

Roberto Bottinelli

Short biographical sketch

BORN: 20 April 1956, Pavia, Italy.

ADDRESS: Department of Molecular Medicine, Via Forlanini 6, 27100 Pavia, Italy; Tel: +39.0382987257; fax +39.0382.987664; e-mail: roberto.bottinelli@unipv.it

GOOGLE SCHOLAR PAGE: <http://scholar.google.it/citations?user=FSfIFosAAAAJ>

RESEARCH FIELD: Muscle physiology: the cellular and molecular mechanisms at the basis of the structural and functional heterogeneity and plasticity of skeletal muscle in health and disease

RESEARCH ACTIVITY: He devoted most of his research activity to the study of the cellular and molecular determinants of skeletal muscle structural and functional plasticity. The most recent activity relate to three strictly related topics: (i) the mechanisms of the functional diversity among skeletal myosin isoforms studied at molecular level and at the level of the kinetics of acto-myosin interaction; (ii) the impact of physiologic and pathologic conditions on structure and function of skeletal muscle and the underlying cellular and molecular mechanisms; (iii) the impact of gene, cell and pharmacological therapies on skeletal muscle of animal models of muscular dystrophies. All studies have been performed through a wide network of national and international collaborations.

The results of his research work have been published in **99 publications** in journal indexed in PUB MED and with impact factor; total impact factor 645, mean 6.52; **H index 37 ISI, 34 Scopus (from 1996), 41 Google Scholar; citations: 4736 (ISI)**. Google Scholar web page: <http://scholar.google.it/citations?user=FSfIFosAAAAJ>.

The most important works were published in Nature (1984, 2006 (2)), Nat Med (2006), Nature Methods (2012), J Clin Invest (2004, 2006), EMBO Journal (1997), Proc Natl Acad Sci USA (2006 (2); 2007), Circulation Research (1984, 1998), Journal of Physiology (London), the leading physiology journal (1991, 1994 (2), 1996 (2), 1997, 2003 (2), 2004, 2006, 2007, 2009, 2010 (1), 2011 (2), 2012), Science (2003).

EDITORIAL ACTIVITY: Reviewing Editor of the Journal of Physiology (London) (2004-2006); Senior Editor of the Journal of Physiology (London) (2006-2011); member of the executive committee of the Journal of Physiology (2007-2011); Senior Editor European Journal of Applied Physiology (2003-2010); member of F1000 since 2006; Associate Editor Frontiers in Skeletal Muscle Physiology (2010).

MEMBERSHIPS

Physiological Society (UK)
Biophysical Society (USA)
Italian Physiological Society (IT)
American College of Sport Medicine (USA)

MOST IMPORTANT ONGOING COLLABORATIONS:

- M. Geeves, University of Kent, UK: kinetics of acto-myosin interactions in skeletal myosin isoforms
- F. Pavone and M. Capitanio, LENS, Florence: single molecule mechanics of skeletal myosin isoforms
- C. Reggiani, Padova: intracellular signaling during skeletal muscle adaptations
- G. Cossu, University College: cell therapy for Muscular Dystrophies
- Diana Conte Camerino, University of Bari, Italy; disuse muscle atrophy
- Marco Narici, University of Nottingham, UK; skeletal muscle and ageing

MAJOR RESEARCH FUNDING:

- European Community (V Framework): Pan European Network for Ageing Muscle - Better Ageing 2001-2005.

Tuesday, May 14, 2013

- Telethon Foundation: "Analysis of functional impairment of skeletal muscle in murine models of muscular dystrophy and of functional recovery following mesoangioblast treatments" (2003-2006)
- Cariplo Foundation: "Studio di un protocollo terapeutico per correggere le distrofie muscolari attraverso l'uso di un nuovo tipo di cellula staminale" (2004-2006); "Miglioramento dell'efficacia clinica di un nuovo tipo di cellula staminale, i mesoangioblasti, nel modello pre-clinico della distrofia di Duchenne" (2007-2009); "La miopatia steroidea: caratterizzazione molecolare, istopatologica ed elettrofisiologica" (2011-2013)
- Italian Space Agency: "The cellular and molecular mechanisms of skeletal muscle plasticity in disuse induced atrophy and in pathologic conditions" (OSMA project, 2006-2009)
- European Community (VII Framework): MYOAGE (2009-2012)

Current position title

Full Professor of Physiology, Medical School, University of Pavia, Italy

Educational background

University of Pavia, Pavia, Italy, M.D. 1981 (17/7/1981)

University of Pavia, Specialization in Sport Medicine, 1986 (17/10/1986)

University of Pavia, Ph.D. Physiology 1988 (7/12/1989)

List of 10 major publications

1. Capitanio M, Canepari M, Maffei M, Beneventi D, Monico C, Vanzi F, Bottinelli R & Pavone FS. (2012). Ultrafast force-clamp spectroscopy of single molecules reveals load dependence of myosin working stroke. **Nature methods** 9, 1013-1019.
2. Pellegrino MA, Desaphy JF, Brocca L, Pierno S, Camerino DC & Bottinelli R. (2011). Redox homeostasis, oxidative stress and disuse muscle atrophy. **The Journal of physiology** 589, 2147-2160.
3. Sampaolesi M, Blot S, D'Antona G, Granger N, Tonlorenzi R, Innocenzi A, Mognol P, Thibaud JL, Galvez BG, Barthelemy I, Perani L, Mantero S, Guttinger M, Pansarasa O, Rinaldi C, Cusella De Angelis MG, Torrente Y, Bordignon C, Bottinelli R & Cossu G. (2006). Mesoangioblast stem cells ameliorate muscle function in dystrophic dogs. **Nature** 444, 574-579.
4. D'Antona G, Lanfranconi F, Pellegrino MA, Brocca L, Adami R, Rossi R, Moro G, Miotti D, Canepari M & Bottinelli R. (2006). Skeletal muscle hypertrophy and structure and function of skeletal muscle fibres in male body builders. **J Physiol** 570, 611-627.
5. Capitanio M, Canepari M, Cacciafesta P, Lombardi V, Cicchi R, Maffei M, Pavone FS & Bottinelli R. (2006). Two independent mechanical events in the interaction cycle of skeletal muscle myosin with actin. **Proc Natl Acad Sci U S A** 103, 87-92.
6. Sampaolesi M, Torrente Y, Innocenzi A, Tonlorenzi R, D'Antona G, Pellegrino MA, Barresi R, Bresolin N, De Angelis MG, Campbell KP, Bottinelli R & Cossu G. (2003). Cell therapy of alpha-sarcoglycan null dystrophic mice through intra-arterial delivery of mesoangioblasts. **Science** 301, 487-492.
7. D'Antona G, Pellegrino MA, Adami R, Rossi R, Carlizzi CN, Canepari M, Saltin B & Bottinelli R. (2003). The effect of ageing and immobilization on structure and function of human skeletal muscle fibres. **J Physiol** 552, 499-511.
8. Bottinelli R & Reggiani C. (2000). Human skeletal muscle fibres: molecular and functional diversity. **Prog Biophys Mol Biol** 73, 195-262.

9. Bottinelli R, Canepari M, Pellegrino MA & Reggiani C. (1996). Force-velocity properties of human skeletal muscle fibres: myosin heavy chain isoform and temperature dependence. *J Physiol* 495 (Pt 2), 573-586.
10. Bottinelli R, Schiaffino S & Reggiani C. (1991). Force-velocity relations and myosin heavy chain isoform compositions of skinned fibres from rat skeletal muscle. *J Physiol* 437, 655-672.

Previous employment (in chronological order)

1992-1998 Researcher in Physiology, Faculty of Medicine, University of Pavia
 1998-2001 Associate Professor of Physiology, Faculty of Medicine, University of Pavia
 2001- Full Professor of Physiology, , Faculty of Medicine, University of Pavia

Experience (in chronological order)

Teaching:

The full Physiology course for Medical students since 1996
 A Physiology course for Motoric Sciences degree since 1999
 The Physiology Course for Medical and Pharmaceutical Biotechnology Degree since 2004
 The Physiology Course in English for Medical students since 2010

Administrative:

Head of the Department of Experimental Medicine, University of Pavia, 2005-2008
 Head of the Department of Physiology, University of Pavia, 2008-2011
 Director of the Interuniversity Institute of Myology (2008-2011)
 Director of the Specialization school of Sport Medicine for medical doctors 2002-

Research:

P.I. of the Muscle Biophysics Laboratory of the Department since 1999

Experimental:

1981-1988 Cardiac physiology: factors affecting contractility, relaxation, intracellular calcium kinetics
 1982-1986 contractility of intact isolated frog muscle fibres
 1984- muscle fibre types, myosin and myofibrillar protein isoforms and their contractile and energetic properties
 1998- analysis of myosin motor function at single molecule level by reconstituted contractile systems in vitro: in vitro motility assays and optical trap
 2002-2007 study of cellular, gene and pharmaceutical therapies of muscular dystrophies
 2002- proteomic analysis of muscle phenotype adaptations
 2009- gene expression analysis and analysis of intracellular pathways underlying skeletal muscle plasticity in health and disease

Publications *in extenso*

1. Minetto MA, Botter A, Bottinelli O, Miotti D, Bottinelli R & D'Antona G. (2013). Variability in Muscle Adaptation to Electrical Stimulation. *International journal of sports medicine*.
2. D'Antona G, Mascaro A, Monopoli A, Miglietta D, Ongini E & Bottinelli R. (2013). Nitric oxide prevents atorvastatin-induced skeletal muscle dysfunction and alterations in mice. *Muscle Nerve* 47, 72-80.

3. Tedesco FS, Gerli MF, Perani L, Benedetti S, Ungaro F, Cassano M, Antonini S, Tagliafico E, Artusi V, Longa E, Tonlorenzi R, Ragazzi M, Calderazzi G, Hoshiya H, Cappellari O, Mora M, Schoser B, Schneiderat P, Oshimura M, Bottinelli R, Sampaolesi M, Torrente Y, Broccoli V & Cossu G. (2012). Transplantation of Genetically Corrected Human iPSC-Derived Progenitors in Mice with Limb-Girdle Muscular Dystrophy. **Sci Transl Med** 4, 140ra189.
4. Porcelli S, Marzorati M, Pugliese L, Adamo S, Gondin J, Bottinelli R & Grassi B. (2012). Lack of functional effects of neuromuscular electrical stimulation on skeletal muscle oxidative metabolism in healthy humans. **J Appl Physiol**.
5. Farini A, Sitzia C, Navarro C, D'Antona G, Belicchi M, Parolini D, Del Fraro G, Razini P, Bottinelli R, Meregalli M & Torrente Y. (2012). Absence of T and B lymphocytes modulates dystrophic features in dysferlin deficient animal model. **Exp Cell Res** 318, 1160-1174.
6. Capitanio M, Canepari M, Maffei M, Beneventi D, Monico C, Vanzi F, Bottinelli R & Pavone FS. (2012). Ultrafast force-clamp spectroscopy of single molecules reveals load dependence of myosin working stroke. **Nature methods** 9, 1013-1019.
7. Canepari M, Maffei M, Longa E, Geeves M & Bottinelli R. (2012). Actomyosin kinetic of pure fast and slow rat myosin isoforms studied by in vitro motility assay approach. **Exp Physiol**.
8. Brocca L, Cannavino J, Coletto L, Biolo G, Sandri M, Bottinelli R & Pellegrino MA. (2012). The time course of the adaptations of human muscle proteome to bed rest and the underlying mechanisms. **J Physiol** 590, 5211-5230.
9. Tedesco FS, Hoshiya H, D'Antona G, Gerli MF, Messina G, Antonini S, Tonlorenzi R, Benedetti S, Berghella L, Torrente Y, Kazuki Y, Bottinelli R, Oshimura M & Cossu G. (2011). Stem cell-mediated transfer of a human artificial chromosome ameliorates muscular dystrophy. **Sci Transl Med** 3, 96ra78.
10. Pellegrino MA, Desaphy JF, Brocca L, Pierno S, Camerino DC & Bottinelli R. (2011). Redox homeostasis, oxidative stress and disuse muscle atrophy. **The Journal of physiology** 589, 2147-2160.
11. Maffioletti NA, Minetto MA, Farina D & Bottinelli R. (2011). Electrical stimulation for neuromuscular testing and training: state-of-the art and unresolved issues. **European journal of applied physiology** 111, 2391-2397.
12. Gondin J, Brocca L, Bellinzona E, D'Antona G, Maffioletti NA, Miotti D, Pellegrino MA & Bottinelli R. (2011). Neuromuscular electrical stimulation training induces atypical adaptations of the human skeletal muscle phenotype: a functional and proteomic analysis. **J Appl Physiol** 110, 433-450.
13. Camerino GM, Pellegrino MA, Brocca L, Digennaro C, Camerino DC, Pierno S & Bottinelli R. (2011). Statin or fibrates chronic treatment modifies the proteomic profile of rat skeletal muscle. **Biochemical pharmacology** 81, 1054-1064.
14. Bottinelli R & Westerblad H. (2011). Reactive oxygen and nitrogen species in skeletal muscle: acute and long-term effects. **The Journal of physiology** 589,

2117-2118.

15. Tricarico D, Mele A, Camerino GM, Bottinelli R, Brocca L, Frigeri A, Svelto M, George AL, Jr. & Camerino DC. (2010). The KATP channel is a molecular sensor of atrophy in skeletal muscle. **J Physiol** 588, 773-784.
16. Flati V, Caliaro F, Specia S, Corsetti G, Cardile A, Nisoli E, Bottinelli R & G DA. (2010). Essential amino acids improve insulin activation of AKT/MTOR signaling in soleus muscle of aged rats. **Int J Immunopathol Pharmacol** 23, 81-89.
17. Desaphy JF, Pierno S, Liantonio A, Giannuzzi V, Digennaro C, Dinardo MM, Camerino GM, Ricciuti P, Brocca L, Pellegrino MA, Bottinelli R & Camerino DC. (2010). Antioxidant treatment of hindlimb-unloaded mouse counteracts fiber type transition but not atrophy of disused muscles. **Pharmacol Res** 61, 553-563.
18. D'Antona G, Ragni M, Cardile A, Tedesco L, Dossena M, Bruttini F, Caliaro F, Corsetti G, Bottinelli R, Carruba MO, Valerio A & Nisoli E. (2010). Branched-chain amino acid supplementation promotes survival and supports cardiac and skeletal muscle mitochondrial biogenesis in middle-aged mice. **Cell Metab** 12, 362-372.
19. Canepari M, Pellegrino MA, D'Antona G & Bottinelli R. (2010). Skeletal muscle fibre diversity and the underlying mechanisms. **Acta Physiol (Oxf)** 199, 465-476.
20. Canepari M, Pellegrino MA, D'Antona G & Bottinelli R. (2010). Single muscle fiber properties in aging and disuse. **Scand J Med Sci Sports** 20, 10-19.
21. Brocca L, Pellegrino MA, Desaphy JF, Pierno S, Camerino DC & Bottinelli R. (2010). Is oxidative stress a cause or consequence of disuse muscle atrophy in mice? A proteomic approach in hindlimb-unloaded mice. **Exp Physiol** 95, 331-350.
22. Borina E, Pellegrino MA, D'Antona G & Bottinelli R. (2010). Myosin and actin content of human skeletal muscle fibers following 35 days bed rest. **Scand J Med Sci Sports** 20, 65-73.
23. Pansarasa O, Rinaldi C, Parente V, Miotti D, Capodaglio P & Bottinelli R. (2009). Resistance training of long duration modulates force and unloaded shortening velocity of single muscle fibres of young women. **J Electromyogr Kinesiol** 19, e290-300.
24. Durieux AC, D'Antona G, Desplanches D, Freyssenet D, Klossner S, Bottinelli R & Fluck M. (2009). Focal adhesion kinase is a load-dependent governor of the slow contractile and oxidative muscle phenotype. **J Physiol** 587, 3703-3717.
25. Canepari M, Rossi R, Pansarasa O, Maffei M & Bottinelli R. (2009). Actin sliding velocity on pure myosin isoforms from dystrophic mouse muscles. **Muscle Nerve** 40, 249-256.
26. Parente V, D'Antona G, Adami R, Miotti D, Capodaglio P, De Vito G & Bottinelli R. (2008). Long-term resistance training improves force and unloaded shortening velocity of single muscle fibres of elderly women. **Eur J Appl Physiol** 104, 885-

27. Benchaouir R, Meregalli M, Farini A, D'Antona G, Belicchi M, Goyenvalle A, Battistelli M, Bresolin N, Bottinelli R, Garcia L & Torrente Y. (2008). [Restoration of human dystrophin following transplantation of exon-skipping-engineered DMD patient stem cells into dystrophic mice]. **Med Sci (Paris)** 24, 99-101.
28. Torrente Y, Belicchi M, Marchesi C, Dantona G, Cogiamanian F, Pisati F, Gavina M, Giordano R, Tonlorenzi R, Fagiolari G, Lamperti C, Porretti L, Lopa R, Sampaolesi M, Vicentini L, Grimoldi N, Tiberio F, Songa V, Baratta P, Prella A, Forzenigo L, Guglieri M, Pansarasa O, Rinaldi C, Mouly V, Butler-Browne GS, Comi GP, Biondetti P, Moggio M, Gaini SM, Stocchetti N, Priori A, D'Angelo MG, Turconi A, Bottinelli R, Cossu G, Rebullia P & Bresolin N. (2007). Autologous transplantation of muscle-derived CD133+ stem cells in Duchenne muscle patients. **Cell transplantation** 16, 563-577.
29. Sampaolesi M, Blot S, Bottinelli R & Cossu G. (2007). Sampaolesi et al. reply. **Nature** 450, E23-25.
30. Farini A, Meregalli M, Belicchi M, Battistelli M, Parolini D, D'Antona G, Gavina M, Ottoboni L, Constantin G, Bottinelli R & Torrente Y. (2007). T and B lymphocyte depletion has a marked effect on the fibrosis of dystrophic skeletal muscles in the scid/mdx mouse. **The Journal of pathology** 213, 229-238.
31. D'Antona G, Pellegrino MA, Carlizzi CN & Bottinelli R. (2007). Deterioration of contractile properties of muscle fibres in elderly subjects is modulated by the level of physical activity. **Eur J Appl Physiol** 100, 603-611.
32. D'Antona G, Brocca L, Pansarasa O, Rinaldi C, Tupler R & Bottinelli R. (2007). Structural and functional alterations of muscle fibres in the novel mouse model of facioscapulohumeral muscular dystrophy. **J Physiol** 584, 997-1009.
33. Brunelli S, Sciorati C, D'Antona G, Innocenzi A, Covarello D, Galvez BG, Perrotta C, Monopoli A, Sanvito F, Bottinelli R, Ongini E, Cossu G & Clementi E. (2007). Nitric oxide release combined with nonsteroidal antiinflammatory activity prevents muscular dystrophy pathology and enhances stem cell therapy. **Proc Natl Acad Sci U S A** 104, 264-269.
34. Benchaouir R, Meregalli M, Farini A, D'Antona G, Belicchi M, Goyenvalle A, Battistelli M, Bresolin N, Bottinelli R, Garcia L & Torrente Y. (2007). Restoration of human dystrophin following transplantation of exon-skipping-engineered DMD patient stem cells into dystrophic mice. **Cell stem cell** 1, 646-657.
35. Vanzì F, Capitano M, Sacconi L, Stringari C, Cicchi R, Canepari M, Maffei M, Piroddi N, Poggesi C, Nucciotti V, Linari M, Piazzesi G, Tesi C, Antolini R, Lombardi V, Bottinelli R & Pavone FS. (2006). New techniques in linear and non-linear laser optics in muscle research. **J Muscle Res Cell Motil** 27, 469-479.
36. Sampaolesi M, Blot S, D'Antona G, Granger N, Tonlorenzi R, Innocenzi A, Mognol P, Thibaud JL, Galvez BG, Barthelemy I, Perani L, Mantero S, Guttinger M, Pansarasa O, Rinaldi C, Cusella De Angelis MG, Torrente Y, Bordignon C, Bottinelli R & Cossu G. (2006). Mesoangioblast stem cells ameliorate muscle function in dystrophic dogs. **Nature** 444, 574-579.

37. Nyitrai M, Rossi R, Adamek N, Pellegrino MA, Bottinelli R & Geeves MA. (2006). What limits the velocity of fast-skeletal muscle contraction in mammals? **J Mol Biol** 355, 432-442.
38. Mourkioti F, Kratsios P, Luedde T, Song YH, Delafontaine P, Adami R, Parente V, Bottinelli R, Pasparakis M & Rosenthal N. (2006). Targeted ablation of IKK2 improves skeletal muscle strength, maintains mass, and promotes regeneration. **J Clin Invest** 116, 2945-2954.
39. Minetti GC, Colussi C, Adami R, Serra C, Mozzetta C, Parente V, Fortuni S, Straino S, Sampaolesi M, Di Padova M, Illi B, Gallinari P, Steinkuhler C, Capogrossi MC, Sartorelli V, Bottinelli R, Gaetano C & Puri PL. (2006). Functional and morphological recovery of dystrophic muscles in mice treated with deacetylase inhibitors. **Nat Med** 12, 1147-1150.
40. Maffiuletti NA, Zory R, Miotti D, Pellegrino MA, Jubeau M & Bottinelli R. (2006). Neuromuscular adaptations to electrostimulation resistance training. **Am J Phys Med Rehabil** 85, 167-175.
41. Gelfi C, Vigano A, Ripamonti M, Pontoglio A, Begum S, Pellegrino MA, Grassi B, Bottinelli R, Wait R & Cerretelli P. (2006). The Human Muscle Proteome in Aging. **J Proteome Res** 5, 1344-1353.
42. Gabellini D, D'Antona G, Moggio M, Prella A, Zecca C, Adami R, Angeletti B, Ciscato P, Pellegrino MA, Bottinelli R, Green MR & Tupler R. (2006). Facioscapulohumeral muscular dystrophy in mice overexpressing FRG1. **Nature** 439, 973-977.
43. Denti MA, Rosa A, D'Antona G, Sthandier O, De Angelis FG, Nicoletti C, Allocca M, Pansarasa O, Parente V, Musaro A, Auricchio A, Bottinelli R & Bozzoni I. (2006). Chimeric adeno-associated virus/antisense U1 small nuclear RNA effectively rescues dystrophin synthesis and muscle function by local treatment of mdx mice. **Hum Gene Ther** 17, 565-574.
44. Denti MA, Rosa A, D'Antona G, Sthandier O, De Angelis FG, Nicoletti C, Allocca M, Pansarasa O, Parente V, Musaro A, Auricchio A, Bottinelli R & Bozzoni I. (2006). Body-wide gene therapy of Duchenne muscular dystrophy in the mdx mouse model. **Proc Natl Acad Sci U S A** 103, 3758-3763.
45. D'Antona G, Lanfranconi F, Pellegrino MA, Brocca L, Adami R, Rossi R, Moro G, Miotti D, Canepari M & Bottinelli R. (2006). Skeletal muscle hypertrophy and structure and function of skeletal muscle fibres in male body builders. **J Physiol** 570, 611-627.
46. Capitanio M, Canepari M, Cacciafesta P, Lombardi V, Cicchi R, Maffei M, Pavone FS & Bottinelli R. (2006). Two independent mechanical events in the interaction cycle of skeletal muscle myosin with actin. **Proc Natl Acad Sci U S A** 103, 87-92.
47. Rossi R, Maffei M, Bottinelli R & Canepari M. (2005). Temperature dependence of speed of actin filaments propelled by slow and fast skeletal myosin isoforms. **J Appl Physiol** 99, 2239-2245.

48. Pellegrino MA, Brocca L, Dioguardi FS, Bottinelli R & D'Antona G. (2005). Effects of voluntary wheel running and amino acid supplementation on skeletal muscle of mice. ***Eur J Appl Physiol*** 93, 655-664.
49. Canepari M, Rossi R, Pellegrino MA, Orrell RW, Cobbold M, Harridge S & Bottinelli R. (2005). Effects of resistance training on myosin function studied by the in vitro motility assay in young and older men. ***J Appl Physiol*** 98, 2390-2395.
50. Torrente Y, Belicchi M, Sampaolesi M, Pisati F, Meregalli M, D'Antona G, Tonlorenzi R, Porretti L, Gavina M, Mamchaoui K, Pellegrino MA, Furling D, Mouly V, Butler-Browne GS, Bottinelli R, Cossu G & Bresolin N. (2004). Human circulating AC133(+) stem cells restore dystrophin expression and ameliorate function in dystrophic skeletal muscle. ***J Clin Invest*** 114, 182-195.
51. Toniolo L, Patruno M, Maccatrozzo L, Pellegrino MA, Canepari M, Rossi R, D'Antona G, Bottinelli R, Reggiani C & Mascarello F. (2004). Fast fibres in a large animal: fibre types, contractile properties and myosin expression in pig skeletal muscles. ***J Exp Biol*** 207, 1875-1886.
52. Polla B, D'Antona G, Bottinelli R & Reggiani C. (2004). Respiratory muscle fibres: specialisation and plasticity. ***Thorax*** 59, 808-817.
53. Pellegrino MA, D'Antona G, Bortolotto S, Boschi F, Pastoris O, Bottinelli R, Polla B & Reggiani C. (2004). Clenbuterol antagonizes glucocorticoid-induced atrophy and fibre type transformation in mice. ***Exp Physiol*** 89, 89-100.
54. Linari M, Bottinelli R, Pellegrino MA, Reconditi M, Reggiani C & Lombardi V. (2004). The mechanism of the force response to stretch in human skinned muscle fibres with different myosin isoforms. ***J Physiol*** 554, 335-352.
55. Sampaolesi M, Torrente Y, Innocenzi A, Tonlorenzi R, D'Antona G, Pellegrino MA, Barresi R, Bresolin N, De Angelis MG, Campbell KP, Bottinelli R & Cossu G. (2003). Cell therapy of alpha-sarcoglycan null dystrophic mice through intra-arterial delivery of mesoangioblasts. ***Science*** 301, 487-492.
56. Pellegrino MA, Canepari M, Rossi R, D'Antona G, Reggiani C & Bottinelli R. (2003). Orthologous myosin isoforms and scaling of shortening velocity with body size in mouse, rat, rabbit and human muscles. ***J Physiol*** 546, 677-689.
57. D'Antona G, Pellegrino MA, Adami R, Rossi R, Carlizzi CN, Canepari M, Saltin B & Bottinelli R. (2003). The effect of ageing and immobilization on structure and function of human skeletal muscle fibres. ***J Physiol*** 552, 499-511.
58. D'Antona G, Megighian A, Bortolotto S, Pellegrino MA, Ragona RM, Staffieri A, Bottinelli R & Reggiani C. (2002). Contractile properties and myosin heavy chain isoform composition in single fibre of human laryngeal muscles. ***J Muscle Res Cell Motil*** 23, 187-195.
59. Weiss S, Rossi R, Pellegrino MA, Bottinelli R & Geeves MA. (2001). Differing ADP Release Rates from Myosin Heavy Chain Isoforms Define the Shortening Velocity of Skeletal Muscle Fibers. ***J Biol Chem*** 276, 45902-45908.

60. Rossi R, Bottinelli R, Sorrentino V & Reggiani C. (2001). Response to caffeine and ryanodine receptor isoforms in mouse skeletal muscles. **Am J Physiol Cell Physiol** 281, C585-594.
61. Fulceri R, Rossi R, Bottinelli R, Conti A, Intravaia E, Galione A, Benedetti A, Sorrentino V & Reggiani C. (2001). Ca(2+) release induced by cyclic adp ribose in mice lacking type 3 ryanodine receptor. **Biochem Biophys Res Commun** 288, 697-702.
62. Bottinelli R. (2001). Functional heterogeneity of mammalian single muscle fibres: do myosin isoforms tell the whole story? **Pflugers Arch** 443, 6-17.
63. Reggiani C, Bottinelli R & Stienen GJ. (2000). Sarcomeric Myosin Isoforms: Fine Tuning of a Molecular Motor. **News Physiol Sci** 15, 26-33.
64. He ZH, Bottinelli R, Pellegrino MA, Ferenczi MA & Reggiani C. (2000). ATP consumption and efficiency of human single muscle fibers with different myosin isoform composition. **Biophys J** 79, 945-961.
65. Canepari M, Rossi R, Pellegrino MA, Bottinelli R, Schiaffino S & Reggiani C. (2000). Functional diversity between orthologous myosins with minimal sequence diversity. **J Muscle Res Cell Motil** 21, 375-382.
66. Bottinelli R & Reggiani C. (2000). Human skeletal muscle fibres: molecular and functional diversity. **Prog Biophys Mol Biol** 73, 195-262.
67. Canepari M, Rossi R, Pellegrino MA, Reggiani C & Bottinelli R. (1999). Speeds of actin translocation in vitro by myosins extracted from single rat muscle fibres of different types. **Exp Physiol** 84, 803-806.
68. Bottinelli R, Pellegrino MA, Canepari M, Rossi R & Reggiani C. (1999). Specific contributions of various muscle fibre types to human muscle performance: an in vitro study. **J Electromyogr Kinesiol** 9, 87-95.
69. Sartorio A, Narici M & Bottinelli R. (1998). Different impairment of muscle strength in adults with childhood-onset and acquired GH deficiency. **J Clin Endocrinol Metab** 83, 712.
70. Harridge SD, Bottinelli R, Canepari M, Pellegrino M, Reggiani C, Esbjornsson M, Balsom PD & Saltin B. (1998). Sprint training, in vitro and in vivo muscle function, and myosin heavy chain expression. **J Appl Physiol** 84, 442-449.
71. Bottinelli R, Coviello DA, Redwood CS, Pellegrino MA, Maron BJ, Spirito P, Watkins H & Reggiani C. (1998). A mutant tropomyosin that causes hypertrophic cardiomyopathy is expressed in vivo and associated with an increased calcium sensitivity. **Circ Res** 82, 106-115.
72. Barone V, Bertocchini F, Bottinelli R, Protasi F, Allen PD, Franzini Armstrong C, Reggiani C & Sorrentino V. (1998). Contractile impairment and structural alterations of skeletal muscles from knockout mice lacking type 1 and type 3 ryanodine receptors. **FEBS Lett** 422, 160-164.

73. Satta A, Migliori GB, Spanevello A, Neri M, Bottinelli R, Canepari M, Pellegrino MA & Reggiani C. (1997). Fibre types in skeletal muscles of chronic obstructive pulmonary disease patients related to respiratory function and exercise tolerance. **Eur Respir J** 10, 2853-2860.
74. Reggiani C, Potma EJ, Bottinelli R, Canepari M, Pellegrino MA & Stienen GJ. (1997). Chemo-mechanical energy transduction in relation to myosin isoform composition in skeletal muscle fibres of the rat. **J Physiol** 502 (Pt 2), 449-460.
75. Bottinelli R, Narici M, Pellegrino MA, Kayser B, Canepari M, Faglia G & Sartorio A. (1997). Contractile properties and fiber type distribution of quadriceps muscles in adults with childhood-onset growth hormone deficiency. **J Clin Endocrinol Metab** 82, 4133-4138.
76. Bottinelli R. (1997). The XXV European Muscle Congress: La Grand-Motte, Montpellier, France 14-17 September 1996. **J Muscle Res Cell Motil** 18, 119-122.
77. Bertocchini F, Ovitt CE, Conti A, Barone V, Scholer HR, Bottinelli R, Reggiani C & Sorrentino V. (1997). Requirement for the ryanodine receptor type 3 for efficient contraction in neonatal skeletal muscles. **Embo J** 16, 6956-6963.
78. Stienen GJ, Kiers JL, Bottinelli R & Reggiani C. (1996). Myofibrillar ATPase activity in skinned human skeletal muscle fibres: fibre type and temperature dependence. **J Physiol** 493 (Pt 2), 299-307.
79. Harridge SD, Bottinelli R, Canepari M, Pellegrino MA, Reggiani C, Esbjornsson M & Saltin B. (1996). Whole-muscle and single-fibre contractile properties and myosin heavy chain isoforms in humans. **Pflugers Arch** 432, 913-920.
80. Bottinelli R, Canepari M, Pellegrino MA & Reggiani C. (1996). Force-velocity properties of human skeletal muscle fibres: myosin heavy chain isoform and temperature dependence. **J Physiol** 495 (Pt 2), 573-586.
81. Bottinelli R & Reggiani C. (1995). Force-velocity properties and myosin light chain isoform composition of an identified type of skinned fibres from rat skeletal muscle. **Pflugers Arch** 429, 592-594.
82. Bottinelli R, Canepari M, Cappelli V & Reggiani C. (1995). Maximum speed of shortening and ATPase activity in atrial and ventricular myocardia of hyperthyroid rats. **Am J Physiol** 269, C785-790.
83. Ricciardi L, Bottinelli R, Canepari M & Reggiani C. (1994). Effects of acidosis on maximum shortening velocity and force-velocity relation of skinned rat cardiac muscle. **J Mol Cell Cardiol** 26, 601-607.
84. Polla B, Bottinelli R, Sandoli D, Sardi C & Reggiani C. (1994). Cortisone-induced changes in myosin heavy chain distribution in respiratory and hindlimb muscles. **Acta Physiol Scand** 151, 353-361.
85. Bottinelli R, Canepari M, Reggiani C & Stienen GJ. (1994). Myofibrillar ATPase activity during isometric contraction and isomyosin composition in rat single

- skinned muscle fibres. **J Physiol** 481 (Pt 3), 663-675.
86. Bottinelli R, Betto R, Schiaffino S & Reggiani C. (1994). Unloaded shortening velocity and myosin heavy chain and alkali light chain isoform composition in rat skeletal muscle fibres. **J Physiol** 478 (Pt 2), 341-349.
87. Bottinelli R, Betto R, Schiaffino S & Reggiani C. (1994). Maximum shortening velocity and coexistence of myosin heavy chain isoforms in single skinned fast fibres of rat skeletal muscle. **J Muscle Res Cell Motil** 15, 413-419.
88. Bottinelli R, Cappelli V, Morner SE & Reggiani C. (1993). Effects of amrinone on shortening velocity and force development in skinned skeletal muscle fibres. **J Muscle Res Cell Motil** 14, 110-120.
89. Morner SE, Canepari M, Bottinelli R, Cappelli V & Reggiani C. (1992). Effects of Amrinone on shortening velocity, force development and ATPase activity of demembranated preparations of rat ventricular myocardium. **Acta Physiol Scand** 146, 21-30.
90. Bottinelli R, Schiaffino S & Reggiani C. (1991). Force-velocity relations and myosin heavy chain isoform compositions of skinned fibres from rat skeletal muscle. **J Physiol** 437, 655-672.
91. Cappelli V, Bottinelli R, Polla B & Reggiani C. (1990). Altered contractile properties of rat cardiac muscle during experimental thiamine deficiency and food deprivation. **J Mol Cell Cardiol** 22, 1095-1106.
92. Cappelli V, Bottinelli R, Poggesi C, Moggio R & Reggiani C. (1989). Shortening velocity and myosin and myofibrillar ATPase activity related to myosin isoenzyme composition during postnatal development in rat myocardium. **Circ Res** 65, 446-457.
93. Bottinelli R, Eastwood JC & Flitney FW. (1989). Sarcomere 'give' during stretch of frog single muscle fibres with added series compliance. **Q J Exp Physiol** 74, 215-217.
94. Cappelli V, Moggio R, Polla B, Bottinelli R, Poggesi C & Reggiani C. (1988). The dual effect of thyroid hormones on contractile properties of rat myocardium. **Pflugers Arch** 411, 620-627.
95. Altringham JD & Bottinelli R. (1985). The descending limb of the sarcomere length-force relation in single muscle fibres of the frog. **J Muscle Res Cell Motil** 6, 585-600.
96. Poggesi C, Bottinelli R, Vitale M & Testa S. (1984). Postextrasystolic potentiation in isolated rat myocardium: dependence on resting muscle length. **Pflugers Arch** 402, 321-324.
97. Altringham JD, Bottinelli R & Lactis JW. (1984). Is stepwise sarcomere shortening an artefact? **Nature** 307, 653-655.
98. Poggesi C, Reggiani C, Bottinelli R, Ricciardi L & Minelli R. (1983). Relaxation in

atrial and ventricular myocardium: activation decay and different load sensitivity. **Basic Res Cardiol** 78, 256-265.

99. Bottinelli R, Poggesi C, Ricciardi L & Reggiani C. (1982). Effect of muscle stretch during isometric contraction on the time-course of relaxation in mammalian myocardium. **Boll Soc Ital Biol Sper** 58, 184-190.

100. Bottinelli R, Poggesi C, Ricciardi L & Minelli R. (1982). The influence of temperature on the relaxation properties of rat papillary muscle. **Boll Soc Ital Biol Sper** 58, 177-183.