and Morpho-functional Images, University of Messina, Messina, Italy*

The sarcoglycan sub-complex, made up of  $\alpha$ -,  $\beta$ -,  $\gamma$ -,  $\delta$ -,  $\epsilon$ - and  $\zeta$ -sarcoglycans, is a multimember transmembrane system which provide a mechanosignaling connection from the cytoskeleton to extracellular matrix. Sarcoglycans have been found in many kind of tissues as epithelial tissue where they seem to be involved in cell-cell adhesion using their cadherin-like domain; by that, it was supported that sarcoglycans are involved in different pathological condition of epithelial tissues. So, we performed an immunofluorescence study of the sarcoglycan sub-complex in normal gingival tissues and in gingival tissue of patients affected by periodontitis and scleroderma, two different pathological condition where it is possible to observe an inflammation and alteration of the gingival epithelium. Results obtained from normal samples have shown the presence of a staining pattern for each sarcoglycan in gingival epithelium; pathological samples results, instead, have shown that the entire sarcoglycan sub-complex changes in staining pattern level in dependence of the inflammation degree. All these data suggest a key role of sarcoglycans in maintenance of epithelia architecture by their mechanosignal-

ing functions and they also suggest an involvement of this protein system in inflammation pathways.

### SARCOGLYCANS AND INTEGRINS IN MASSETER MUSCLE OF BABOONS

G. Rizzo, G. Vermiglio, A. Duca, M. Runci, E. Magaouda, G. Anastasi

*Department of Biomedical Sciences and Morpho-functional Images, University of Messina, Messina, Italy*

Sarcoglycans and integrins are transmembrane proteins which play, in muscle tissues, signaling and mechanical functions which are important for the development and the integrity of muscle. Since it was supported the existence of a bidirectional signaling between sarcoglycans and integrins, it become important to investigate these protein systems together. In fact, our previous study on smooth and skeletal muscle have shown that sarcoglycans and integrins seem to cooperate regulating muscle metabolic feature and frequency of contraction; moreover, our results on masseter muscle of human and chimpanzee have suggested that these proteins could be also involved in regulation of the intensity of force. So, in the present study we continued the phylogenetic study investigating, by immunofluorescence and molecular techniques, sarcoglycans and integrins in masseter muscle of baboons of high and low dominance, social groups with different degree of aggressiveness. Results have shown the presence of all tested proteins in the masseter muscle of baboons of high dominance; instead, in low dominance baboons, we found positive fibers and negative fibers both for sarcoglycans and integrins in the same microscopic field. Results, showing for the first time the existence of normal muscular fibers which are negative for the entire sarcoglycan sub-complex and integrins, suggest the existence of alternative and unknown protein systems which seem to be correlated with the aggressiveness degree, intensity of force and phylogenesis.

### NEUROPROTECTIVE ACTIVITY OF IBUPROFEN AND LIPOIC ACID CONJUGATE IN AN ALZHEIMER'S DISEASE RAT MODEL

S. Zara,<sup>1</sup> M. De Colli,<sup>1</sup> S. Pacella,<sup>2</sup> M. Rapino,<sup>3</sup> P. Sozio,<sup>1</sup> A. Di Stefano,<sup>1</sup> A. Cataldi<sup>1</sup>

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Alzheimer's disease (AD) is a frequent form of senile dementia. Neuroglobin (Ngb) has a neuroprotective role, decreases the levels of A $\beta$  peptide and, promoting Akt phosphorylation, activates cell survival involving cyclic-nucleotide response element-binding protein (CREB). A new molecule, (IBU-LA), has been synthesized and administered to AD rat model to counteract AD progression. The aim of this study has been to investigate the IBU-LA-mediated induction of Ngbneuroprotective and anti-apoptotic activities.

Brain morphology has been analyzed through Bielschowsky staining, A $\beta$ (1-40) and Ngb expression by immunohistochemistry; Akt, p-Akt, CREB and p-CREB expression by western blot; apoptosis through cytochrome c/Apaf 1 immunocomplex formation and TUNEL analysis.

Bielschowsky staining and A $\beta$ (1-40) expression show few nerve connections and A $\beta$ (1-40) expression in A $\beta$  sample, preserved neuronal cells and A $\beta$ (1-40) expression lowering in IBU sample, mostly in IBU-LA one. Ngb level decreases in A $\beta$



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