

# **MONICA CANEPARI**

## **CURRICULUM vitae et studiorum**

### **Personal details:**

#### **Date and place of birth:**

07 May 1963, Castel San Giovanni (PC), Italy

#### **Nationality**

Italian

#### **Address:**

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University of Pavia  
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### **Actual position**

Researcher in Physiology at the Faculty of Medicine and Surgery, University of Pavia, Italy

### **Education and Fellowships**

- ❖ *1982, High School:* Liceo Scientifico di Castel San Giovanni (Piacenza, Italy).
- ❖ *1988, Degree in Pharmacological Sciences* University of Pavia (Italy), magna-cum laude.
- ❖ *1989, Research fellow:* Laboratory of Pharmacology of Thrombosis and Atherosclerosis, Institute of Pharmacological Science, University of Milan.
- ❖ *1990-1993* PhD student in Laboratory of Muscle Physiology, Institute of Human Physiology, University of Pavia
- ❖ *1993*, PhD in Physiology, University of Pavia.
- ❖ *1994-2000*, Post doctoral position at the Institute of Human Physiology, University of Pavia.
- ❖ *2000-*, Researcher in Physiology, faculty of Medicine and Surgery, University of Pavia.

### **Collaborations and stays in foreign laboratories**

- ❖ *1994* Invited visitor at the University of Orsay, France (1w) to learn an electrophoresis technique to separate cardiac myosin isoforms in non-denaturing conditions.
- ❖ *1996* Invited visitor at National Institute of Medical Research, Mill Hill, London (2 mo) to learn a technique to study contractile proteins interaction in vitro (in vitro motility assay or IVMA)
- ❖ *1998* Invited visitor at National Institute of Medical Research, Mill Hill, London (2 weeks) to perform IVMA experiments in collaboration with Dr.M.Anson
- ❖ *2001* Invited visitor at Department of Biology, University of York (1mo) to learn a technique to manipulate and study the functional properties of single molecules (optical trap or OT)

## **Seminars**

- ❖ 1998, Invited speaker at “Physiology Seminar Series” Institute of Advanced Biomedical Technology , CNR, Milan :
  - 1) “Functional properties of skeletal isolated human muscular fibers”
  - 2) “Analysis of myofibrillar proteins interaction with IVMA technique”
- ❖ 2005, Invited speaker at “Physiology Seminar Series” Department of Anatomy and Physiology, University of Padua  
“The working stroke of skeletal myosin isoforms is developed in two step”
- ❖ 2006, Invited speaker at “Physiology Seminar Series” Department of Clinical Medicine and Applied Biotechnology, University of Bologna,  
“Techniques for the study muscle function: in vitro studies at molecular level”
- ❖ 2010, As part of a program of supplementary educational activities for students of Medicine  
“Molecular mechanisms of the difference between the isoforms of myosin ”

## **Research activity**

- ❖ 1986-1988: she studied the effect of calcium antagonists on isolated guinea-pig atria
- ❖ 1988-1990: she studied the phosphatidylinositol cycle after cell stimulation and learned platelet aggregation techniques
- ❖ 1990-1999: her scientific interests cover different aspects of skeletal and heart muscle physiology. Her research activity was focussed on contractile and biochemical parameters of muscle function: mechanical experiments on isolated muscles, electrophysiological analysis of contractile proteins, ATPase activity.
- ❖ From 1999-, she devoted most of her research activity to the study of the acto-myosin interaction and to the study of the molecular determinants of the functional differences among skeletal myosin isoforms. Most work has been done to improve techniques to study the functional properties of single molecule: extraction of pure myosin isoforms from single muscle fibers; in vitro motility assay (IVMA) and manipulation of single molecules by laser trap (optical trap or OT).

The results of the research work have been published in 35 publications in extenso in journal indexed in PUB MED.

2 book chapters

Contemporary *h* index 16 (SCOPUS)

Total citations 1350 (SCOPUS)

## **Referee**

European Journal of Applied Physiology

Journal of Applied Physiology

Acta Physiologica

Journal of Muscle Research and Cell Motility

## **Societies**

Italian Physiological Society

Interuniversity Institute of Myology

## **Teaching**

- ❖ 1994-2000, Teaching Assistant of Human Physiology at the Faculty of Medicine of the University of Pavia
- ❖ 2000-, Regular teacher of Physiology of Sport in the Faculty of Medicine and Surgery, Course in Sport Sciences, University of Pavia,
- ❖ 2007-, Teaching Laboratory of Physiology-2, Degree of Medicine and Surgery
- ❖ 2003-, Supplementary didactic activities in the Faculty of Medicine and Surgery , Bachelor's degree in Sports Medicine

## **Grant proposals**

She has participated to numerous national and international grant proposals : Programs of Relevant National Interest, from 2000); European Community (PENAM 2001-2004; Better Ageing 2002-2005, FP7-HEALTH-2007-B); Italian Space Agency (PROGETTO OSMA 2006-2009); Telethon Onlus (2007-2009), Fondazione Cariplo (2003, 2006, 2010).

## **Honors**

Participation on the list of auditors for program evaluation and ministerial research products (EUROPEAN RESEARCH COUNCIL, 2012)

Member of the jury for the award of PhD in "Physiological Sciences and Nutrition" XX cycle (AA 2005-2007) at the University of Florence (coordinator Prof. Poggesi)

Member of the Board with the Rector's Decree No. 2673 of 24/10/2005 for benchmarking in place of the scientific researcher BIO-09, Faculty of Medicine, University of Padova

## **Book chapters**

1) Bottinelli R., Pellegrino M.A., Rossi R., **Canepari M.** and C.Reggiani  
“*Contractile properties of human skeletal muscle fibres in disuse and disease*”  
**Advances in Occupational Medicine & Rehabilitation** Capodaglio P, Narici M. La Goliardica Pavese pp 17-36, (1998)

2) **Canepari M.** and Bottinelli R.  
“*Cellular and Molecular Mechanisms of Skeletal Muscle Plasticity*”  
**Role of Physical Exercise in Preventing Disease and Improving the Quality of Life** Stocchi V, De Feo P., Hood D.A. Springer pp. 3-22, (2007) ISBN 978-88-470-0375-0

## **Relevant publications**

1) **Canepari M.**, Rossi R., Pellegrino M.A., Reggiani C., and R.Bottinelli  
“*Speeds of actin traslocation in vitro by myosins extracted from single rat muscle fibres of different types*”  
**Exp.Physiol.** 84:803-806, (1999)

- 2) **Canepari M**, Rossi R, Pellegrino M.A., Bottinelli R., Schiaffino S. and C.Reggiani  
*“Functional diversity between orthologous myosins with minimal sequence diversity”*  
**J.Muscl.Res.Cell Motil.** 21:375-382, (2000)
- 3) **Canepari M**, Rossi R, Pellegrino MA, Orrell RW, Cobbold M, Harridge S, Bottinelli R.  
*Effects of resistance training on myosin function studied by the in vitro motility assay in young and older men”*  
**J Appl Physiol.**:98(6):2390-5, (2005)
- 4) Rossi R., Maffei M., Bottinelli R. , **Canepari M**.  
*“Temperature dependence of speed of actin filaments propelled by slow and fast skeletal myosin isoforms”*  
**J Appl Physiol.**:99(6):2239-45, (2005)
- 5) Capitanio M., **Canepari M.**, Cacciafesta P., Lombardi V., Cicchi R., Maffei M., Pavone F.S., Bottinelli R.  
*“Two independent mechanical events in the interaction cycle of skeletal muscle myosin with actin”*  
**Proc. Natl. Acad. Sci. USA** 103(1):87-92, (2006)
- 6) **Canepari M**, Rossi R, Pansarasa O, Maffei M, Bottinelli R.  
*“ Actin sliding velocity on pure myosin isoforms from dystrophic mouse muscles”*  
**Muscle Nerve.** 40(2):249-56 (2009)
- 7) **Canepari M**, Pellegrino MA, D'Antona G, Bottinelli R.  
*“Single muscle fiber properties in aging and disuse”*  
**Scand J Med Sci Sports.** 20(1):10-9 (2010)
- 8) **Canepari M**, Pellegrino MA, D'Antona G, Bottinelli R.  
*“Skeletal muscle fibre diversity and the underlying mechanisms”*  
**Acta Physiol.** 199(4):465-76 (2010)
- 9) **Canepari M**, Maffei M, Longa E, Geeves M, Bottinelli R  
*“Actomyosin kinetics of pure fast and slow rat myosin isoforms studied by in vitro motility assay approach”.*  
**Exp Physiol.** 97(7):873-81(2012)
- 10) Capitanio M, **Canepari M**, Maffei M, Beneventi D, Monico C, Vanzi F, Bottinelli R, Pavone FS.  
*“Ultrafast force-clamp spectroscopy of single molecules reveals load dependence of myosin working stroke”.*  
**Nat Methods.** 9(10):1013-9 (2012)