

Curriculum Vitae

Isabelle Deschênes, Ph.D.

TITLE Assistant Professor of Medicine and of Biomedical Engineering
Case Western Reserve University

ADDRESS Heart & Vascular Research Center
MetroHealth Campus, Case Western Reserve University
Rammelkamp 658
2500 MetroHealth Drive
Cleveland, OH 44109-1998
Phone: (216) 778-5166
Fax: (216) 778-1261
Email: ideschenes@metrohealth.org

EDUCATION AND TRAINING

- 1999-2003 Post-doctoral Fellowship
Johns Hopkins University, Division of Cardiology, School of Medicine
Baltimore, USA
Supervisor : Dr. Gordon F. Tomaselli
- 1996-1999 Ph.D. in Experimental Medicine
Fast inactivation study of voltage-gated sodium channels cloned from heart and skeletal muscle.
Laval Hospital Research Center. Supervisor: Dr. Mohamed Chahine
Laval University, Quebec, Canada
- 1996-1999 Masters of Science in Experimental Medicine
Electrophysiological study of heart and skeletal muscle sodium channels
Laval Hospital Research Center. Supervisor: Dr. Mohamed Chahine
Laval University, Quebec, Canada
- 1991-1995 B.S. in Microbiology
Laval University, Quebec, Canada

PROFESSIONAL APPOINTMENTS

2003 – Present Assistant Professor of Medicine and Biomedical Engineering
Case Western Reserve University

MEMBERSHIP IN PROFESSIONAL SOCIETIES

American Heart Association Basic Science Council

Biophysical Society
Heart Rhythm Society (formerly known as North American Society of Pacing and Electrophysiology)
Cardiac Muscle Society

HONORS AND AWARDS

- 2003 Finalist for the Louis N and Arnold M Katz Basic Science Research Prize for Young Investigators of the American Heart Association
- 2002/03 Fellowship from the North American Society for Pacing and Electrophysiology (NASPE)
- 2002 Fellowship of the “Fond de Recherche en Santé du Québec” (FRSQ)
- 1999 Fellowship of the Heart and Stroke Foundation of Canada
- 1999 Student Presentation Award of the 52nd Canadian Cardiovascular Society Meeting
- 1999 Student Research Achievement Award of the Biophysical Society
- 1999 First place of the Student Presentation Award, Laval Hospital.
- 1999 Student Presentation Award of the Faculty of Medicine, Laval University
- 1999 Student Presentation Award of the “Groupe de Recherche en Transport Membranaire”, Montreal University.
- 1998 First place of the Student Presentation Award, Laval Hospital.
- 1997 Ph.D. scholarship of “FCAR-FRSQ santé”
- 1997 Ph.D. scholarship (Research Trainee), Heart and Stroke Foundation of Canada
- 1997 Ph.D. scholarship, CRSNG (Research Council of Natural Science and Engineering)
- 1997 Ph.D. scholarship, Laval University Foundation
- 1995 Finalist of the Student Presentation Award of 49th Canadian Cardiovascular Society Meeting
- 1996 Bursary from the Quebec Heart Institute (Ph.D.)
- 1995 Bursary from the Quebec Heart Institute (Masters)

1994 Summer student bursary from St-François d'Assise Hospital, Quebec.

1993 Summer student bursary from the Research Group in Buccal Ecology (GREB)
Laval University, Quebec

PROFESSIONAL SERVICE

Scientific Reviewer: *Circulation Research*, *The Anatomical Record* and *Journal of Molecular and Cellular Cardiology*

RESEARCH TRAINEES

Steve Poelzing, Ph.D.	Post-doctoral fellow	11/03 to now
Linden Karas	Chester Scholar	Summer 2004

RESEARCH SUPPORT

Ongoing:

American Heart Association, Ohio Valley Affiliate, Beginning Grant-in-Aid:
Elucidating the molecular basis of the Ca²⁺- independent transient outward potassium current (I_{to}) in mammalian ventricular myocytes.

07/01/04 to 06/30/06

Direct cost: \$55,000/year

Indirect cost: \$5,500/year

Effort: 40%

Pending:

NIH, 1R01HL077682-01

Macromolecular Complex Formed By Cardiac I_{Na} and I_{to}

04/01/05 to 03/31/10

Direct cost: \$250,000/year

Indirect cost: \$128,750/year

Effort: 40%

TEACHING

EBME 105 Introduction to Biomedical Engineering, 7 lectures

BIBLIOGRAPHY

Manuscripts

1. **Deschênes, I.** Armoundas, SP. Jones, and GF. Tomaselli. Gene Silencing of KChIP2 Reveals a Structural and Developmental Link Between I_{to} and I_{Na} in the Heart. In review *Circulation Research*.
2. FG. Akar, RC. WU, I. **Deschênes, I.** Armoundas. V. Piacentino III, SR. Houser, and GF. Tomaselli. (2003) Phenotypic Differences in the Transient Outward K⁺ Current of Human and Canine Ventricular Myocytes: Insights into the Molecular Composition of Ventricular I_{to}. *Am J Physiol Heart Circ Physiol*. [Epub ahead of print].

3. **Deschênes, I** and GF. Tomaselli. (2002) Modulation of Kv4.3 current by accessory subunits. *FEBS Lett* 528(1-3):183.
4. N. Neyroud, **I. Deschênes**, M. Akao, HB. Nuss, and E. Marbán. Somatic gene transfer of tagged K⁺ channel fragments to probe trafficking and electrical function in epithelial cells and cardiac myocytes. *J Membr Biol.* 190(2):133-44
5. **I. Deschênes**, D. DiSilvestre, GJ. Juang, RC. Wu, WF. An, and GF. Tomaselli. (2002) Regulation of Kv4.3 current by KChIP2 splice variants: a component of native cardiac I(to)? *Circulation* 106(4):423-9.
6. **I. Deschênes**, N. Neyroud, D. DiSilvestre, E. Marban, D. T. Yue and G. F. Tomaselli (2002). Isoform-specific modulation of voltage-gated Na(+) channels by calmodulin. *Circ Res.* 90(4):E49-57.
7. **I. Deschênes**, E. Trottier and M. Chahine (2001). Implication of the C-Terminal Region of the alpha-Subunit of Voltage-gated Sodium Channels in Fast Inactivation. *J Membr Biol.* 183(2):103-14.
8. **I. Deschênes**, G. Baroudi, I. Barde, M. Berthet, T. Chalvidan, I. Denjoy, P. Guicheney and M. Chahine. (2000). Electrophysiological characterization of SCN5A mutations causing long QT (E1784K) and Brugada (R1512W and R1432G) syndromes. *Cardiovasc Res.* 46(1):55-65
9. **I. Deschênes**, E. Trottier and M. Chahine (1999). Cysteine scanning analysis of the IFM cluster in the inactivation gate of a human heart sodium channel. (*Cardiovasc Res* 42:521-529).
10. **I. Deschênes**, E. Trottier, L. Gailis and M. Chahine (1998). Methanethiosulfonat reagents, a tool to study the inactivation gate of cloned human heart sodium channels. *Proceedings of the XIII World Congress of Cardiology.* 197-202.
11. **I. Deschênes**, L.-Q.Chen, R.G.Kallen and M.Chahine (1998). Chimeric study of the electrophysiological characteristics of skeletal and cardiac muscle sodium channels expressed in a human cell line. *J. Membrane Biol.* 164:25-34.
12. **I. Deschênes**, M.Chahine, J.Tremblay, D. Paulin, and J. Puymirat (1997). Increase in the proliferative capacity of human myoblasts by using the T antigen under the vimentin promoter control. *Muscle Nerve* 20:437-445.
13. M. Chahine, **I. Deschênes**, E. Trottier, L-Q. Chen, and R. G. Kallen (1997): Restoration of fast inactivation in an inactivation -defective human heart sodium channel by the cysteine modifying reagent benzyl-MTS: analysis of IFM-ICM mutation. *Biochem. Biophys. Res. Comm.* 233:606-610.

14. M. Chahine, **I. Deschênes**, L.-Q. Chen and R.G. Kallen (1996). Electrophysiological characteristics of skeletal and cardiac muscle sodium channels expressed in the tsA201 cell line. *Am. J. Physiol.* 271:H498-H506.

Abstracts:

1. **I. Deschênes** and G.F. Tomaselli. (2004) Calmodulin associates with both cardiac and skeletal muscle sodium channels in living cells. (Biophysical Society Meeting, Baltimore, MD).
2. **I. Deschênes**, AA. Armoundas, SP. Jones, and GF. Tomaselli. (2003) Gene Silencing of KChIP2 Reveals a Structural and Developmental Link Between I_{to} and I_{Na} in the Heart. (American Heart Association Scientific Sessions, Orlando, FL)
3. **I. Deschênes** and GF. Tomaselli. (2002) Modulation of Kv4.3 current by accessory subunits. (Biophysical Society Meeting, San Antonio, TX).
4. **I. Deschênes**, N.M. Neyroud, E. Marban, D.T. Yue, G.F. Tomaselli (2001) Modulation of the cardiac sodium channel by CaM-kinase phosphorylation. (American Heart Association Scientific Sessions, Anaheim CA)
5. **I. Deschênes**, G.J. Juang, R.C. Wu, G.F. Tomaselli (2001) Calcium-dependent regulation of human Kv4.3 current by KChIP2 splice variants (American Heart Association Scientific Sessions, Anaheim CA)
6. R.C. Wu, G.J. Juang, A.A. Armoundas, **I. Deschênes**, G.F. Tomaselli (2001) KChIP2 modulation of Kv4.3 current resembles human but not canine ventricular transient outward K⁺ current (American Heart Association Scientific Sessions, Anaheim CA)
7. G.J. Juang, **I. Deschênes** R.C. Wu, G.F. Tomaselli (2001) Regulation of Kv4.3 current by KChIP2 splice variants (NASPE, Boston MA)
8. **I. Deschênes**, N. M. Neyroud, D.T. Yue, E. Marban, G.F. Tomaselli (2001) Effect of calmodulin on the activity of the human heart and skeletal muscle sodium channels (45th Annual meeting of the Biophysical Society, Boston MA)
9. N.M. Neyroud, **I. Deschênes**, H.B. Nuss, E. Marban (2001) Functional consequences of Kv4.3 c-terminus overexpression in rat cardiac myocytes (45th Annual meeting of the Biophysical Society, Boston MA)
10. **I. Deschênes**, R. G. Kallen, E. Carbonneau, H.Mannouzu, and M. Chahine (2000). Does domain III of the α -subunit of sodium channel plays a role in the α/β -subunit interaction? (44th Annual Meeting of the Biophysical Society, New Orleans, USA).

11. **I. Deschênes**, E. Trottier, and M. Chahine (1999). Implication of the C-terminal region of the α -subunit of voltage-gated sodium channel in fast inactivation. (72nd American Heart Association Annual Meeting, Atlanta, USA).
12. G. Baroudi, **I. Deschênes**, P. Guicheney and M. Chahine (1999): Characterization of two mutations in SCN5A sodium channel causing Brugada syndrome in a mammalian expression system. (72nd American Heart Association Annual Meeting, Atlanta, USA).
13. **I. Deschênes**, I. Barde, M. Berthet, T. Chalvidan, I. Denjoy, P. Guicheney and M. Chahine: (1999): Two novel mutations in SCN5A causing long-QT and Brugada syndromes and their functional consequences on human cardiac voltage-gated sodium channel. (52st Annual Meeting of the Canadian Cardiovascular Society, 19-23 October, Québec).
14. P. Guicheney, **I. Deschênes**, L. Nicolas, M. Berthet, T. Chalvidan, J-M Davy, A. Leenhardt, P. Coumel, I. Denjoy and M. Chahine (1999): Novel mutations in the cardiac Na⁺ channel alpha subunit gene (SCN5A) in patients with Brugada syndrome. XXI Congress of the ESC August 28th-September 1st 1999, Barcelona, Spain.
15. **I. Deschênes**, I. Barde, M. Berthet, T. Chalvidan, I. Denjoy, P. Guicheney and M. Chahine (1999): Novel mutations in SCN5A causing long-QT and Brugada syndromes and their functional consequences on human cardiac voltage-gated sodium channel. XXI Congress of the ESC August 28th-September 1st 1999, Barcelona, Spain.
16. **I. Deschênes**, I. Bardes, T. Chalvidans, P. Guicheney and M. Chahine (1999). The inactivation gate of human heart sodium channels as a target for mutations found in long QT and Brugada syndrome. (43rd Annual Meeting Biophysical Society, Baltimore, USA).
17. **I. Deschênes**, E. Trottier and M. Chahine (1998). pH variation modulates fast inactivation kinetics of mutant human heart sodium channels. (71st American Heart Association Annual Meeting, Dallas, USA).
18. **I. Deschênes**, R. Dumaine and M. Chahine (1998). Exposition of a LQT3 mutation to acidic pH restores normal fast inactivation of the mutant human cardiac sodium channel. (51st Canadian Cardiovascular Society Meeting, Ottawa, Canada)
19. **I. Deschênes**, E. Trottier, J. Sirois, R.G. Kallen, M.Chahine (1998). Methanthiosulfonate Reagents, a Tool to Study the Inactivation Gate of Cloned Human Heart Sodium Channels (XIII World Congress of Cardiology, Rio de Janeiro, Brazil).
20. **I. Deschênes**, E. Trottier, J. Sirois, R.G. Kallen and M.Chahine (1997). Probing the role of isoleucine-phenylalanine-methionine (IFM) of the III-IV linker in the fast inactivation of the human heart sodium channel by methanthiosulfonate reagents (70th American Heart Association Annual Meeting, Orlando, USA).

21. **I. Deschênes**, E. Trottier, J. Sirois, R.G. Kallen and M.Chahine (1997). Probing the role of isoleucine-phenylalanine-methionine (IFM) of the III-IV linker in the fast inactivation of the human heart sodium channel by methanthiosulfonate reagents (50th Canadian Cardiovascular Society Meeting, Winnipeg, Canada).
22. **I. Deschênes**, J.Tremblay, J.Puymirat, M.Chahine (1997). Immunocytochemical and electrophysiological characterization of conditionally immortal human skeletal muscle cells (Canadian Society of Biology, Quebec, Canada).
23. **I. Deschênes**, E Trottier, L.-Q. Chen, R.G. Kallen and M. Chahine (1997). Probing the role of the phenylalanine residue in the inactivation gate of hH1 Na channels by cysteine modifying reagents. (41st Annual Meeting of the Biophysical Society)
24. **I. Deschênes** and M. Chahine (1996). Étude électrophysiologique des canaux sodiques clonés du coeur humain et du muscle squelettique. (XXXVIII^e Réunion Annuelle du Club de Recherches Cliniques du Québec) (Annual Meeting XXXVIII of the Clinical Research Club).
25. **I. Deschênes** and M. Chahine (1996). Electrophysiological study of cloned sodium channel from heart and skeletal muscle. (49th Canadian Cardiovascular Society Meeting, Montreal, Canada)
26. N. Berkova, V. Korobko, L. Shinjarova, **I. Deschênes** and A. Lemay (1996). Development of Tumor Necrosis Factor (TNF) mutein for the study of the structure functional topography of TNF. (Impact of cancer biotechnology on predictive oncology therapy, Third International Symposium)
27. **I. Deschênes**, J. Puymirat and M. Chahine (1996) Immunocytochemical and electrophysiological characterization of conditionally immortal human skeletal muscle cells. (Annual Meeting of the Society for Neuroscience, Washington, USA)
28. M. Chahine and **I. Deschênes** (1995). La toxine d'anémone de mer (ATX II) module les canaux sodiques du coeur humain exprimés dans une lignée cellulaire humaine. (37^{ième} Réunion du Club de Recherches Cliniques du Québec)
29. **I. Deschênes**, M. Parrot, H. Morency and M.C. Lavoie (1993). Purification préliminaire de mutacines. (Congrès de l'Association des Microbiologistes du Québec, Montreal, Canada)