

Department of Biology
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L. Daniel Howell, Ph.D.

Curriculum Vitae

CURRENT POSITION

2003-present **Associate Professor of Biology**
Department of Biology, Liberty University

PREVIOUS POSITIONS

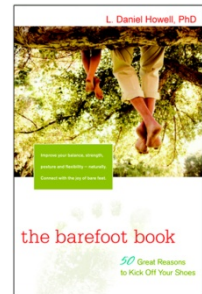
- 2001-2003 **Postdoctoral Research Fellow**, *McGill University*
Department of Physiology, Montreal, Quebec
Sponsor: John W. Hanrahan, Ph.D.
· Investigated regulation of CFTR by protein kinases and protein phosphatases.
- 1997-2001 **Postdoctoral Research Fellow**, *Duke University Medical Center*
Department of Medicine, Durham, North Carolina
Sponsor: Jonathan A. Cohn, M.D.
· Investigated how protein phosphorylation regulates the ATPase activity of CFTR and how CF-causing mutations affect such regulation.
- 1995-1997 **Graduate Research Assistant**, *Virginia Tech*
Department of Biochemistry, Blacksburg, Virginia
· Characterized newly discovered dual-specificity protein phosphatases from cyanobacteria.
- 1992-1995 **Graduate Teaching Assistant**, *Virginia Tech*
Department of Biology, Blacksburg, Virginia
· Taught laboratory course material; supervised laboratory experiments and administered exams; graded all written work and determined final grades.
- 1990-1992 **Undergraduate Research Assistant**, *Old Dominion University*
Department of Biology, Norfolk, Virginia
· Characterized bacterial proteins expressed in response to heavy-metal toxicity in the laboratory of Andrew S. Gordon, Ph.D.

EDUCATION

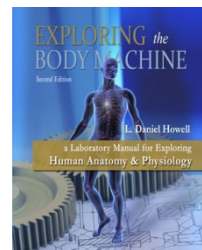
- 1998 **Ph.D. (Biochemistry)**
Virginia Tech, Blacksburg, VA
Dissertation: Characterization of IphP from *Nostoc commune* UTEX 584 and a Dual Specificity Protein Phosphatase from *Anabaena* PCC 7120.
Advisor: Peter J. Kennelly, Ph.D.
- 1992 **B.S. (major: Biology, minor: Chemistry)**
Old Dominion University, Norfolk, VA

RESEARCH & SCHOLARLY WORKS**BOOKS**

- 2010 The Barefoot Book, Hunter House Publishers, ISBN 978-0-8979355-4-8
Americans are chronic shoe-wearers. We buy shoes for infants who can't yet walk. We wear shoes almost constantly, certainly in public spaces, and often within the comfortable walls of our own homes. If we'd like, we can purchase shoes for just about any occasion or purpose imaginable, in a vast array of styles, colors, materials, and prices. Well, of course. We need shoes. We need them for warmth and for protection. We wear shoes to be fashionable and because it's expected. It's just what we do. And what's wrong with that? *The Barefoot Book* explores this question and provides a surprising answer.



- 2008 Exploring the Body Machine: A Laboratory Manual for Exploring Human Anatomy & Physiology, Academx Publishing, ISBN 978-1-61539-457-9
A 422-page, full-color, two-semester laboratory manual with over 350 original illustrations covering all eleven organ systems of the body, plus an introduction to the language of anatomy, cells, tissues and microscopes. Divided into 31 chapters, *Exploring the Body Machine* is designed to engage the whole student with hands-on, interactive exercises.



- 2006 Human A&P lecture guides, self published
These lecture guides are designed to supplement student note-taking in class. Each lecture guide contains the complete PowerPoint presentation text with fill-in-the-blanks to keep the student engaged.

BOOK CHAPTERS

- 2003 Hanrahan, J.W., T. Zhu and **L.D. Howell**. Regulation of CFTR by Protein Phosphorylation, in The Cystic Fibrosis Transmembrane Conductance Regulator. Eds. Kevin L. Kirk and David C. Dawson. Plenum Publishers. ISBN 030-6-47837-4

PEER-REVIEWED JOURNAL PUBLICATIONS (chronological order)

- Gordon A.S., **L.D. Howell**, and V. Harwood. Responses of diverse heterotrophic bacteria to elevated copper concentrations. *Can. J. Microbiol.* 40:408-411, 1994.
- Howell, L.D.**, C. Griffiths, L. Slade, M. Potts, and P.J. Kennelly. Substrate specificity of IphP, a cyanobacterial dual-specificity protein phosphatase with MAP kinase phosphatase activity. *Biochemistry* 35:7566-7572, 1996.
- McCartney, B., **L.D. Howell**, M. Potts, and P.J. Kennelly. Protein tyrosine phosphorylation in the cyanobacterium *Anabaena* PCC 7120. *J. Bacteriol.* 179:2314-2318, 1997.
- Howell, L.D.**, R. Borchardt, and J.A. Cohn. ATP hydrolysis by a CFTR domain: Pharmacology and effects of the G551D mutation. *Biochem. Biophys. Res. Comm.* 271:518-525, 2000.
- Derand, R., L. Bulteau-Pignoux, Y. Mettey, O. Zegarra-Moran, **L.D. Howell**, C. Randak, L.J.V. Galiotta, J.A. Cohn, C. Norez, L. Romio, J-M. Vierfond, M. Joffre, and F. Becq. Activation of G551D CFTR channel with MPB-91: Regulation by ATPase activity and phosphorylation. *Am.J.Physiol. (Cell Physiol.)* 281:C1657-C1666, 2001.
- Howell, L.D.**, R. Borchardt, J. Kole, A. Kaz, C. Randak and J.A.Cohn. Protein kinase A regulates ATP hydrolysis and dimerization by a CFTR (cystic fibrosis transmembrane conductance regulator) domain *Biochem.J.* 378:151-159, 2004

7. Chappe, V., D. Hinkson, **L.D. Howell**, A. Evagelidis, C. Liao, L. Chang, J. Riordan and J.W. Hanrahan. Stimulatory and inhibitory protein kinase C consensus sequences regulate cystic fibrosis transmembrane conductance regulator. *Proc. Natl. Acad. Sci.* 101:390-395, 2004

SELECTED PUBLISHED ABSTRACTS (5 of 12)

1. Cohn, J.A., J. Kole, R. Borchardt, **L.D. Howell**, and L. Chien. Regulation of CFTR R-domain by phosphorylation of serine-737. *Pediatric Pulmonology Suppl.* 12, 1998.

2. **Howell, L.D.** and J.A. Cohn. ATP hydrolysis by the NBD1 domain of CFTR: Effects of the G551D mutation. *Ped. Pulmon. Suppl.* 13, 1999.

3. **Howell, L.D.** and J.A. Cohn. NBD1/R fusion proteins exhibit PKA-regulated dimerization and ATP binding. *Ped. Pulmon. Suppl.* 20, 2000.

4. **Howell, L.D.**, M. Danko, R. Borchardt, C. Randak, and J.A. Cohn. Domain-domain interactions regulate ATP hydrolysis during CFTR activation. *Ped. Pulmon. Suppl.* 21, 2001.

5. **Howell, L.D.**, V. Chappe and J.W. Hanrahan. Analysis of CFTR residues modified by protein kinases and phosphatases. *Ped. Pulmon. Suppl.* 25, 2003

CONFERENCE PRESENTATIONS (INVITED TALKS & POSTERS)

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| 1996 | Substrate specificity of IphP, a cyanobacterial dual-specificity protein phosphatase with MAP kinase phosphatase activity. Europhosphatase '96 (a Gordon Research Conference), St. Moritz, Switzerland (poster/talk) |
| 1998 | Regulation of CFTR R-domain by phosphorylation of serine-737, North American Cystic Fibrosis Conference, Montreal, CA (poster) |
| 1999 | ATP hydrolysis by the NBD1 domain of CFTR: Effects of the G551D mutation. North American Cystic Fibrosis Conference, Seattle, WA (poster) |
| 1999 | The G551D mutation affects ATP binding and hydrolysis by CFTR NBD1/R domain. FASEB Conference on Transport ATPases, Snowmass, CO (poster) |
| 2000 | NBD1/R fusion proteins exhibit PKA-regulated dimerization and ATP binding. North American Cystic Fibrosis Conference, Baltimore, MD (poster) |
| 2001 | Domain-domain interactions regulate ATP hydrolysis during CFTR activation. North American Cystic Fibrosis Conference, Nashville, TN (poster/talk) |
| 2003 | Analysis of CFTR residues modified by protein kinases and phosphatases. North American Cystic Fibrosis Conference, Anaheim, CA (poster) |
| 2003 | Regulation of CFTR ATPase by protein phosphorylation. Liberty University, Lynchburg, VA (talk) |
| 2006 | Cystic Fibrosis Transmembrane Conductance Regulator. BIOL 415, Liberty University (talk) |
| 2010 | CFTR: Regulation by Phosphorylation. Inaugural speaker for the LU Journal Club, Liberty University (talk) |

MANUSCRIPTS IN PREPARATION

1. Bowman, J., C. Hubbard and L.D. Howell. A rapid and reproducible method for determining arch type from footprints: the transverse arch index.
2. L.D. Howell. The impact of shoes on the foot arch as assessed by the transverse arch index.

AWARDS & HONORS

Aug 2001 – Jul 2003	Postdoctoral Research Fellowship , Canadian Cystic Fibrosis Foundation
Aug 1999 – Jul 2001	Postdoctoral Research Fellowship , Cystic Fibrosis Foundation
1999	Best Poster , FASEB Conference on Transport ATPases
1997	Dean's List , Virginia Polytechnic Institute & State University (Blacksburg, VA)
1996	Competitive Travel Awards , EMBO-Friedrich Meischer Institute (Basel, Switzerland) and Virginia Polytechnic Institute & State University (Blacksburg, VA)
1991-1992	Dean's List , Old Dominion University (Norfolk, VA)
1988	Who's Who Among American High School Students

PROFESSIONAL AFFILIATIONS (Past & Present)

Sigma Xi Research Society

RESEARCH EXPERIENCE

Protein:

Design, expression and purification of recombinant fusion proteins; enzyme assays, kinetics analyses; catalytic mechanism analyses; nucleotide binding assays; radioisotope labeling; phosphoamino acid analyses; tryptic peptide mapping; 1D and 2D SDS-PAGE; isoelectric focusing; sucrose density gradient ultracentrifugation; chromatography (HPLC, affinity, ion-exchange, filtration); immunoprecipitation; western blotting

Molecular Biology:

DNA Minipreps, PCR, transformation, site-directed mutagenesis, DNA sequencing

Cell Culture:

Growth of C127 and Calu3 cell lines; *in vivo* phosphorylation / radiolabeling of CFTR (cystic fibrosis transmembrane conductance regulator) in Calu3 cells

PAST RESEARCH SUPPORT

Postdoctoral Fellowship Cystic Fibrosis Foundation "Functional Analyses of the NBD1/R Domain of CFTR"	07/01/1999 – 06/30/2001
· The goal of that project was to investigate the ATPase function of the NBD1 domain of CFTR and its regulation by the R domain of CFTR.	
Role: PI	
Postdoctoral Fellowship Canadian Cystic Fibrosis Foundation "Investigating Dephosphorylation of CFTR"	07/01/2001 – 06/30/2003
· The major goal of this project was to examine whether the protein phosphatases deemed most likely to regulate CFTR <i>in vivo</i> (i.e., PP2A and PP2C) preferentially target a subset of the 10+ phosphorylated residues of CFTR.	
Role: PI	

TEACHING**COURSES TAUGHT AT LIBERTY UNIVERSITY**

2003-present	BIOL 213/214	Human Anatomy & Physiology I A study of the structure and function of the human body with emphasis on the chemistry of life, cells, tissues, skin, nerves and special senses, muscle, bones, and coordination and control of body movements. Emphasis is placed on concepts in physiology, including the maintenance of homeostasis.
2003-present	BIOL 215/216	Human Anatomy & Physiology II BIOL 215 is a continuation of BIOL 213. A study of the structure and function of the human body with emphasis on the endocrine, cardiovascular, lymphatic, respiratory, digestive, urinary and reproductive systems. Concepts in physiology, including the maintenance of homeostasis, will be discussed.
2007-present	BCHM 452*	Biochemistry II BCHM 452- <i>Biochemistry II</i> (4 credits) is a continuation of BCHM 451- <i>Biochemistry I</i> . Emphasis is placed on membrane physiology (including lipid biosynthesis, membrane transport, excitable membranes, electron transport / oxidative phosphorylation, and photosynthesis) and the flow of biological information (including nucleotide biosynthesis, DNA replication & repair, transcription, and translation).
2006-2009	BIOL 495	Independent Research
2003-2005	BIOL 103	General Biology Lab

HONORS THESIS SUPERVISION

2006	Uchechi Anayanwuu, GSK-3 β regulates organelle transport in human NT2 cells, Dept. of Biology (thesis committee)
2007	Robert Mullis, Protein Phosphorylation and a Novel Phosphatase in the Cyanobacterium <i>Anabaena</i> , Dept. of Biology (supervisor)

STUDENT EVALUATIONS

RateMyProfessors Rating: 4.6

10 Most recent comments from www.ratemyprofessors.com:

1. "he is awesome!"
2. "Dr. Howell made A&P fun. He kept my interest during class and was always willing to answer questions."
3. "Dr. Howell is an AMAZING teacher. He gives you a lecture guide that you use for everything... He really cares about his students. This class requires SOOOO much studying, don't take that lightly otherwise you'll do horrible!!"

* A course I helped develop, along with the Biochemistry major at Liberty University.

4. “Awesome! Such a great teacher! He made everything very applicable and has a great sense of humor. Fun labs and the exams were hard but you just have to put alot of time into studying, like all anatomy classes.”
5. “Dr. Howell is an DYNAMIC teacher! His lecture guide was so useful and helped me feel prepared for class. He shows a genuine interest in the student and wants us to succeed. He bends over backwards to be available to help the students. I feel so prepared to continue my studies in Nursing, since taking his Anatomy class. :)”
6. “An extremely good teacher. This class requires a whole lot of studying. Howell is willing to help if you are having trouble understanding the material...trust me I know...I have gone to him several times. He is also a funny guy...definitely keeps your attention.”
7. “The greatest Anatomy teacher at the university. Intelligent, funny, informative, well spoken, and he created the notebook that is used to follow along with the lectures. Absolutely take him for Anatomy if you can.”
8. “he is an amazing professor! Easy to understand, funny, laid back, extremely smart! I absolutely love him. if you have the choice... GET HIM.”
9. “Dr. Howell is an amazing professor who has a passion for his subject and truly cares for his students.”
10. “Incredibly hard class. Take every chance you get to go into the lab and study, or meet with him for any questions you have. Overall, he's great teacher, and genuinely cares for all his students :)”

SERVICE**UNIVERSITY INSTITUTIONAL SERVICE**

- 2004-present **Web Manager**, Dept. of Biology & Chemistry, Liberty University
- 2010 **Chair**, Departmental Molecular Oversight Committee, Liberty University
· Oversee biochemistry major requirements and molecular biology concentration
- 2010 **Creator / Editor**, Creation Newsletter, newsletter for the Biology Dept., Liberty University
- 2005 – 2007 **Member**, Biochemistry & Molecular Biology committee, Liberty University
· Developed biochemistry major and molecular biology concentration
- 2006 – 2007 **Panelist**, Transfer Student Orientation Panel, Liberty University
- 2004 – 2007 **Senator**, *Liberty University Senate*, Liberty University
- 2002 – 2003 **Senator**, *McGill University Senate*, McGill University
- 2002 – 2003 **Postdoc Representative**, *Postdoctoral & Postgraduate Student Society*, McGill University
- 2002 – 2003 **Postdoc Representative**, *Research Policy Committee*, McGill University
- 1993 – 1995 **Juror**, *Graduate Honor Council Judiciary Committee*, Virginia Tech

COMMUNITY SERVICE

- 2005-present **Actor/Director**, Blue Ridge Community Church drama team
- 2008 **Judge**, Central Virginia Regional Science Fair, Central Virginia Community College