

BIOGRAPHICAL SKETCH

Provide the following information for the key personnel in the order listed on Form Page 2.

Photocopy this page or follow this format for each person.

NAME	POSITION TITLE
Thomas A. Rando, MD, PhD	Associate Professor

EDUCATION/TRAINING (Begin with baccalaureate or other initial professional education, such as nursing, and include postdoctoral training.)

INSTITUTION AND LOCATION	DEGREE (if applicable)	YEAR(s)	FIELD OF STUDY
Harvard College, Cambridge, MA	AB	1979	Biochemistry
Harvard Medical School, Boston, MA	MD	1987	Medicine
Harvard University, Cambridge, MA	PhD	1987	Cell Biology
Stanford University, Stanford, CA	Postdoc	1994	Molecular Pharmacology

RESEARCH AND PROFESSIONAL EXPERIENCE: Concluding with present position, list, in chronological order, previous employment, experience, and honors. Include present membership on any Federal Government public advisory committee. List, in chronological order, the titles, all authors, and complete references to all publications during the past three years and to representative earlier publications pertinent to this application. If the list of publications in the last three years exceeds two pages, select the most pertinent publications. **DO NOT EXCEED TWO PAGES.**

Professional Experience

1987-1988	Intern in Medicine, Massachusetts General Hospital, Boston, MA
1988-1990	Resident in Neurology, UCSF, San Francisco, CA
1990-1991	Chief Resident in Neurology, UCSF, San Francisco, CA
1991-1994	Postdoctoral Fellow, Department of Molecular Pharmacology, Stanford University
1995-2002	Assistant Professor, Department of Neurology and Neurological Sciences, Stanford University
1995-1996	Staff Physician, Neurology Service, Veterans Affairs Medical Center, Palo Alto, CA
1996-present	Chief of Service, Neurology Service, Veterans Affairs Medical Center, Palo Alto, CA
2000-present	Director, GRECC, Veterans Affairs Medical Center, Palo Alto, CA
2000-2003	Founding Director, MDA Clinic, Stanford University Medical Center
2002-present	Associate Professor, Department of Neurology and Neurological Sciences, Stanford University

Honors and Awards

1985	Grass Fellowship in Neurophysiology
1991-1994	Dana Fellowship in Neuroscience
1992-1994	Howard Hughes Medical Institute Postdoctoral Research Fellowship for Physicians
1995	Junior Faculty Research Award, American Academy of Neurology
1996	Frederick E. Terman Fellowship, Stanford University
1999	Paul Beeson Physician Faculty Scholar in Aging, American Federation for Aging Research
2002	American Neurological Association, Elected member
2004	Ellison Medical Foundation Senior Scholar Award in Aging

Research Projects Ongoing

- Title:** "Oxidative stress and muscle cell death" *PI:* Thomas A. Rando
Agency: NIH/NINDS
Type: RO1 – NS36409-04 (7/1/01-6/30/06)
 The primary goal of this project is to explore the hypothesis that oxidative stress is the final common pathway of cell death in muscular dystrophies due to defects in the dystrophin gene.
- Title:** "Cellular signaling and muscular dystrophies" *PI:* Thomas A. Rando
Agency: NIH/NINDS
Type: RO1 – NS40718-01 (7/1/01-6/30/06)
 The primary goal of this project is to explore the role of the dystrophin-dystroglycan complex in cell survival signaling.

3. *Title*: “Notch signaling and satellite cell activation” *PI*: Thomas A. Rando
Agency: NIH/NIA
Type: RO1 – AG23806 (12/1/04-11/30/09)
 The primary goal of this project is to investigate the molecular mechanisms of muscle stem cell activation.
4. *Title*: “Mechanisms of rejuvenation of tissue-specific stem cells” *PI*: Thomas A. Rando
Agency: The Ellison Medical Foundation
Type: Senior Scholar Award in Aging (11/1/04-10/31/08)
 The primary goal of this project is study age-related changes in stem cell function.
5. *Title*: “Molecular mechanisms of age-related impairment of muscle regeneration” *PI*: Thomas A. Rando
Agency: Department of Veterans Affairs
Type: Merit Review (10/1/04 – 9/30/09)
 The primary goal of this project is to investigate the mechanisms of decline of muscle regenerative potential with age.
6. *Title*: “Integrase-mediated gene therapy for muscular dystrophies” *PI*: Thomas A. Rando
Agency: Muscular Dystrophy Association
Type: Neuromuscular Disease Research Grant (7/1/04 – 6/30/07)
 The primary goal of this project is to develop this approach to enhance plasmid-mediated gene therapy for muscular dystrophies.

Research Projects Completed During Last 3 Years

1. *Title*: “Mechanisms of age-related muscle atrophy: The role of cellular antioxidant defenses” *PI*: Thomas A. Rando
Agency: American Federation for Aging Research
Type: Paul Beeson Physician Faculty Scholar in Aging Research (7/1/99 – 6/30/04)
 The primary goals of this project was to test the hypothesis that age-related muscle atrophy is due in part to an age-related reduction of cellular antioxidant defenses and consequently to cellular oxidative injury.
2. *Title*: “Molecular and cellular mechanisms of muscle atrophy” *PI*: Thomas A. Rando
Agency: Department of Veterans Affairs
Type: Merit Review (4/1/99 – 9/30/04)
 The primary goal of this project was to investigate the mechanisms of muscle cell atrophy by changes in IGF-1 signaling and muscle precursor cell properties with age.
3. *Title*: “Chimeraplast mediated gene therapy for muscular dystrophies” *PI*: Thomas A. Rando
Agency: Muscular Dystrophy Association
Type: Neuromuscular Disease Research Grant (1/1/01 – 12/31/03)
 The primary goal of this project was to develop this non-viral gene therapy approach to muscular dystrophies.

Selected Publications

- Rastinejad F, Conboy MJ, Rando TA, Blau HM (1993) Tumor suppression by RNA from the 3' untranslated region of α -tropomyosin. *Cell*, 75: 1107-1117.
- Rando TA, Blau HM (1994) Primary mouse myoblast purification, characterization, and transplantation for cell-mediated gene therapy. *J Cell Biol*, 125: 1275-1287.
- Pavlath GK, Rando TA, Blau HM (1994) Transient immunosuppressive treatment leads to long-term retention of allogeneic myoblasts in hybrid myofibers. *J Cell Biol*, 127: 1923-1932.
- Yang JT, Rando TA, Mohler WA, Rayburn H, Blau HM, Hynes RO (1996) Genetic analysis of α_4 integrin functions in the development of mouse skeletal muscle. *J Cell Biol*, 135: 1-8.
- Rando TA, Disatnik M-H, Yu Y, Franco AA (1998) Muscle cells from *mdx* mice have an increased susceptibility to oxidative stress. *Neuromusc Disord*, 8: 14-21.

- Nakai J, Sekiguchi N, Rando TA, Allen PD, Beam KG (1998) Two regions of the ryanodine receptor involved in coupling with L-type Ca²⁺ channels. **J Biol Chem**, 273: 13403-13406.
- Rando TA, Crowley RS, Carlson E, Epstein CJ, Mohapatra PK (1998) Overexpression of Cu,Zn-superoxide dismutase: a novel cause of murine muscular dystrophy. **Ann Neurol**, 44: 381-386.
- Disatnik M-H, Dhawan J, Yu Y, Beal MF, Whirl MM, Franco AA, Rando TA (1998) Evidence of oxidative stress in *mdx* mouse muscle: Studies of the pre-necrotic state. **J Neurol Sci**, 161: 77-84.
- Taverna D, Disatnik M-H, Rayburn H, Bronson RT, Yang J, Rando TA, Hynes RO (1998) Dystrophic muscle in mice chimeric for expression of $\alpha 5$ integrin. **J Cell Biol**, 143: 849-859.
- Rando TA, Epstein CJ (1999) Copper/zinc superoxide dismutase: more is not necessarily better. **Ann Neurol**, 46:135-136.
- Franco AA, Odom RS, Rando TA (1999) Regulation of antioxidant enzymes in response to oxidative stress and differentiation in skeletal muscle. **Free Rad Biol Med**, 27: 1122-1132.
- Disatnik M-H, Rando TA (1999) Integrin mediated muscle cell spreading: the role of protein kinase C in outside-in and inside-out signaling and evidence of integrin cross-talk. **J Biol Chem**, 274: 32486-32492.
- Disatnik M-H, Chamberlain JS, Rando TA (2000) Dystrophin mutations predict cellular susceptibility to oxidative stress. **Muscle Nerve**, 23: 784-792.
- Rando TA, Disatnik M-H, Zhou LZ-H (2000) Rescue of dystrophin expression in *mdx* mouse muscle by RNA/DNA oligonucleotides. **Proc Natl Acad Sci, USA**, 10: 5363-5368.
- Rando TA (2001) The role of nitric oxide in the pathogenesis of muscular dystrophies: a "two hit" hypothesis of the cause of muscle necrosis. **Microsc Res Tech**, 55: 223-235
- Zhuang W, Eby J, Cheong M, Mohapatra P, Bredt DS, Disatnik M-H, Rando TA (2001) The susceptibility of muscle cells to oxidative stress is independent of nitric oxide synthase expression. **Muscle Nerve**, 24: 502-511.
- Zhou LZ-H, Johnson AP, Rando TA (2001) NF κ B and AP-1 mediate transcriptional responses to oxidative stress in skeletal muscle cells. **Free Rad Biol Med**, 31: 1405-1416.
- Rando TA (2001) The dystrophin-glycoprotein complex, cellular signaling, and the regulation of muscle cell survival in the muscular dystrophies. **Muscle Nerve**, 24: 1575-1594.
- Taylor-Jones JM, Moerman E, McGehee RE, Rando TA, Lecka-Czernik B, Lipschitz DA, Peterson CA (2002) Activation of an adipogenic program in adult myoblasts with age. **Mech Aging Devel**, 123: 649-661.
- Bertoni C, Rando TA (2002) Dystrophin gene repair in *mdx* muscle precursor cells *in vitro* and *in vivo* mediated by RNA/DNA chimeric oligonucleotides. **Hum Gene Ther**, 13: 707-718.
- Disatnik M-H, Boutet SC, Lee CH, Mochly-Rosen D, Rando TA (2002) Sequential activation of individual PKC isozymes in integrin-mediated muscle cell spreading: A role for MARCKS in an integrin signaling pathway. **J Cell Sci**, 115: 2151-2163.
- Xing J, Yu Y, Rando TA (2002) The modulation of cellular susceptibility to oxidative stress: Protective and destructive actions of Cu,Zn-superoxide dismutase. **Neurobiol Dis**, 10: 234-246.
- Rando TA (2002) Oligonucleotide-mediated gene therapy for muscular dystrophies. **Neuromusc Disord**, 12: S55-60.
- Langenbach K, Rando TA (2002) Inhibition of dystroglycan binding to laminin disrupts the PI3K/AKT pathway and survival signaling in muscle cells. **Muscle Nerve**, 26: 644-653.
- Conboy IM, Rando TA (2002) The regulation of Notch signaling controls satellite cell activation and cell fate determination in postnatal myogenesis. **Devel Cell**, 3: 397-409.
- Luo D, Rando TA (2003) The regulation of catalase gene expression in mouse muscle cells is dependent on the CCAAT-binding factor NF-Y. **Biochem Biophys Res Commun**, 303: 609-618.
- Bertoni C, Lau C, Rando TA (2003) Restoration of dystrophin expression in *mdx* muscle cells by chimeraplast-mediated exon skipping. **Hum Mol Genet**, 12: 1087-1099.
- Smythe G, Eby J, Disatnik M-H, Rando TA (2003) A caveolin-3 mutant that causes limb girdle muscular dystrophy type 1C disrupts Src localization and activity and induces apoptosis in skeletal myotubes. **J Cell Science**, 116: 4739-4749.
- Conboy IM, Conboy MJ, Smythe GM, Rando TA (2003) Notch-mediated restoration of regenerative potential to aged muscle. **Science**, 302: 1575-1577.
- Disatnik M-H, Boutet SC, Pacio W, Ross LB, Chan A, Lee CH, Rando TA (2004) The bi-directional translocation of MARCKS between membrane and cytosol regulates integrin-mediated muscle cell spreading. **J Cell Science**, 116: 4739-4749.
- Sherwood RI, Christensen JL, Conboy IM, Conboy MJ, Rando TA, Weissman IL, Wagers AJ (2004) Identification and isolation of mouse adult skeletal muscle progenitor cells. **Cell**, in press.