



Skeletal muscle in denervation, aging and cancer

Padova and Terme Euganee, Padua (Italy), March 15 - 17, 2013

Terme Euganee Conference Hall, Hotel Augustus, Viale Stazione 150 - 35136 Montegrotto Terme, Padua, Italy

Phone +39 049 793 200 - Fax +39 049 793518 - http://www.hotelaugustus.com/english/pages/hotel_augustus.php - E-mail: info@hotelaugustus.com

Organizers: H. Kern, S. Masiero, S. Merigliano, W. Mayr, C. Reggiani and U. Carraro

Thursday March 14, 2013

13.00  **Interreg IVa “Mobility in elderly” – Partner meeting** – Helmut Kern, Winfried Mayr, Chairmen

21.30 **Organizing Meeting of the Call for an EU Program 2015-2020 “FES4SEF - Functional Electrical Stimulation for Senior Early Falls”**

Friday March 15, 2013

Vallisneri Biology Complex, Aula B-Pt, University of Padua, Viale G. Colombo 3, Padua, Italy

09.30 **Workshop cirMYO** – L. Vitiello, U. Carraro, Chairmen

(15 min) Three ways to try and heal a diseased muscle: macrophages, exon skipping and cell transplant, *E. Galletta, et al., Padua, Italy*

(15 min) Congenital pseudo-myotonia in Chianina and Romagnola cattle and congenital myotonia in a New Forest pony: genetic homologs of human muscular diseases, *T. Dorotea, et al., Padua, Italy*

(15 min) Mitochondrial calcium signaling in the control of skeletal muscle homeostasis, *C. Mammucari, Padua, Italy*

(15 min) Skeletal muscle injury in Amyotrophic Lateral Sclerosis: effect or first cause? *A. Nori, Padua, Italy*

(15 min) Presynaptic neurotoxins and the degeneration and regeneration of motor axon terminals, *M. Rigoni, Padua, Italy*

(15 min) Water-environment as exercise setting to improve physical function in elderly, *M. Bergamin, Padua, Italy*

(15 min) Muscle tissue micro engineering, *E. Serena, et al., Padua, Italy*

(15 min) ER processing of skeletal muscle proteins, *E. Bianchini, D. Sandonà, R. Betto, Padua, Italy*

(15 min) Microgenomics of skeletal muscle fibers, *F. Chemello, G. Lanfranchi, Padua, Italy*

(15 min) Double face of autophagy in skeletal muscles during physical exercise, *P. Grumati, et al., Padua, Italy*

Archivio Antico, Palazzo Bo, University of Padua, Via VIII Febbraio, Padua, Italy

14.00 Openings - Rosario Rizzuto, University of Padua Department of Biomedical Sciences, Head

14.10 Myology Lectures* – Ugo Carraro, Carlo Reggiani, Chairmen

(30 min) **Rehabilitation studies in denervation, aging and oncology** – Interreg IVa “Mobility in elderly”, Helmut Kern, Wilhelminenspital, Wien, Austria

(30 min) **Transcriptional changes in muscle with exercise and disuse**, Andrew Fisher and Jonathan Jarvis, Liverpool John Moores University, UK

(30 min) **The contribution of stem cell therapy to skeletal muscle remodeling in heart failure**, Giorgio Vescovo, Vicenza General Hospital, Italy

(30 min) **Patient results and mathematical methodology for EMG-based control of deep brain stimulation in Parkinson and Essential Tremor**, Daniel Graupe, University of Illinois, Chicago, IL, USA

(30 min) **Bone and muscle assessment in patients undergoing total hip arthroplasty using HU based analysis**, Paolo Gargiulo, Landspítali, Reykjavik, Iceland

16.40 Coffee Break

17.00 Perspectives in Rehabilitation of Oncologic Patients – Helmut Kern, Stefano Merigliano, Chairmen

(30 min) Mechanisms underlying exercise-mediated rescue of cachexia, *Dario Coletti et al., University Pierre et Marie Curie Paris, France and Sapienza University, Rome, Italy*

(20 min) A subclinical myopathy in early colorectal cancer, *Sandra Zampieri et al., University of Padua, Italy & LBI, Wien, Austria*

(20 min) Rehabilitation treatment for postintervention lymphedema in breast cancer, *Stefano Masiero et al., Rehabilitation Department, University of Padua Hospital, Italy*

(20 min) Exercise-based rehabilitation in complicated patients with anemia, *Leonida Compostella et al., Istituto Codivilla Putti, Cortina d'Ampezzo (BI), Italy*

(20 min) Physical Medicine and Rehabilitation in Oncology. Therapeutic strategies in a key cancer center in Vienna – Interreg IVa “Mobility in elderly”, Austria, *Martina Grim-Stieger et al., LBI, Wilhelminenspital Wien, Austria*

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21.30 Organizing Meeting of the ejtm/BAM On-Line Advisory Board

**Myology Lecture Neural injury and regeneration: Accelerating axon growth after nerve injury, Tessa Gordon, Toronto, Canada
Due to obligations in Canada, Prof. Tessa Gordon will lecture to doctorate students and mentors May 2nd, 2013*



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Saturday March 16, 2013

Terme Euganee Conference Hall, Hotel Augustus, Montegrotto Terme, Padua, Italy

09.00  **Workshop Interreg IVa “Mobility in elderly”** – Helmut Kern, Marco Sandri, Chairmen

(30 min) Progressive un-coupling of mitochondria from calcium release units in ageing: implications for muscle performance, Feliciano Protasi, Chieti University, Italy

(30 min) Decades of high level physical activity postpone age-related decline by increasing reinnervation of skeletal muscles, Sandra Zampieri et al., University of Padua and LBI, Wilhelminenspital, Wien, Austria

(30 min) Effects of electrical stimulation and strength training with proprioceptive stimulation on selected strength and functional parameters in elderly, Jan Cvecka et al., Faculty of Physical Education & Sport, Comenius University, Bratislava, Slovakia

(30 min) The effect of strength training on balance in elderly, Nejc Sarabon, University of Primorska, Science and Research Centre, IKARUS, Koper, Slovenia

11.00 Coffee Break

11.30  **Interreg IVa – Molecular Biology** – Jonathan Jarvis, Sergio Adamo, Chairmen

(30 min) The power of mitochondrial shaping machinery in controlling muscle mass, Marco Sandri, Dept. Biomedical Sciences, University of Padua, Italy

(30 min) The role of cytokine IL-6 in the physiopathology of skeletal muscle, Antonio Musarò, Sapienza University, Rome, Italy

(30 min) The role of the Mitochondrial Calcium Uniporter (MCU) in skeletal muscle trophism, Cristina Mammucari, Gaia Gherardi, Anna Raffaello, Rosario Rizzuto, Dept. Biomedical Sciences, University of Padua, Italy

13.00 Lunch & Cycling Exercise; 14.00 **Discussion of Posters** - Libero Vitiello, Paolo Gargiulo, Chairmen

15.00 **Molecular Biology, Session II** – Antonio Musarò, Feliciano Protasi, Chairmen

(30 min) Malignant Hyperthermia (MH) and Environmental Heat Stroke (EHS): understand the molecular mechanisms to develop therapeutic interventions, Feliciano Protasi, Chieti University, Italy

(30 min) Epigenetic signature during differentiation of presomitic satellite cells, Tiziana Pietrangelo, et al., Dept. Neurosciences and Imaging, University G. d'Annunzio Chieti-Pescara, Chieti, Italy; Interuniversity Institute of Myology (IIM); Interdepartmental Stem Cell Institute, Leuven, Belgium; Dept Experimental Veterinary Sciences, University of Padua, Italy

(30 min) Cytoskeleton in injured skeletal muscles, Roberta Squecco, Fabio Francini, University of Florence, Italy

16.30 Coffee Break

16.45 **Workshop Rise2-Italy** – Winfried Mayr, Stefano Masiero, Chairmen

(20 min) Muscle reinnervation in difficult-to-stimulate complete Conus-Cauda Syndrome, Emiliana Bizzarini, et al., Udine, Italy

(20 min) Dynamic echomyography of skeletal muscle demonstrates that h-b FES in peripheral denervation does not hamper muscle reinnervation, Riccardo Zanato, et al., Padua, Italy

(20 min) Three year RISE therapy follow up of non- or poorly-compliant patients, Thordur Helgason, et al., Reykjavik, Iceland

(20 min) Recovery of tetanic contractility: the first step toward a walking aid for unilateral peripheral denervation of tibialis anterior, Andrea Marcante, et al., Padua, Italy

(20 min) Clinical effects of the exercise therapy in Amyotrophic Lateral Sclerosis patients, Antonio Merico, et al., Ospedale San Camillo, Venice, Italy

(20 min) Molecular mechanism of action of botulinum neurotoxins at nerve terminal, Marco Pirazzini, et al., Padua, Italy

19.30 Dinner

21.00 **Organizing Meeting of the 2013 Autumn Padua Muscle Days**



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Sunday March 17, 2013

Terme Euganee Conference Hall, Hotel Augustus, Montegrotto Terme, Padova, Italy

- 09.00 **MED^{EL} Workshop FES in Reinnervating Muscle, Session I** – Richard J Piercy, Francesco Mascarello, chairmen
(30 min) How to stimulate muscle respecting its inherent adaptive capacity, *Jonathan Jarvis, Liverpool John Moores University, UK*
(30 min) Neuromuscular pathology in equine recurrent laryngeal neuropathy, *Richard Piercy, Royal Veterinary College, London, UK*
(30 min) Hounsfield based analysis of posterior cricoarytenoid muscles undergoing Functional Electrical Stimulation, *Paolo Gargiulo, Jon Cheetham, Melissa Kenny, Norm G Ducharme, Landspítali University Hospital of Iceland, Reykjavik University, and College of Veterinary Medicine Cornell University, Ithaca, NY, USA*
- 10.30 Coffee Break
- 10.45 **MED^{EL} Workshop FES in Reinnervating Muscle, session II** - Justin Perkins, Roberto Stramare, chairmen
(15 min) Expression of myosin heavy chain isoforms in laryngeal muscles in comparison with skeletal and special muscles, *Lisa Maccatrozzo, Luana Toniolo, Pasqua Cancellara, Marco V Patrino, Carlo Reggiani, Francesco Mascarello, Dept. Comparative Biomedicine&Nutrition, and Dept. Biomedical Sciences, University of Padua, Italy*
(15 min) Wavelet analysis of laryngeal EMG for estimation of different fibre type activation in normal horses and horses with a distal axonopathy, *Justin Perkins, Emil Olsen, Jon Cheetham, Marta Cercone, Richard J Piercy, Norm G Ducharme, Royal Veterinary College, London, UK and Departments of Clinical Sciences, College of Veterinary Medicine, Cornell University, Ithaca, New York, US*
(15 min) Speckle analysis of transoesophageal ultrasound in laryngeal muscles during resting breathing and nerve stimulation, *Sarah A Jones, Rosie Carruthers, Royal Veterinary College, London, UK*
(30 min) Functional Echomyography in Healthy Subjects and Patients with Facial Palsy, *Gerd Fabian Volk, Mira Finkensieper, Maik Sauer, Martin Pohlmann, Orlando Guntinas-Lichius, Klinik und Poliklinik für Hals-, Nasen- und Ohrenheilkunde, Universitätsklinikum Jena, Germany*
- 12.30 Lunch & 13.30 **Poster Session**
- 14.30 **Electrical Stimulation in neurological disorders** – Stefano Masiero, Daniel Graupe, Chairmen
(30 min) Implantable pulse generators for experimental studies – stimulation pattern flexibility versus technological limits, *H. Lanmueller, M. Bijak, E. Unger, Medical University of Vienna, Austria,*
(20 min) The short-term effects of antenna insulation thickness on path losses in wireless telemetry implants at microwave frequencies *Lukas Kneisz, Michael Schermann, Ewald Unger, Michael Haller, Matthias Krenn, Winfried Mayr, Medical University of Vienna, Austria*
(20 min) A neuroprosthesis for finger movement rehabilitation, *Thordur Helgason, et al., Reykjavik, Iceland*
(20 min) Current versus voltage controlled electrical stimulation of the anterior thigh, *Matthias Krenn, et al., Medical University of Vienna, Austria; Instituto Tecnológico y de Estudios Superiores de Monterrey, Mexico; LBI of Electrical Stimulation & Physical Rehabilitation, Dept. Physical Medicine and Rehabilitation, Wilhelminenspital, Vienna, Austria*
- 16.00 Coffee Break
- 16.30 **Muscle Disorders** – Fabrizio Bruschi, Ugo Carraro, Chairmen
(30 min) The myositis caused by *Trichinella* spp. *Fabrizio Bruschi, Dept. Translational Research, University of Pisa, Italy*
(30 min) Myotilin, Desmin and MHC-I expression in muscular disorders with protein aggregates, *Giovanna Cenacchi, Bologna, Italy*
(30 min) Caveolinopathy – Case histories of four persons, in two families, *István Gáti, Olof Danielsson, Vrethem Magnus, Linköping University, Sweden*
(30 min) Hereditary Spastic Paraplegia: clinical effects of neurorehabilitation, *Paola Cudia, Alessandra Lacatena, Alfons Baba, Pawel Kiper, Elisabetta Tasca, Antonio Merico, Francesco Piccione, Elena Pegoraro, Corrado Angelini, Venezia&Padua, Italy*
- 18.30 U. Carraro - Adjö, Arrivederci, Auf Wiedersehen, Aurevoir, Búcsú, Despedida, Poslovite, Sjámt, See You to 2013 Autumn Padua Muscle Days



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Saturday March 16, 2013 & Sunday March 17, 2013

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14.00 Posters – Libero Vitiello, Paolo Gargiulo, Chairmen

- 01 EMG of upper airway muscles in horses: quantitative and spectral analysis of thyrohyoid muscle activity during exercise, *Marta Cercone, Cornell University, Ithaca, NY, USA*
- 02 Combined Sihler nerve stain & arterial description for representation of neuro-arterial-architecture, *Martina Fersterra, Christoph Mülling, Veterinär-Anatomisches Institut, Tierkliniken, Leipzig, Germany*
- 03 3D distribution of electrical field of multipolar intra-muscular FES stimulation electrodes in perfused horse (+ canine) larynx model by robotic computer controlled needle potential screening acquisition system, *Verena Tast, Christoph Mülling, Veterinär-Anatomisches Institut, Tierkliniken, Leipzig, Germany*
- 04 Assessment of FES-threshold and optimal stimulation parameters in horses with naturally occurring recurrent laryngeal neuropathy RLN, *Céline Mespoulhès-Rivière Chirurgie – Clinique équine ENVA, Maisons-ALFORT, Paris, France*
- 05 Nuclear wandering and nuclear grouping in denervated skeletal muscle, *Nicoletta Adami et al., Translational Myology Lab, Dept. Biomedical Sciences, University of Padua, Italy*
- 06 Sub-clinical denervation/reinnervation events are contributing mechanisms of muscle atrophy progression in aging. *Simone Mosole et al., Translational Myology Lab, Dept. Biomedical Sciences, University of Padua, Italy*
- 07 Strategies to accelerate muscle reinnervation across traumatic nerve gaps. *Vincenzo Vindigni, Luca Lancerotto, Laura Masetto, Erica Dalla Venezia, Simone Mosole, Nicoletta Adami, Sandra Zampieri, Ugo Carraro, Riccardo Zanato, Roberto Stramare, Stefano Masiero, Franco Bassetto, Plastic Surgery Clinic and Physiatri Unit of the Neurosciences Dept.; Radiology Unit of the Medicine Dept.; and Translational Myology Lab, University of Padua, Italy*
- 08 FES training protocols for the functional recovery of permanently complete denervated human muscles, *Stefan Loeffler, Helmut Kern, Ludwig Boltzmann Institute of Electrical Stimulation and Physical Rehabilitation, Vienna, Austria*
- 09 Reliability of novel postural sway task test. *Milan Sedliak, Ján Cvečka, Veronika Tirpáková, Stefan Löffler, Nejc Sarabon, Helmut Kern, Dušan Hamar*
- 10 Acquired multifocal myoclonus. Case histories, *István Gáti, Olof Danielsson, Göran Leijon, Valeria Szekeres, Vrethem Magnus, Linköping University, Linköping, Sweden, and Division of Neurology, Outpatients Department of Pécs, Pécs, Hungary*
11. Age-related decline of muscle power in track and field master athletes indicates a lifespan of 110 years, *Paolo Gava, et al., Translational Myology Lab, Dept. Biomedical Sciences, Padua University, Italy; Ludwig Boltzmann Institute of Electrical Stimulation and Physical Rehabilitation, Vienna, Austria*
12. Clinical effects of the exercise therapy in Amyotrophic Lateral Sclerosis patients, *Antonio Merico, et al., Ospedale San Camillo, Venice, Italy*

Organizers and Participants gratefully acknowledge the sponsors

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The Department of Biomedical Sciences, Padua, Italy (www.biomed.unipd.it)



Interreg IVa “Mobility in elderly” (www.physmed-vienna.at)

MED^{EL}, Innsbruck, Austria (<http://www.medel.com/int/>)

De Gustibus Carnis, Verona, Italy (www.degustibuscarnis.it)