BIOGRAPHICAL SKETCH

Provide the following information for the key personnel and other significant contributors in the order listed on Form Page 2.
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NAME	POSITION TITLE
Nosek, Thomas M.	Professor of Physiology and Biophysics
eRA COMMONS USER NAME tnosek	

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
University of Notre Dame	B.S.	1965-1969	Physics
The Ohio State University	Ph.D.	1969-1973	Biophysics
Bowman Gray School of Medicine, Wake Forest University	Post Doc	1973-1976	Physiology

A. Positions and Honors. List in chronological order previous positions, concluding with your present position. List any honors. Include present membership on any Federal Government public advisory committee.

RESEARCH AND PROFESSIONAL EXPERIENCE

1969-1973 Research Associate, Ohio State University, Department of Biophysics, Columbus, OH
1973-1976 Instructor of Physiology, Bowman Gray School of Medicine, Winston-Salem, NC
1976-1982 Assistant Professor, Department of Physiology, Medical College of Georgia, Augusta, GA
1982-1993 Associate Professor, Department of Physiology, Medical College of Georgia, Augusta, GA
1993- 1997 Professor, Depart. of Physiology & Endocrinology, Medical College of Georgia, Augusta, GA
1997-2006 Associate Dean for Biomedical Information Technologies, Case Western Reserve University, Cleveland, OH
1997-Present Professor, Department of Physiology & Biophysics, Case Western Reserve U., Cleveland, OH

HONORS

1974-1976 NIH Cardiovascular Post-Doctoral Fellowship
Fall 1986 German Academic Exchange Service, Study Visit Fellowship for Faculty

B. Selected peer-reviewed publications (in chronological order). Do not include publications submitted or in preparation.

23. Kolbeck RC;La Neave C;Aguirre A;Nosek TM;Pannell KH , Inotropic influence of macrocyclic polyethers on tracheal smooth muscle. , Pharmacol Biochem Behav , 8/1/1992 ; Vol.42, 4 :645-50
24. Godt RE;Fogaça RT;Andrews MA;Nosek TM , Influence of ionic strength on contractile force and energy consumption of skinned fibers from mammalian and crustacean striated muscle. , Adv Exp Med Biol , 1/1/1993 ; Vol.332, :763-73; discussion 773-4
25. Nosek TM;Levy M , The need to promote CAI. , Acad Med , 6/1/1993 ; Vol.68, 6 :499-500
26. Godt RE;Fogaça RT;Silva IK;Nosek TM , Contraction of developing avian heart muscle. , Comp Biochem Physiol Comp Physiol , 6/1/1993 ; Vol.105, 2 :213-8
27. Nosek, T. M., G. C. Bond, J. M. Ginsburg, R. E. Godt, W. F. Hofman, W. J. Jackson, T. F. Ogle, S. P. Porterfield, S. D. Stoney, and V. T. Wiedmeier. "Using computer-aided instruction (CAI) to promote active learning in the physiology classroom." Annals of the New York Academy of Sciences 701:128-129 (1993)
28. Kolbeck RC;Nosek TM , Fatigue of rapid and slow onset in isolated perfused rat and mouse diaphragms. , J Appl Physiol , 10/1/1994 ; Vol.77, 4 :1991-8

29. Nosek, T.M. and Levy, M. "Development of a multimedia textbook of physiology: A resource for moving physiology education into the 21st century." Journal of Medical Education Technologies 5:5-15 (1994).
30. Brotto MA;Fogaça RT;Creazzo TL;Godt RE;Nosek TM , The effect of 2,3-butanedione 2-monoxime (BDM) on ventricular trabeculae from the avian heart. , J Muscle Res Cell Motil , 2/1/1995 ; Vol.16, 1 :1-10
31. Andrews MA;Godt RE;Nosek TM , Influence of physiological L(+)-lactate concentrations on contractility of skinned striated muscle fibers of rabbit. , J Appl Physiol , 6/1/1996 ; Vol.80, 6 :2060-5
32. Brotto MA;Nosek TM , Hydrogen peroxide disrupts Ca2+ release from the sarcoplasmic reticulum of rat skeletal muscle fibers. , J Appl Physiol , 8/1/1996 ; Vol.81, 2 :731-7
33. Kolbeck RC;She ZW;Callahan LA;Nosek TM , Increased superoxide production during fatigue in the perfused rat diaphragm. , Am J Respir Crit Care Med , 7/1/1997 ; Vol.156, 1 :140-5
34. Nosek TM;Fogaça RT;Hatcher CJ;Brotto MA;Godt RE , Effect of cardiac neural crest ablation on contractile force and calcium uptake and release in chick heart. , Am J Physiol , 9/1/1997 ; Vol.273, 3 Pt 2 :H1464-71
35. Essig DA;Nosek TM , Muscle fatigue and induction of stress protein genes: a dual function of reactive oxygen species? , Can J Appl Physiol , 10/1/1997 ; Vol.22, 5 :409-28
36. Godt RE;Fogaça RT;Nosek TM , Alterations of myocardial contraction associated with a structural heart defect in embryonic chicks. , Adv Exp Med Biol , 1/1/1998 ; Vol.453, :453-8; discussion 459
37. Nosek TM;Andrews MA , Ion-specific protein destabilization of the contractile proteins of cardiac muscle fibers. , Pflugers Arch , 2/1/1998 ; Vol.435, 3 :394-401
38. Andrews MA;Nosek TM , Fatigue conditions alter sarcoplasmic reticulum function of striated muscle. , Ann N Y Acad Sci , 9/16/1998 ; Vol.853, :300-3
39. Supinski G;Stofan D;Callahan LA;Nethery D;Nosek TM;DiMarco A , Peroxynitrite induces contractile dysfunction and lipid peroxidation in the diaphragm. , J Appl Physiol , 8/1/1999 ; Vol.87, 2 :783-91
40. Hatcher CJ;Godt RE;Nosek TM , Excessive microtubules are not responsible for depressed force per cross-bridge in cardiac neural-crest-ablated embryonic chick hearts. , Pflugers Arch , 8/1/1999 ; Vol.438, 3 :307-13
41. Shi B;Bhat G;Mahesh VB;Brotto M;Nosek TM;Brann DW , Bradykinin receptor localization and cell signaling pathways used by bradykinin in the regulation of gonadotropin-releasing hormone secretion. , Endocrinology , 10/1/1999 ; Vol.140, 10 :4669-76
42. Matar W;Nosek TM;Wong D;Renaud J , Pinacidil suppresses contractility and preserves energy but glibenclamide has no effect during muscle fatigue. , Am J Physiol Cell Physiol , 2/1/2000 ; Vol.278, 2 :C404-16
43. Supinski G;Nethery D;Nosek TM;Callahan LA;Stofan D;DiMarco A , Endotoxin administration alters the force vs. pCa relationship of skeletal muscle fibers. , Am J Physiol Regul Integr Comp Physiol , 4/1/2000 ; Vol.278, 4 :R891-6
44. Brotto MA;Andreatta-van Leyen S;Nosek CM;Brotto LS;Nosek TM , Hypoxia and fatigue-induced modification of function and proteins in intact and skinned murine diaphragm muscle. , Pflugers Arch , 9/1/2000 ; Vol.440, 5 :727-34
45. Nagaraj RY;Nosek CM;Brotto MA;Nishi M;Takeshima H;Nosek TM;Ma J , Increased susceptibility to fatigue of slow- and fast-twitch muscles from mice lacking the MG29 gene. , Physiol Genomics , 11/9/2000 ; Vol.4, 1 :43-9
46. Nosek TM;Brotto MA;Essig DA;Mestril R;Conover RC;Dillmann WH;Kolbeck RC , Functional properties of skeletal muscle from transgenic animals with upregulated heat shock protein 70. , Physiol Genomics , 11/9/2000 ; Vol.4, 1 :25-33
47. Callahan LA;She ZW;Nosek TM , Superoxide, hydroxyl radical, and hydrogen peroxide effects on single-diaphragm fiber contractile apparatus. , J Appl Physiol , 1/1/2001 ; Vol.90, 1 :45-54
48. de Paula Brotto M;van Leyen SA;Brotto LS;Jin JP;Nosek CM;Nosek TM , Hypoxia/fatigue-induced degradation of troponin I and troponin C: new insights into physiologic muscle fatigue. , Pflugers Arch , 8/1/2001 ; Vol.442, 5 :738-44
49. Brotto MA;Nosek TM;Kolbeck RC , Influence of ageing on the fatigability of isolated mouse skeletal muscles from mature and aged mice. , Exp Physiol , 1/1/2002 ; Vol.87, 1 :77-82

50. Pan Z;Yang D;Nagaraj RY;Nosek TA;Nishi M;Takeshima H;Cheng H;Ma J , Dysfunction of store-operated calcium channel in muscle cells lacking mg29. , Nat Cell Biol , 5/1/2002 ; Vol.4, 5 :379-83
51. Jin JP;Brotto MA;Hossain MM;Huang QQ;Brotto LS;Nosek TM;Morton DH;Crawford TO , Truncation by Glu180 nonsense mutation results in complete loss of slow skeletal muscle troponin T in a lethal nemaline myopathy. , J Biol Chem , 7/11/2003 ; Vol.278, 28 :26159-65
52. Kingsberg SA;Malemud CJ;Novak T;Cole-Kelly K;Wile MZ;Spanos P;Nosek TM , A comprehensive approach to enhancing sexual health education in the Case Western Reserve University School of Medicine. , Int J Impot Res , 10/1/2003 ; Vol.15 Suppl 5, :S51-7
53. Litaker D;Cebul RD;Masters S;Nosek T;Haynie R;Smith CK , Disease prevention and health promotion in medical education: reflections from an academic health center. , Acad Med , 7/1/2004 ; Vol.79, 7 :690-7
54. Brotto MA;Nagaraj RY;Brotto LS;Takeshima H;Ma JJ;Nosek TM , Defective maintenance of intracellular Ca2+ homeostasis is linked to increased muscle fatigability in the MG29 null mice. , Cell Res , 10/1/2004 ; Vol.14, 5 :373-8
55. Nosek TM;Brotto MA;Jin JP , Troponin T isoforms alter the tolerance of transgenic mouse cardiac muscle to acidosis. , Arch Biochem Biophys , 10/15/2004 ; Vol.430, 2 :178-84
56. Brotto MA;Marrelli MT;Brotto LS;Jacobs-Lorena M;Nosek TM, Functional and biochemical modifications in skeletal muscles from malarial mice., Exp Physiol, 5/1/2005; Vol.90, 3:417-25
57. Zhao X;Yoshida M;Brotto L;Takeshima H;Weisleder N;Hirata Y;Nosek TM;Brotto M;Ma J, Enhanced resistance to fatigue and altered calcium handling properties of sarcalumenin knockout mice., Physiol Genomics, 7/5/2005
58. Nosek TM; Nayar U, IUPS Teaching Workshop, April 7-10, 2005, Pali Mountain, California: Information Technology in Physiology Education, Adv. Physiol. Educ., 12/1/2005; Vol.29:218-221
59. Brotto, M. A., Biesiadecki, B. J., Brotto, L. S., Nosek, T. M., and Jin, J. P. (2006): Coupled expression of troponin T and troponin I isoforms in single skeletal muscle fibers correlates with contractility. *Am J Physiol Cell Physiol* **290**, C567-76.
60. Weisleder, N., Brotto, M., Komazaki, S., Pan, Z., Zhao, X., Nosek, T., Parness, J., Takeshima, H., and Ma, J. (2006): Muscle aging is associated with compromised Ca2+ spark signaling and segregated intracellular Ca2+ release. *J Cell Biol* **174**, 639-45.
61. Nosek, T. & Medvedev, I. (2006). A Comprehensive eCurriculum Management System (eCMS) for a New Self-Directed Medical Curriculum. In T. Reeves & S. Yamashita (Eds.), *Proceedings of World Conference on E-Learning in Corporate, Government, Healthcare, and Higher Education 2006* (pp. 2959-2964). Chesapeake, VA: AACE.
62. Nosek, T., Wang, W., Medvedev, I., Wile, M. & O'Brien, T. (2006). Use of a computerized audience response system in medical student teaching: Its effect on active learning and exam performance. In T. Reeves & S. Yamashita (Eds.), *Proceedings of World Conference on E-Learning in Corporate, Government, Healthcare, and Higher Education 2006* (pp. 2245-2250). Chesapeake, VA: AACE.
63. Nosek, T., Cohen, M., Matthews, A., Papp, K., Wolf, N., Wrenn, G., Sher, A., Coulter, K. & Wiesner, G. (2006). Next Generation Computer Assisted Instruction: A Serious Gaming/Immersion Environment For Medical Education. In T. Reeves & S. Yamashita (Eds.), *Proceedings of World Conference on E-Learning in Corporate, Government, Healthcare, and Higher Education 2006* (pp. 1377-1382). Chesapeake, VA: AACE.
64. O'Brien T, Wang W, Medvedev I, Wile MZ, and Nosek TM. Use of a computerized audience response system in medical student teaching: Its effect on exam performance. In press *Medical Teacher*., 2007
65. Biesiadecki, B., Chong, S.M., Nosek, T.M., and Jin, J-P. Troponin T Core Structure and the Regulatory NH_2-Terminal Variable Region. *Biochemistry 2007, 46*1368-1379.
66. Shen, J., Yu, W-M., Brotto, M., Guo, C., Stoddard, C., Nosek, T.M., and Qu, C-K. Deficiency of the novel phosphoinositide phosphatase MIP induces a Brody disease-like muscle disorder by compromising store-operated Ca2+ signaling. Submitted to "Nature Cell Biology" Feb 2008.

Books and Chapters:

1. T.F. Ogle, T.M. Nosek and T.M. Mills. Action of progesterone and RU 38486 on protein synthesis in rat placenta. In: Regulation of ovarian and testicular function. Ed. by V.B. Mahesh, D.S. Dhindsa, E. Anderson and S.P. Kalra. Plenum Publishing Co., pp. 689-692, 1987.
2. T.M. Nosek, T.F. Ogle, W.F. Hofman, S.D. Stoney, Jr., J.M. Ginsburg, V.T. Wiedmeier, G.C. Bond, R.E. Godt, W.J. Jackson, and S.P. Porterfield. "Medical Physiology: A problem-based computer aided instructional course". Conference Proceedings of the First Annual Conference on Multimedia in Education & Industry, pp. 105-111, 1992.
3. Godt,R.E., Fogaca,R.T.H., Andrews,M.A.W., and Nosek, T.M. Influence of ionic strength on contractile force and energy consumption of skinned fibers from mammalian and crustacean striated muscle. Mechanisms of Myofilament Sliding in Muscle Contraction, ed. H. Sugi and G.H. Pollack, Plenum Press, New York 1993 pp. 763-774.
4. Editor and section author of Essentials of Human Physiology: A Multimedia Resource published on CD-ROM by Visible Productions, Denver, Colorado (Jan 1996 - June 1997) and by Gold Standard Multimedia, Tampa, Fl (December 1997 - 2004), DxR Development Group, Inc., Carbondale, IL (2004 – present).
5. Nosek, T., Cohen, M, Matthews, A, Papp, K, Wolf, N, Wrenn, G, Sher, A, Coulter, K, Martin, J, Wiesner, GL (2007): A Serious Gaming/Immersion Environment to Teach Clinical Cancer Genetics, pp. 355-360. In R. S. H. James D. Westwood, Helene M. Hoffman, Greg T. Mogel, Roger Phillips, Richard A. Robb, Kirby G. Vosburgh (Ed.): *Medicine Meets Virtual Reality 15 - in vivo, in vitro, in silico: Designing the Next in Medicine*, IOS Press, Amsterdam.

C. Research Support. List selected ongoing or completed (during the last three years) research projects (federal and non-federal support). Begin with the projects that are most relevant to the research proposed in this application. Briefly indicate the overall goals of the projects and your role (e.g. PI, Co-Investigator, Consultant) in the research project. Do not list award amounts or percent effort in projects.

Grants: (28 funded projects, currently funded listed)

1. NIH-NHLB (RO1), "Role of troponin T isoforms in Amish nemaline myopathy". December 1, 2002 – November 30, 2007, Co-Investigator, Dr. J.-P. Jin, PI. To determine how the different isoforms of TnT affect muscle function in this disease.
2. NIH R21 grant from NICHD entitled "Molecular and Cellular Basis of Contractures for Design of Therapeutic Agents" "Myofilament protein isoforms in neuromuscular reflex". April 1, 2003 – March 31, 2006 Co-Investigator, Dr. J.P. Jin, PI. Determining the role of Tn isoforms in neuromuscular reflexes.
3. NIH Cancer Education Grant Program "The Essentials of Clinical Cancer Genetics Internet Curriculum". September 2003 – August 2006. Co-Investigator, Dr. Georgia Wiesner,PI. Developing a serious game to teach Clinical Cancer Genetics to first year medical students.
4. NIH Section of Molecular Cardiology "Troponin structure & function in cardiomyopathy" 10/01/2005 – 9/30/2010 Consultant, PI: J.P. Jin,: Determining the role of the various Tn isoforms in the development of cardiomyopathies.
5. CDC RO1. "Workshop and Internet Wellness Interventions for Women Aging with Disabilities". 9/30/2006-9/29/2009, TM Nosek, PI on consortium agreement, Creating a serious game to help women aging with disabilities learn about health promotion and disease prevention and to set goals and carry out action plans to better their health and well being.
6. NIH - Case Western Reserve TREC Pilot Grant. "Role of a novel muscle phosphatase (mtmr14) in muscle function, obesity, & cancer." 7/1/2007-6/30/2008 TM Nosek, PI. Using KO mice to evaluate the role of mtmr14 in the control of muscle contraction through calcium signaling and the potential implications for the link between obesity and cancer.