

CURRICULUM VITAE

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Date of Birth 26 December 1964, Bremen, Germany
Personal Data German Citizen, U.S. Permanent Resident, Married, No Children

EDUCATION

1984 Baccalaureate, Jung-Stilling Gymnasium, Hilchenbach, Germany
1989 Diplom (similar to M.S.), Physics, University of Siegen, Germany
1990 M.S., Engineering Sciences (Bioengineering), University of California, San Diego
1995 Ph.D., Bioengineering, University of California, San Diego

EMPLOYMENT

1986-1989 Teaching Assistantships, Department of Physics, University of Siegen, Germany
1990-1992 Teaching Assistantships, Department of Applied Mechanics and Engineering Sciences (Bioengineering), University of California, San Diego
1995-1996 Staff Volunteer, Medical Mission and Orphanage of 'Foundation for His Ministry', Vicente Guerrero, Baja California, Mexico
1996-2000 Postgraduate Researcher (Postdoctoral Fellow), Department of Medicine, University of California, San Diego
2000-2001 Application Developer, Protein Data Bank, San Diego Supercomputer Center
2001-present Production Manager, Protein Data Bank, San Diego Supercomputer Center

AWARDS

1987-1990 German National Scholarship Foundation (supports top 1% of German students)
1992-1995 American Heart Association, California Affiliate, Predoctoral Research Fellow
1998-2000 NIH, National Research Service Award (individual postdoctoral training grant)

EXPERIENCE

Designed a Fourier spectrometer for high resolution spectral analysis of faint light sources
Developed computational models of cardiac contractile function
Demonstrated ischemic protection of cytoskeleton by specific heat shock proteins
Measured contractile force in isolated mammalian cardiac myocytes
Characterized contractile phenotypes of transgenic mice in isolated papillary muscles
Determined important component of cardiac force-frequency relationship
Evaluated approaches to cardiac in vivo gene therapy
Cloned and characterized mouse HCN2 and Kv4.2 ion channel promoters
Assisted with teaching of graduate course on “Biological Data and Analysis Tools”
Derived Swiss-Prot cross-reference consensus for data uniformity at Protein Data Bank
Developed Perl modules for parsing mmCIF files (new standard in structural biology)
Designed and implemented redundancy filter for Protein Databank web interface
Managed development and implementation of new features at Protein Data Bank
Managed data distribution and query functionality at Protein Data Bank

TECHNIQUES

COMPUTING AND ENGINEERING: Perl, Java, C/C++, Fortran, SQL, relational databases (Sybase, Oracle, MySQL), Unix/Linux, Mac, PC/Windows, bioinformatics, computer modeling of cardiac physiology, data acquisition and analysis, instrumentation design

PHYSIOLOGY: Small animal surgery (rat aortic banding), contractile function of papillary muscles, force measurements in single cardiac myocytes, cell shortening, rapid cooling contractures

CELLULAR AND MOLECULAR BIOLOGY: Myocyte isolation, cell culture, immunocytochemistry, simulated ischemia, library screening, adenoviral gene transfer, DNA preparation and analysis, cloning

OPTICS AND IMAGING: Confocal microscopy, light microscopy, image analysis, spectroscopy, interferometry, micromanipulation

LANGUAGES

Bilingual in English and German, proficient in Spanish, knowledge of French

EXTRACURRICULAR INTERESTS

Chess, classical music (voice, guitar), hiking, bicycling, photography

REFERENCES

Philip Bourne, Ph.D.
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BIBLIOGRAPHY

PUBLISHED MANUSCRIPTS

1. Stenzel R., Bluhm W.F., Tittel H.O., and Romero-Borja F. UV-VIS Fourier transform spectrometer with automatic adjustment. SPIE (Society of Photo-Optical Instrumentation Engineers) 1575 (8th International Conference on Fourier Transform Spectroscopy): 236-237, 1991.
2. Bluhm W.F., McCulloch A.D., and Lew W.Y.W. Active force in rabbit ventricular myocytes. *J. Biomech.* 28: 1119-1122, 1995.
3. Bluhm W.F., and Lew W.Y.W. Sarcoplasmic reticulum in cardiac length-dependent activation in rabbits. *Am. J. Physiol.* 269: H965-H972, 1995.
4. He H., Giordano F.J., Hilal-Dandan R., Choi D.-J., Rockman H.A., McDonough P.M., Bluhm W.F., Meyer M., Sayen M.R., Swanson E., and Dillmann W.H. Overexpression of the rat sarcoplasmic reticulum Ca^{2+} ATPase gene in the heart of transgenic mice accelerates calcium transients and cardiac relaxation. *J. Clin. Invest.* 100: 380-389, 1997.
5. Bluhm W.F., Lew W.Y.W., Garfinkel A., and McCulloch A.D. Mechanisms of length history-dependent tension in an ionic model of the cardiac myocyte. *Am. J. Physiol.* 274: H1032-H1040, 1998.
6. Bluhm W.F., Meyer M., Swanson E.A., and Dillmann W.H. Postrest potentiation of active force in mouse papillary muscles is greatly accelerated by increased stimulus frequency. *Ann. N. Y. Acad. Sci.* 853: 304-307, 1998.
7. Bluhm W.F., Martin J.L., Mestral R., and Dillmann W.H. Specific heat shock proteins protect microtubules during simulated ischemia in cardiac myocytes. *Am. J. Physiol.* 275: H2243-H2249, 1998.
8. Bluhm W.F., Sung D., Lew W.Y.W., Garfinkel A., and McCulloch A.D. Cellular mechanisms for the slow phase of the Frank-Starling response. *J. Electrocard.* 31 (Suppl.): 13-22, 1998.
9. Gloss B., Sayen M.R., Trost S.U., Bluhm W.F., Meyer M., Swanson E.A., Usala S.J., and Dillmann W.H. Altered cardiac phenotype in transgenic mice carrying the $\Delta 337$ threonine thyroid hormone receptor β mutant derived from the S family. *Endocrinol.* 140: 897-902, 1999.
10. Meyer M., Bluhm W.F., He H., Post S.R., Giordano F.J., Lew W.Y.W., and Dillmann W.H. Phospholamban-to-SERCA2 ratio controls the force-frequency relationship. *Am. J. Physiol.* 276: H779-H785, 1999.
11. Bluhm W.F., Meyer M., Sayen M.R., Swanson E.A., and Dillmann W.H. Overexpression of sarcoplasmic reticulum Ca^{2+} -ATPase improves cardiac contractile function in hypothyroid mice. *Cardiovasc. Res.* 43: 382-388, 1999.
12. Bluhm W.F., Kranias E.G., Dillmann W.H., and Meyer M. Phospholamban: a major determinant of the cardiac force-frequency relationship. *Am. J. Physiol.* 278: H249-H255, 2000.

13. Gloss B., U. Trost S.U., Bluhm W.F., Swanson E.A., Clark R., Winkfein R., Janzen K.M., Giles W., Chassande O., Samarut J., and Dillmann W.H. Cardiac ion channel expression and contractile function in mice with deletion of thyroid hormone receptor α or β . *Endocrinology* 142: 544-550, 2001.
14. Meyer M., Trost S.U., Bluhm W.F., Knot H.J., Swanson E., and Dillmann W.H. Impaired sarcoplasmic reticulum function leads to contractile dysfunction and cardiac hypertrophy. *Am. J. Physiol.* 280: H2046-H2052, 2001.
15. Kuller A., Fleri W., Bluhm W.F., Bourne, P.E., Smith J.L., and Westbrook J. Announcement of the BioSync web site. *Nat. Struct. Biol.* 8: 663, 2001.
16. Westbrook J., Feng Z., Jain S., Bhat T.N., Thanki N., Ravichandran V., Gilliland G.L., Bluhm W., Weissig H., Greer D.S., Bourne P.E., and Berman H.M. The Protein Data Bank: unifying the archive. *Nucleic Acids Res.* 30: 245-248, 2002.
17. Trost S.U., Belke D.D., Bluhm W.F., Meyer M., Swanson E., and Dillmann W.H. Overexpression of the sarcoplasmic reticulum Ca^{2+} -ATPase improves myocardial contractility in diabetic cardiomyopathy. *Diabetes* 51: 1166-1171, 2002.
18. Kuller A., Fleri W., Bluhm W.F., Smith J.L., Westbrook J., and Bourne P.E. A biologist's guide to synchrotron facilities: the BioSync web resource. *Trends Biochem. Sci.* 27: 213-215, 2002.
19. Berman H.M., Battistuz T., Bhat T.N., Bluhm W.F., Bourne P.E., Burkhardt K., Feng Z., Gilliland G.L., Iype L., Jain S., Fagan P., Marvin J., Padilla D., Ravichandran V., Schneider B., Thanki N., Weissig H., Westbrook J.D., and Zardecki C. The protein data bank. *Acta Cryst. D*58: 899-907, 2002.
20. Martin J.L., Bluhm W.F., He H., Mestri R., and Dillmann W.H. Mutation of COOH-terminal lysines in overexpressed α B-crystallin abrogates ischemic protection in cardiomyocytes. *Am. J. Physiol.* 283: H85-H91, 2002.

SUBMITTED MANUSCRIPTS

21. Meyer M., Trost S.U., Belke D.D., Swanson E., Cary S.P., Ho P., Bluhm W.F., McDonough P.M., Silverman G.J., and Dillmann W.H. Contractilin, a recombinant inotropic antibody based protein, increases cardiac contractility by mimicking phospholamban phosphorylation. *J. Clin. Invest.* (in revision)

ABSTRACTS

1. Bluhm W.F., and McCulloch A.D. A fading memory model for cardiac muscle. *FASEB Journal* 6 (4): A983, 1992.
2. Bluhm W., McCulloch A., and Lew W. Force-interval relation in rabbit cardiac myocytes. *FASEB Journal* 7 (3): A136, 1993.
3. Bluhm W.F., and Lew W.Y.W. Length-dependent slow changes in myocardial stress are sensitive to isoproterenol. *FASEB Journal* 8 (5): A611, 1994.

4. Dillmann W., Swanson E., Sayen R., Bluhm W., and Gloss B. Sarcoplasmic reticulum Ca^{2+} ATPase (SERCA2) gene expression in homozygous transgenic mice expressing a mutant T3 receptor (mT₃R) and contribution of SERCA2 to contractile behavior in hypothyroidism. *Thyroid* 7 (Suppl.1), S-109, 1997.
5. Bluhm W.F., Meyer M., He H., and Dillmann W.H. Contractile effects of sarcoplasmic reticulum Ca^{2+} ATPase overexpression in papillary muscles from transgenic mice. *Circulation* 96 (8) (Suppl.I): I-178, 1997.
6. Bluhm W.F., Martin J.L., Mestri R., and Dillmann W.H. Heat shock proteins protect microtubules during simulated ischemia in rat neonatal cardiac myocytes. *FASEB Journal* 12 (5): A727, 1998.
7. Bluhm W.F., Meyer M., He H., Giordano F.J., Lew W.Y.W., Kranias E.G., and Dillmann W.H. The phospholamban to SERCA2a ratio modifies the force-frequency relationship. *Circulation* 98 (Suppl.): I-53, 1998.
8. Bluhm W.F., Sayen R., Swanson E.A., Meyer M., Vetter R., and Dillmann W.H. Overexpression of sarcoplasmic reticulum Ca^{2+} -ATPase prevents cardiac contractile dysfunction in pressure overload hypertrophy in rats. *Circulation* 98 (Suppl.): I-54, 1998.
9. Trost S.U., Bluhm W.F., Swanson E., and Dillmann W.H. SERCA2a overexpression improves cardiac performance in diabetic cardiomyopathy in mice. *Circulation* 98 (Suppl.): I-140, 1998.
10. Meyer M., Trost S.U., Bluhm W.F., Swanson E.A., and Dillmann W.H. Impaired sarcoplasmic reticulum function causes heart failure and cardiac hypertrophy in mice. *Circulation* 98 (Suppl.) I-490, 1998.
11. Bluhm W.F., Kranias E.G., Meyer M., and Dillmann W.H. Phospholamban: The major determinant of the cardiac force-frequency relationship. *J. Mol. Cell. Cardiol.* 31(5): A39, 1999.
12. Meyer M., Trost S.U., Bluhm W.F., Swanson E., and Dillmann W.H. Eine gezielte Funktionsstörung des sarkoplasmatischen Retikulums führt zu einer primären Herzinsuffizienz gefolgt von einer sekundären kardialen Hypertrophie. [A targeted dysfunction of the sarcoplasmic reticulum leads to primary heart failure followed by secondary hypertrophy.] *Z. Kardiol.*, 1999.
13. Meyer M., Trost S.U., Cary S.P., Ho P., Bluhm W.F., McDonough P.M., Silverman G.J., and Dillmann W.H. Contractilin, a recombinant single chain antibody to phospholamban, accelerates SR calcium uptake and increases cardiac contractility in vivo. *Circulation* (Suppl.), 2000.

INVITED TALKS

1. "Length-history dependence of myocardial contractility". Cardiology seminar, Department of Medicine, University of California, San Diego, 1995.
2. "The cardiac force-frequency relationship: why faster is better." Cardiology seminar, Department of Medicine, University of California, San Diego, 1999.
3. "Why faster is better: the role of SERCA and phospholamban in the cardiac force-frequency relationship." Department of Experimental Cardiology, Max-Planck-Institute, Bad Nauheim, Germany (Host: W. Schaper), 1999.

4. "Why faster is better: phospholamban regulates the cardiac force-frequency relationship." Medtronic, Minneapolis, 2000.
5. "The Protein Data Bank: data distribution and query functionality". XIX Congress International Union of Crystallography, Geneva, Switzerland, 2002.

THESIS and DISSERTATION

1. Bluhm W.F. Design and Construction of a UV Fourier Spectrometer with Linear Mirror Motion. University of Siegen (Germany), 1989.
2. Bluhm W.F. Length-History Dependence of Myocardial Contraction. University of California, San Diego, 1995.