

Journal of Biological Research

Bollettino della Società Italiana di Biologia Sperimentale



**92st SIBS Experimental Biology in the time
and the space.**

Research and scientific truth

Sassari, Italy, 2-4 December 2019

ABSTRACT BOOK

www.jbiolres.org

jbr

Journal of Biological Research

Bollettino della Società Italiana di Biologia Sperimentale

eISSN 2284-0230

EDITORS IN CHIEF

Marco Giammanco (*University of Palermo, Italy*)

Gian Luigi Mariottini (*University of Genoa, Italy*)

ASSOCIATE EDITORS

Renzo Antolini (*University of Trento, Italy*)

Massimo Cocchi (*President of SIBS, University of Bologna, Italy*)

Luigi Pane (*University of Genoa, Italy*)

Emma Rabino Massa (*University of Turin, Italy*)

EDITORIAL BOARD

James Anthony, *Michigan State University, East Lansing, USA*

Saeme Asgari, *Pasteur Institute, Iran*

Han Bao, *MSU-DOE Plant Research Laboratory of Michigan State University, USA*

Emilia Bellone, *University of Genoa, Italy*

Maria Grazia Bridelli, *University of Parma, Italy*

Dario Cantino, *University of Turin, Italy*

David Caramelli, *University of Florence, Italy*

Giuseppe Caramia, *G. Salesi Hospital, Ancona, Italy*

Emilio Carbone, *University of Turin, Italy*

Brunetto Chiarelli, *University of Florence, Italy*

Pierluigi Consolo, *University of Messina, Italy*

Amelia De Lucia, *University "Aldo Moro", Bari, Italy*

Danila Di Majo, *University of Palermo, Italy*

Andrea Drusini, *University of Padua, Italy*

Luciano Fadiga, *University of Ferrara, Italy*

Vittorio Farina, *University of Sassari, Italy*

Sara Ferrando, *University of Genoa, Italy*

William Galanter, *University of Illinois, Chicago, USA*

Lorenzo Gallus, *University of Genoa, Italy*

Darren Grice, *Institute for Glycomics and School of Medical Science, Griffith University, Nathan, Australia*

Stefania Grimaudo, *University of Palermo, Italy*

Millie Hughes-Fulford, *University of San Francisco, USA*

Gaetano Leto, *University of Palermo, Italy*

Gianni Losano, *University of Turin, Italy*

Mansoor A. Malik, *Howard University Hospital, Washington DC, USA*

Neville A. Marsh, *Queensland University of Technology, Brisbane, Australia*

Bruno Masala, *University of Sassari, Italy*

Alejandro M.S. Mayer, *Midwestern University, Downers Grove, USA*

Concetta Maria Messina, *Department of Earth and Sea Sciences, University of Palermo, Italy*

Vincenzo Mitolo, *University "Aldo Moro", Bari, Italy*

Amir Sasan Mozaffari Nejad, *Hamadan University of Medical Sciences, Iran*

Werner E.G. Muller, *Johannes Gutenberg University, Mainz, Germany*

Giuseppe Murdaca, *University of Genoa, Italy*

Giuseppe Palumbo, *University Federico II, Naples, Italy*

Gian Luigi Panattoni, *University of Turin, Italy*

Massimo Pregnolato, *University of Pavia, Italy*

Mark R. Rasenick, *University of Illinois, Chicago, USA*

Angela Maria Rizzo, *University of Milan, Italy*

Giacomo Rizzolatti, *University of Parma, Italy*

Aldo Rustioni, *University of North Carolina, USA*

Salvatore Sapienza, *University of Catania, Italy*

Pietro Scotto Di Vettimo, *University of Naples, Italy*

Vinicio Serino, *University of Siena, Italy*

Lynne Christine Weaver, *University of Western Ontario, Canada*

Ming Wei, *Griffith University, Australia*

Mario Wiesendanger, *University of Friburg, Switzerland*

Editorial Staff

Francesca Baccino, *Managing Editor*

Claudia Castellano, *Production Editor*

Tiziano Taccini, *Technical Support*

Publisher

PAGEPress Publications

via A. Cavagna Sangiuliani, 5

27100 Pavia, Italy

Tel. +39.0382.464340 – Fax. +39.0382.34872

info@pagepress.org – www.pagepress.org



PRESIDENT

Massimo Cocchi (*University of Bologna, Italy*)

SCIENTIFIC COMMITTEE

Renzo Antolini (*University of Trento, Italy*)

Nicolò Benfante (*QPP Institute, Italy*)

Massimo Cocchi (*University of Bologna, Italy*)

Maria Grazia Bridelli (*University of Parma, Italy*)

Caterina Faggio (*University of Messina, Italy*)

Marco Giammanco (*University of Palermo, Italy*)

Gian Luigi Mariottini (*University of Genova, Italy*)

Emma Rabino Massa (*University of Torino, Italy*)

Luigi Pane (*University of Genova, Italy*)

Partner



Non-commercial use only

matched male controls and patients with CIS, at comfortable speed. Women with RR or CIS courses did not differ from their matched controls; however, women with RR exhibited significantly lower values of C_w and VO_2 rate than male patients with RR during comfortable walking. These findings preliminarily evidence gender-based differences in the metabolic and energetic demand of mildly-disabled PwMS during low-to moderate intensity exercise, introducing not only the MS course but also gender as a factor that should be controlled for to provide personalized interventions aimed at optimizing health and performance.

DEEPEN THE KNOWLEDGE ABOUT SPIRAL VALVE AND ASSOCIATED LYMPHOID TISSUE (GALT) OF THE SMALL-SPOTTED CATSHARK *SCYLIORHINUS CANICULA* (LINNAEUS, 1758)

Gioele Capillo^{1*}, Marialuisa Aragona², Marco Albano¹, Simona Pergolizzi¹, Maria Cristina Guerrero², Eugenia Rita Lauriano¹

¹Department of Chemical, Biological, Pharmaceutical and Environmental Sciences, University of Messina, Messina, Italy;

²Department of Veterinary Sciences, University of Messina, Zebrafish Neuromorphology Lab, Italy Polo Universitario Annunziata, Messina, Italy

*E-mail: gcapillo@unime.it

Spiral valve intestine is a common feature of several fish species belonging to both Chondrichthyes and Osteichthyes classes. All the three subclasses of Chondrichthyes present this spirialized intestine. Spiral valve intestine is a morpho functional adaptation that allow both (i) increasing intestinal absorption surface maintaining a small size and (ii) increase the permanence time of food within the gut. Being the gastrointestinal tract a potential pathogen invading way, the intestinal mucosa needs an high efficiency immunological surveillance. The present study had a double purpose and tended to explore the morphological, histochemical and immunohistochemical characteristic of both spiral valve mucosa and its associated lymphoid tissue. Tissue fragments from the spiral valve intestine of *Scyliorhinus canicula* (Linnaeus, 1758) caught in the Messina's Strait were treated for histology and histochemistry (H/E, AB/PAS), lectin histochemistry (PNA, WGA), immunoperoxidase (Human TLR2, Human Integrin $\alpha 5$ 1 and Mouse Laminin) and confocal immunofluorescence (Human TLR2, Human Langerin/CD207 and Bovine S100). Valvular mucosa showed many folds composed of columnar and goblet cells, differently positive to PAS, AB and AB-PAS, demonstrating the presence of different types of mucins. PNA and WGA lectins, marked neutral and acid mucins involved in protection against pathogens invasions. Integrin $\alpha 5$ 1 and laminin were expressed differently in enterocytes that apex, in lamina propria and in the muscularis mucosa. The spiral valve gut-associated lymphoid tissue (GALT) showed massive immune cells aggregates positive to TLR2, S100, Langerin/CD207. Intraepithelial lymphocytes within the columnar epithelium were present. The results of the present study wide the information about GALT of Elasmobranchii helping in understanding their immunology.

CELLULAR MECHANISMS AND PHYTOCHEMICALS: DEFINING NOVEL STRATEGIES FOR TISSUE REGENERATION

Sara Cruciani^{1*†}, Roberta Addis^{2†}, Sara Santaniello¹, Emanuela Bellu¹, Giorgio Pintore², Margherita Maioli^{1,3,4}

¹Department of Biomedical Sciences, University of Sassari, Sassari, Italy; ²Department of Chemistry and Pharmacy, University of Sassari, Sassari, Italy; ³Center for Developmental Biology and Reprogramming (CEDEBIOR), Department of Biomedical Sciences, University of Sassari, Sassari, Italy; ⁴Istituto di Ricerca Genetica e Biomedica, Consiglio Nazionale delle Ricerche (CNR), Monserrato, Cagliari, Italy

†Equal contributors.

*Email: sara.cruciani@outlook.com

Cellular reparative processes involve a sequence of events aimed at totally restoring tissue function. In particular cell migration exert a crucial role in wound healing, and is responsible for reepithelization of injured tissue [1]. Fibroblasts are the major actors in wound closure, secreting collagen, accounting for extra cellular matrix integrity (ECM). Phytochemicals are emerging as novel therapeutic agents for various disorders, as inflammation, oxidative stress and wound repair[2][3]. These compounds are widely present in Mediterranean plants, and commonly used in traditional medicine [4]. Within this context, we evaluated the antioxidant and reparative properties of extracts from different plants on fibroblast under different experimental condition. The extracts were residual of distillation processes. We then determined the anti-oxidant activity of the waste material and cell viability after culturing with different concentrations and combinations of the extracts. The stimulation of fibroblast regenerative capabilities was evaluated by scratch assay, along with the production of new extracellular matrix. Our results showed that the tested extracts were able to induce tissue regenerative mechanisms, also under stressing conditions, maintaining cell viability and decreasing reactive oxygen species concentration. These effects could suggest a possible application of waste extracts in wound healing as topical cosmetics for skin damages.

REFERENCES

- [1] L. Rittié, "Cellular mechanisms of skin repair in humans and other mammals," *Journal of Cell Communication and Signaling*. 2016.
- [2] Cruciani *et al.*, "Myrtus Polyphenols, from Antioxidants to Anti-Inflammatory Molecules: Exploring a Network Involving Cytochromes P450 and Vitamin D," *Molecules*, vol. 24, no. 8, p. 1515, 2019.
- [3] S. Cruciani *et al.*, "Extracts from Myrtle Liqueur Processing Waste Modulate Stem Cells Pluripotency under Stressing Conditions," *Biomed Res. Int.*, 2019.
- [4] S. Gonçalves, D. Gomes, P. Costa, and A. Romano, "The phenolic content and antioxidant activity of infusions from Mediterranean medicinal plants," *Ind. Crops Prod.*, 2013.

INFLUENCE OF MATERNAL FACTORS ON PRENATAL AND NEONATAL GROWTH

Françoise Demoulin*

Eco-Anthropologie, Musée de l'Homme, MNHN, Paris, France

*E-mail: francoise.demoulin@mnhn.fr

Prenatal and neonatal growth is dependent on fetal genotype and maternal factors such as genotype, health, socioeconomic status, environment, birth weight and especially nutritional status that influences placenta functions and fetal nutritional state. Nutritional elements transferred from mother to fetus by the placenta are essential for prenatal and neonatal growth: nutrients, calcium, phosphorus, vitamins, magnesium, iron. Habits such as caffeine, alcohol, cigarettes, have deleterious effects on the fetus and the child. In a longitudinal French sur-