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| BIOGRAPHICAL SKETCH Provide the following information for the Senior/key personnel and other significant contributors in the order listed on Form Page 2. Follow this format for each person.  **DO NOT EXCEED FOUR PAGES.** | | | | |
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| NAME  Campbell, Kevin P. | | POSITION TITLE  Investigator, Howard Hughes Medical Institute  Director, Wellstone Muscular Dystrophy Research Center  Chair, Dept of Molecular Physiology and Biophysics | | |
| eRA COMMONS USER NAME (credential, e.g., agency login)  kcampbell | |
| EDUCATION/TRAINING *(Begin with baccalaureate or other initial professional education, such as nursing, include postdoctoral training and residency training if applicable.)* | | | | |
| INSTITUTION AND LOCATION | DEGREE  *(if applicable)* | | MM/YY | FIELD OF STUDY |
| Manhattan College, Bronx, NY | B.S. | | 1973 | Physics |
| University of Rochester, Rochester, NY | M.S. | | 1976 | Biophysics |
| University of Rochester, Rochester, NY | Ph.D. | | 1979 | Biophysics |
| University of Toronto, Toronto, Canada | Postdoc | | 1979-81 | Membrane Biochemistry |
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1. **Personal Statement**

Our research focuses on understanding the molecular, cellular and physiological basis of various forms of muscular dystrophy, and on developing therapeutic strategies to treat these diseases. Our laboratory’s early studies at the University of Iowa focused on elucidating the structure and function of calcium channels and calcium release channels (ryanodine receptors) in skeletal muscle. For the past twenty years, however, we have actively investigated the molecular pathogenesis of muscular dystrophy. Our laboratory has used biochemical, cell biological, genetic and physiological techniques to identify and define disease mechanisms that cause various forms of muscular dystrophy. In doing so, we cloned and characterized dystroglycan, and demonstrated that it links the cytoskeleton to the extracellular matrix in skeletal muscle. Our studies on dystroglycan have since led to significant insights into its basic function as an extracellular matrix receptor in skeletal muscle, its role in the maintenance of muscle-cell membrane integrity and its role in the molecular pathogenesis of glycosylation-deficient muscular dystrophy.

1. **Positions and Honors**

**Positions and Employment**

1973-1977 Graduate Student, Department of Radiation Biology and Biophysics, University of Rochester

1977, 1978 Teaching Assistant, Graduate Biochemistry, University of Rochester

1979-1981 Postdoctoral Fellow with Dr. David MacLennan, University of Toronto

1981-1985 Assistant Professor, Dept. of Molecular Physiology and Biophysics, University of Iowa

1985-1988 Associate Professor, Dept. of Molecular Physiology and Biophysics, University of Iowa

1988- Professor, Dept. of Molecular Physiology and Biophysics, University of Iowa

1989- Investigator, Howard Hughes Medical Institute

1997- Professor, Dept. of Neurology, University of Iowa

1. Roy J. Carver Biomedical Research Chair in Molecular Physiology and Biophysics

2002-2005 Interim Head, Department of Molecular Physiology and Biophysics, University of Iowa

2005- Professor, Department of Internal Medicine

2005- Chair, Department of Molecular Physiology and Biophysics, University of Iowa

2005- Director, Wellstone Muscular Dystrophy Cooperative Research Center

Other Experience and Professional Memberships

1988-2001 Editorial Board: Journal of Biological Chemistry

* 1. Muscular Dystrophy Association Fellowship Review Committee

1991-1995 Physiology Study Section Member, National Institutes of Health

1996-2009 Muscular Dystrophy Association Scientific Advisory Committee

2000-2004 Editorial Board: Journal of Cell Biology

2001-2005 Skeletal Muscle Biology and Exercise Physiology Study Section, National Institutes of Health

2005-2009 Council Member, National Arthritis and Musculoskeletal and Skin Disease Advisory Council

2006- Board Member, Duke NUS-Graduate Medical School Singapore, Scientific Advisory Board

2008-2009 University of Iowa Animal Care Facilities Planning Taskforce

2010- Member, Biomedical Science Advisory Board, Vanderbilt University

2010- Co-Editor-in-Chief: Skeletal Muscle

**Honors**

1973 Phi Beta Kappa, Manhattan College

1977-1978 Elon Huntington Hooker Fellow, University of Rochester

1978-1981 Medical Research Council Postdoctoral Fellowship, University of Toronto

1984-1989 Established Investigator of the American Heart Association

1989 University of Iowa Foundation Distinguished Professor of Physiology and Biophysics

1990 Regents Award for Faculty Excellence

1992 Emilio Trabucchi Foundation Medal

1993 Muscular Dystrophy Association Service Merchandise Leadership Award

1994 ASBMB-Amgen Award

1994 International Albrecht Fleckenstein Award

1995 INSERM/Académie des Sciences Prix

1996 American Academy of Neurology Decade of the Brain Award

1997 Duchenne-Erb-Preis Award (German Muscular Dystrophy Association)

1999 Fellow of the Biophysical Society

1999 Roy J. Carver Biomedical Research Chair in Molecular Physiology and Biophysics

1999 Elected to the National Academy of Medicine (formerly Institute of Medicine), National Academy of Sciences

2000 G. Conte Prize for Basic Research, Mediterranean Society of Myology

2001 S. Mouchly Small, MDA Scientific Achievement Award

2001 Elsevier Science Award at the World Muscle Society Meeting

2003 University of Manitoba Samuel Weiner Distinguished Visitor Award

2004 Rochester Distinguished Scholar Medal

2004 American Academy of Neurology Lecturer Award

2004 Elected to the National Academy of Sciences

2005 Carver College of Medicine Distinguished Mentor Award

2006 American Academy of Arts and Sciences

2009 March of Dimes Prize in Developmental Biology

1. **Selected peer-reviewed publications** 
   * + 1. **Campbell, K.P.** and Kahl, S.D. Association of Dystrophin and an Integral Membrane Glycoprotein. *Nature 338*:259-262, 1989. PMID: 2493582.
       2. Ervasti, J.M., Ohlendieck, K., Kahl, S.D., Gaver, M.G., and **Campbell, K.P.** Deficiency of a Glycoprotein Component of the Dystrophin Complex in Dystrophic Muscle. *Nature 345*:315-319, 1990. PMID: 2188135.
       3. Ervasti, J.M. and **Campbell, K.P.** Membrane Organization of the Dystrophin-Glycoprotein Complex. *Cell 66*:1121-1131, 1991. PMID: 1913804.
       4. Ibraghimov-Beskrovnaya, O., Ervasti, J.M., Leveille, C.J., Slaughter, C.A., Sernett, S.W., and **Campbell, K.P.** Primary Structure of Dystrophin-Associated Glycoproteins Linking Dystrophin to the Extracellular Matrix*. Nature 355*:696-702, 1992. PMID: 1741056.
       5. Michele, D.E., Barresi, R., Kanagawa, M., Saito, F., Cohn, R.D., Satz, J.S., Dollar, H., Nishino, I., Kelley, R.I., Somer, H., Straub, V., Mathews, K.D., Moore, S.A. and **Campbell, K.P.** Posttranslational Disruption of Dystroglycan-Ligand Interactions in Congenital Muscular Dystrophies. *Nature 418*:417-422, 2002. PMID: 12140558.
       6. Barresi, R., Michele, D.E., Kanagawa, M., Harper, H.A., Dovico, S.A., Satz, J.S., Moore, S.A., Zhang, W., Schachter, H., Dumanski, J.P., Cohn, R.D., Nishino, I. and **Campbell, K.P.** LARGE Can Functionally Bypass α-Dystroglycan Glycosylation Defects in Distinct Congenital Muscular Dystrophies. *Nat. Med.* *10*:696-703, 2004.PMID: 15184894.
       7. Kanagawa, M., Saito, F., Kunz, S., Yoshida-Moriguchi, T., Barresi, R., Kobayashi, Y.M., Muschler, J., Dumanski, J.P., Michele, D.E, Oldstone, M.B. and **Campbell, K.P.** Molecular Recognition by LARGE is Essential for Expression of Functional Dystroglycan. *Cell* *117*:953-64, 2004. PMID: 15210115.
       8. Kobayashi, Y.M., Rader, E.P., Crawford, R.W., Iyengar, N.K., Thedens, D.R., Faulkner, J.A., Parikh, S.V., Weiss, R.M., Chamberlain, J.S., Moore, S.A., **Campbell, K.P.** Sarcolemma-Localized nNOS is Required to Maintain Activity After Mild Exercise. *Nature* 456:511-5, 2008. PMID: 15953332; PMCID: PMC2588643.
       9. Yoshida-Moriguchi, T., Yu, L., Stalnaker, S.H., Davis, S., Kunz, S., Oldstone, M.B.A., Schachter, H., Wells, L., **Campbell, K.P.** *O*-Mannosyl Phosphorylation of Alpha-Dystroglycan is Required for Laminin Binding. *Science.* *327*:88-92, 2010. PMID: 20044576; PMC2978000.
       10. Hara, Y., Balci, B., Kanagawa, M., Beltran-Valero de Bernabe, D., Gundesli, H., Yoshida-Moriguchi, T., Willer, T., Satz, J.S., Burden, S.J., Oldstone, M.B.A., Accardi, A., Talim, B., Muntoni, F., Topaloglu, H., Dincer, P. and **Campbell, K.P.** A Dystroglycan Mutation Associated with Limb-Girdle Muscular Dystrophy. *N. Eng. J. Med.* *364:* 939-46, 2011. PMID: 21388311; PMC3071687
       11. Inamori, K., Yoshida-Moriguchi, T., Hara, Y., Anderson, M.E., Yu, L. and **Campbell, K.P.** Dystroglycan Function Requires Xylosyl- and Glucuronyltransferase Activities of LARGE. *Science 335:* 93-96, 2012. PMID: 22223806; PMC3702376
       12. Willer, T., Lee, H., Lommel, M., Yoshida-Moriguchi, T., Beltran Valero de Bernabe, D., Venzke, D., Cirak, S., Schachter, H., Vajsar, J., Voit, T., Muntoni, F., Loder, A.S., Dobyns, W.B., Winder, T.L., Strahl, S., Mathews, K.D., Nelson, S.F., Moore, S.A. and **Campbell, K.P.** *ISPD* loss-of-function mutations disrupt dystroglycan *O*-mannosylation and cause Walker-Warburg syndrome. *Nat. Genet. 44:* 575-80, 2012. PMID: 22522420; PMC3371168
       13. Yoshida-Moriguchi, T., Willer, T., Anderson, ME, Venzke, D., Whyte, T., Muntoni, F., Lee, H., Nelson, SF, Yu, L., **Campbell, KP**. SGK196 is a Glycosylation-Specific O-Mannose Kinase Required for Dystroglycan Function. *Science* 341: 896-9, 2013. PMID: 23929950; PMC3848040
       14. Goddeeris, M.M., Wu, B., Venzke, D., Yoshida-Moriguchi, T., Saito, F., Matsumura, K., Moore, S.A., **Campbell, K.P**. Large glycans on dystroglycan function as a tunable matrix scaffold to prevent dystrophy. *Nature 503:* 136-40, 2013. PMID: 24132234; PMC3891507
       15. Willer, T., Inamori, K., Venzke, D., Harvey, C.D., Morgensen, G., Hara, Y., Beltrán Valero de Bernabé, D., Yu, L., Wright, K.M., **Campbell, K.P.** The glucuronyltransferase B4GAT1 is required for initiation of LARGE-mediated α-dystroglycan functional glycosylation. *eLife* 3;3, 2014. PMID: 25279699

**D. Research Support**

**Ongoing Research Support**

Investigator Campbell (PI)

Howard Hughes Medical Institute

Cell Biology Studies of Muscular Dystrophy

The overall goal of this project is to understand the molecular pathogenesis of muscular dystrophy

5 U54 NS053672-11 (Campbell) 06/08/2015-06/31/2020

NIH/NINDS

Senator Paul D. Wellstone Muscular Dystrophy Cooperative Research Center

Therapeutic Strategies for Congenital and Limb-Girdle Muscular Dystrophies

The overall goal of this proposal is to create a Muscular Dystrophy Cooperative Research Center which will use translational research and advance diagnostic services to explore therapeutic strategies for the treatment of various forms of muscular dystrophy.

Muscular Dystrophy Association (Campbell) 08/01/2012-07/31/2015

Protein O-mannosylation: Classification of New Players in Muscular Dystrophy

This proposal will focus on understanding of the enzymatic mechanism responsible for O-mannosylation modification to develop new treatment options for O-mannosylation deficient disease.

**Completed Research Support**

5 R01 AR051199 (Campbell) 04/01/2004-03/31/2010

NIH/NINDS

# Therapeutic Potential of ε-sarcoglycan in the Treatment of LGMD Type 2D

# The overall goal of this project is to design a therapy for autosomal recessive limb-girdle muscular dystrophy type 2D by exploring the therapeutic potential of upregulating ε-sarcoglycan in skeletal muscle.

3 R01 AR051199-05S1 (Campbell) 09/23/2009-09/22/2010

NIH/NIAMS

Therapeutic potential of α-sarcoglycan in the treatment of limb-girdle muscular dystrophy type 2D (LGMD-2D)

This Competitive Revision focuses on exploring pharmacological treatment strategies encompassing pathways involved in exercise to prevent this form of fatigue as well as prevent exercise-induced muscle edema in mdx and sarcoglycan mouse models.

1 RC2 NS069521-01 (Campbell) 09/30/2009-08/31/2011

NIH/NINDS

ARRA: High-Throughput Genetic & Small-Molecule Screening for Therapeutic Modifiers

This proposal is designed to identify new gene mutations that can cause these types of muscular dystrophy, discover small molecules that can improve dystroglycan function, develop needed mouse models of the disease and to validate newly identified small molecules in treatment strategies.

MDA157538 (Campbell) 01/01/2010-12/31/2012

Muscular Dystrophy Association

This proposal focuses on exploring the mechanisms required for dystroglycan posttranslational processing. The overall results of these experiments will lead to identification of both positive effectors and negative regulators of dystroglycan post-translational modification.