

CURRICULUM VITAE
OF
PETER R.H. WILKES

PERSONAL DATA

Business: University of Ottawa Heart Institute
Ottawa Civic Hospital
Dept. of Cardiac Anaesthesia
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Ottawa, Ontario
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DOB: January 14, 1952

Citizenship: Canadian

ACADEMIC POSITIONS

2001-2003	Director of Research Dept. of Anesthesia University of Ottawa
1998	Assistant Professor Dept. of Anaesthesia University of Ottawa Heart Institute Ottawa, Ontario
1996	Clinical Associate University of Ottawa Heart Institute Ottawa, Ontario
1994 - 1996	Clinical Fellow Intensive Care Medicine University of Ottawa Ottawa, Ontario
1991- 1994	Resident (Anaesthesia) Department of Anaesthesia University of Western Ontario London, Ontario
1990 - 1991	Intern (Comprehensive Medicine) Department of Medicine University of Western Ontario London, Ontario
1986 - 1990	Part-time Post-Doctoral Research Fellow Department of Medicine University of Calgary Calgary, Alberta Supervisor: Dr. J.V. Tyberg Project: Re-evaluation of the balloon in gastro-intestinal manometry Project: Role of the pericardium in release of atrial natriuretic hormone

1984 - 1986 Post-Doctoral Research Fellow
Department of Medicine
University of Calgary
Calgary, Alberta
Supervisor: Dr. H. Mandin
Project: Renal function in rats with congestive heart failure

EDUCATION

1996 Fellow, Royal College of Physicians and Surgeons, Canada
Anaesthesia

Intensive Care Specialty
University of Ottawa

1991 Licentiate of the Medical Council of Canada

1990 MD
University of Calgary
Calgary, Alberta

1984 Ph.D.
University of Calgary
Calgary, Alberta
Supervisor: Dr. B. McMahon
Project: Electrolytes and Acid-base Regulation in Freshwater
White Sucker, Catostomus commersoni, during Saline
Exposure.

1980 M.Sc.
University of Calgary
Calgary, Alberta
Supervisor: Dr. B. McMahon
Project: Compensation to Chronic Hypoxia in the Crayfish,
Orconectes rusticus.

1975 B.Sc. (Hons)
Biology
Trent University
Peterborough, Ontario

AWARDS/SCHOLARSHIPS

- 1995 Canadian Residents/Fellows Competition in Respiratory Research
Sponsored by Galaxo/Wellcome, Inc.
First prize in category of Best Presentation by a Resident
- 1995 Certificate of Teaching Excellence for Senior Residents
Faculty of Medicine/Postgraduate Medical Education
University of Ottawa
Ottawa, Ontario
- 1995 Block Grant awarded by the Thoracic Society of Ontario
Effects of Chronic Hypercapnia on Serum Chloride Concentration
University of Ottawa,
Ottawa, Ontario
- 1995 University of Ottawa Gary Johnson Residents Research Competition
First Prize
University of Ottawa
Ottawa, Ontario
- 1990 Department of Medicine Scholarship
University of Calgary
Calgary, Alberta
- 1988 - 1990 Alberta Heritage Foundation for Medical Research
Part-time Post-Doctoral Research Fellowship
Department of Medicine
University of Calgary
Calgary, Alberta
- 1986 - 1987 Alberta Heritage Foundation for Medical Research
Post-Doctoral Research Fellowship
Department of Medicine
University of Calgary
Calgary, Alberta
- 1984 - 1985 Len Grasely Research Fellow, Kidney Foundation of Canada
Alberta Branch
Post-Doctoral Research Fellowship
Department of Medicine
University of Calgary
Calgary, Alberta

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|-------------|---------------------------------------------------------------------------------------------------------------------------------------|
| 1981 - 1983 | Alberta Heritage Foundation for Medical Research
Studentship
Department of Biology
University of Calgary
Calgary, Alberta |
| 1978, 1982 | Thesis Research Grant
Department of Biology
University of Calgary
Calgary, Alberta |
| 1981 | Province of Alberta Government Scholarship
Department of Biology
University of Calgary
Calgary, Alberta |

PROFESSIONAL ASSOCIATIONS

Royal College of Physicians and Surgeons
College of Physicians and Surgeons of Ontario
Ontario Medical Association
Canadian Medical Association
Canadian Anaesthesia Society
Canadian Critical Care Society

PUBLICATIONS

1. McMahon, B.R., Sinclair, F., Hassall, C.D., DeFur, P.L. and Wilkes, P.R.H.
Ventilation and control of acid-base status during temperature acclimation in the crab, Cancer magister.
J. Comp. Physiol. 128:109-116 (1978).
2. Wilkes, P.R.H., DeFur, P.L. and McMahon, B.R.
A new operational approach to PCO₂ determination in crustacean hemolymph.
Respir. Physiol. 42:17-28 (1980).
3. DeFur, P.L., Wilkes, P.R.H. and McMahon, B.R.
Non-equilibrium acid-base status in C. productus: Role of exoskeletal carbonate buffers.
Respir. Physiol. 42:247-261 (1980).
4. Wilkes, P.R.H., Walker, R.L., McDonald, D.G. and Wood, C.M.
Respiratory, ventilatory, acid-base and ionoregulatory physiology of the White Sucker Catostomus commersoni: The influence of hyperoxia.
J. Exp. Bio. 91:239-254 (1981).
5. Wilkes, P.R.H. and McMahon, B.R.
Effect of maintained hypoxic exposure on the crayfish Orconectes rusticus II. Modulation of haemocyanin oxygen affinity.
J. Exp. Biol. 98:138-149 (1982).
6. Wilkes, P.R.H. and McMahon, B.R.
Effects of maintained hypoxic exposure on the crayfish Orconectes rusticus I. Ventilatory, acid-base and cardiovascular adjustments.
J. Exp. Biol. 98:119-137 (1982).
7. McDonald, D.G., Walker, R.L., Wilkes, P.R.H. and Wood, C.M.
Proton excretion in the marine teleost Parophrus vetulus.
J. Exp. Biol. 98:403-414 (1983).
8. McDonald, D.G., Walker, R.L. and Wilkes, P.R.H.
The interaction of environmental calcium and low pH on the physiology of the rainbow trout, Salmo gairdneri II. Branchial ionoregulatory mechanisms.
J. Exp. Biol. 102:141-156 (1983).
9. McMahon, B.R. and Wilkes, P.R.H.
Emergence responses and serial ventilation in normoxic and hypoxic crayfish, Orconectes rusticus.
Physiol. Zool. 56:133-141 (1983).

10. Hobe, H., Wilkes, P.R.H., Walker, R.L., Wood, C.M. and McMahon, B.R. .
Acid-base balance ionic status and renal function in resting and acid exposed white suckers (Catostomus commersoni).
Can. J. Zool. 61:2660-2668 (1983).
11. Booth, C.E., McMahon, B.R., DeFur, P.L. and Wilkes, P.R.H.
Acid-base regulation during exercise and recovery in the blue crab. Callinectes sapidus.
Respir. Physiol. 58:359-376 (1984).
12. Wilkens, J.L., Wilkes, P.R.H. and Evans, J.
Analysis of the scaphognathite ventilatory pump in the shore crab Carcinus maenas. II. Pumping efficiency and metabolic cost.
J. Exp. Biol. 113:69-81 (1984).
13. Wilkes, P.R.H. and McMahon, B.R.
Responses of the stenohaline freshwater teleost (Catostomus commersoni) to hypersaline exposure. II. Transepithelial flux of sodium, chloride and 'acidic equivalents'.
J. Exp. Biol. 121:95-114 (1986).
14. Wilkes, P.R.H. and McMahon, B.R.
Responses of the stenohaline freshwater teleost (Catostomus commersoni) to hypersaline exposure. I. The dependence of plasma pH and bicarbonate concentration on electrolyte regulation.
J. Exp. Biol. 121:77-94 (1986).
15. Wilkes, P.R.H., Mandin, H., Keane, P., Kirstein, J., Wong, T. and O'Conner, M.
Circulating natriuretic peptide in rats with myocardial infarctions.
Proceedings from the First World Congress on Biologically Active Peptides, (eds. B.M. Brenner and J.H. Laaragh), Raven Press, New York, pp. 477-480 (1987).
16. Walker, R.L., Wilkes, P.R.H. and Wood, C.M.
The effects of hypersaline exposure on oxygen affinity of the blood of the freshwater teleost, Catostomus commersoni.
J. Exp. Biol. 142:125-142 (1989).
17. Stone, J.A., Wilkes, P.R.H., Keane, P.M. Smith, E.R. and Tyberg, J.V.
Pericardial pressure attenuates release of atriopeptin in volume expanded dogs.
Am. J. Physiol. 256:H648-H654 (1989).
18. Burgess, E., Duff, H. and Wilkes, P.R.H.
Propafenone disposition in renal insufficiency and renal failure.
J. Clin. Pharm. 29:112-113 (1989).

19. Wilkes, P.R.H. and Lindsay, P.
Bain Circuit occluded by a foreign body.
Can. J. Anaesth. 41:137-138 (1994).
20. Wilkes, P.R.H., Hoskin, R.W., MacCannell, K.L. and Tyberg, J.V.
Re-examination of the balloon for use in gastro-intestinal manometry.
Can. J. of Physiol. and Pharm. 72:979-984 (1994)
21. Wilkes, P.R.H.
Hypoproteinemia, strong ion difference and acid-base status in critically ill patients.
J. Appl. Physiology. 84:1740-1748 (1998)
22. Akabari, A., Wilkes, P.R.H., Lindheimer, M., Lepage, N., Filler, G.
Reference Ranges for Electrolytes and Anion Gap and Strong Ion Difference measured by Ion Specific Electrodes in Normal Pregnancy
Hypertens Pregnancy. 26:111-119 (2007)

BOOK CHAPTERS

1. Wilkes, P.R.H.
Normal Strong Ion Difference, In: Stewart's Textbook of Clinical Acid Base Medicine
eds. John Kellum, Paul Elbers, (In Press)
2. Wilkes, P.R.H., Akbari, A.
Acid-Base in Pregnancy. In: Stewart's Textbook of Clinical Acid Base Medicine,
eds. John Kellum, Paul Elbers (In Press)

PUBLISHED/PRESENTED ABSTRACTS

1. Wilkes, P.R.H., McMahon, B.R.
Ventilatory and oxygen uptake responses of crayfish to long-term hypoxic exposure.
Can. Soc. Zool. Meeting, Quebec City, Canada (1979).
2. Wilkes, P.R.H. and McMahon, B.R.
Responses to acute, severe hypoxic exposure on the crayfish, Orconectes rusticus
Can. Physiol. Soc./Am. Physiol. Soc. Toronto, Canada (1980).
3. Wilkes, P.R.H., DeFur, P.L. and McMahon, B.R.
A new mathematical description of the crustacean acid-base status.
Can. Soc. Zool. Meeting, Banff, Canada (1981).
4. Wilkes, P.R.H. and McMahon, B.R.
The role of the plasma ionic environment in determining acid-base status.
Alberta Heritage Foundation for Medical Research,
Edmonton, Canada (1982).
5. Wilkes, P.R.H., and McMahon, B.R.
Respiratory, acid-base and cardiovascular responses of the crayfish Orconectes rusticus to long term and chronic hypoxic exposure.
Int. Sym. on Gas Exchange, Gas Transport and Acid-base Regulation in Lower Vertebrates.
Max Planck Institute,
Gottingen, Fed. Resp. Germany (1982).
6. Wilkes, P.R.H. and McMahon, B.R.,
Effects of saline exposure on blood acid-base and electrolyte status in white sucker.
Can. Soc. Zool. Ottawa, Canada (1983).
7. Burgess, E., Schnurr, L. and Wilkes, P.R.H.
Inaccurate serum sodium concentration by ion selective electrode analyzers.
Letter to the Editor, Ann. Int. Med. 103:806 (1985).
8. Wilkes, P.R.H., Burgess, E. and Schnurr, L.
Erroneous measurements of sodium and chloride concentrations in hypoproteinemic patients.
Soc. Critical Care Med. Washington, D.C (1986)
Crit. Care Med. 14:406A (1985).

9. Wilkes, P.R.H., Stone, J.A., Keane, P., Smith, E.R. and Tyberg, J.V.
Role of the pericardium on release of atriopeptin by volume expansion in dogs.
Canadian Cardiovascular Society, Edmonton, Alberta (1987).
10. Wilkes, P.R.H., Hoskin, R.W., MacCannell, K.L. and Tyberg, J.V.
Re-examination of the balloon for use in gastro-intestinal manometry.
Canadian Federation of Biological Societies, Calgary, Alberta (1989).
11. Gelb, A.W., Wilkes, P.R.H., Henderson, S.M., Zhang, C.
Cerebral blood flow and metabolism during prolonged propofol anaesthesia.
Canadian Anaesthesia Society, Halifax, Nova Scotia.
Canadian Journal of Anaesthesia 40:A68 (1993).
12. Wilkes, P.R.H., Gupta, S., Legault, S.
Biological variability of P0.1 airway occlusion pressure in mechanically ventilated patients
Canadian Anesthesia Society, Ottawa, Ontario. (2003)
13. Akbari, A., Wilkes, P.R.H., Lepage, N., Filler, G.
Anion gap and strong ion difference in normal pregnancy
Canadian Society of Nephrology, Calgary, Alberta (2005)
14. Wilkes, P.R.H.
Renal Function after Cardiac Surgery
Canadian Anesthesia Society, Calgary, Alberta (June 2006)

INVITED SPEAKER/PRESENTATIONS

- 1985 Respiratory Therapists of Alberta Annual Conference
Red Deer, Alberta
"Quantitative Acid-Base"

- 1996 Ottawa General Hospital Trauma Services Conference
Ottawa, Ontario
"Inhalation Burns"

- 1996 McMaster University
Medical Rounds
"Hypo-proteinemia, strong ion difference and acid-base status in critical care"

- 1998 Canadian Anaesthesia Society
Satellite Symposium: Sponsored by Dupont Pharmaceuticals
Toronto, Ontario
"Fluid Resuscitation in Renal Failure"

- 1999 Canadian Anaesthesia Society
Annual Conference
Facilitator for Cardiovascular Poster Session
Calgary, Alberta

- 2000 Dupont
Role of Pentaspan in ICU
World Conference of Anaesthesia, Montreal
Teleconference - Ottawa

- 2001 Dupont Satellite Symposium
CAS Conference,
Halifax, Nova Scotia
Use of Pentaspan in Renal Failure

- 2002 Bristol-Myers Consensus Conference
Role of Pentaspan in High Risk Patients
Mt Tremblant, PQ

COURSES/CONTINUING EDUCATION

- 1997 Scholarly Writing Seminar
Dr. R. Lucas
University of Ottawa Research Group

COMMITTEE/ADMINISTRATIVE FUNCTIONS

University of Ottawa Library Committee (2000 -)

Vice Chair, University of Ottawa Research Ethics Board (Jan - Oct 2002)

University of Ottawa Research Ethics Board (2000 – 2002)

Director of Research (2001 - 2003)

Dept. of Anesthesia

University of Ottawa

ICU Fellows Education Committee (2004 -)

CURRENT RESEARCH ACTIVITIES

1) Biological Variability

Co-investigator in (WAVE – Weaning and Variability Evaluation) a prospective, observational study looking at various measures of respiratory variability in patients weaning from mechanical ventilator support.

Principal Investigator: Dr. Andrew Seely

Status: The protocol has REB approval and patient recruitment has been initiated

2) Post Operative Renal Impairment (PORI)

Examination of the pathophysiological changes that occur in renal function following cardiac surgery. An initial CQI study and an REB approved prospective observational study incorporating approximately 60 patients have been completed. Results demonstrate that while glomerular function may be impaired, tubular function is often preserved in patients post cardiac surgery, suggesting that acute tubular necrosis may not always be the final pathway leading to acute renal failure in this high risk population. These results have been presented as a poster at the annual Canadian Anesthesia Society in June 2006.

The second phase of the study will be to use the PET scanner in the OHI to examine changes in renal blood flow following cardiac surgery. Techniques to measure renal blood flow are currently being investigated. The final goal of this study is to develop more effective treatment approaches to acute renal failure following cardiac surgery that would be based on a documented pathophysiological time course.

Status: Application for funding for a PET study to examine renal blood flow is in progress

TEACHING EXPERIENCE

Trent University

Position: Undergraduate Laboratory Demonstrator for Biology Department

University of Calgary

Position: Graduate Teaching Assistant/Laboratory Coordinator

- lectures to Biology/premed students on Introductory
Biology/Zoology/Environmental Physiology

Position: Medical Student/Part-time Post Doctoral Fellow

- lectures to undergraduate medical students/respiratory therapy
students on electrolyte and acid-base physiology

University of Western Ontario

Position: Senior Resident

- clinical rounds and seminars to medical students and junior
residents

University of Ottawa

Position: Assistant Professor
University of Ottawa,
Dept of Anaesthesia

Clinical rounds, seminars and lectures to medical students,
anesthesia residents during core program, fellows in ICU and cardiac
anesthesia

Topics:

Pharmacokinetics/pharmacodynamics
Valvular Heart Disease
Acid-base Chemistry
Chronic Heart Failure
Fluids and Electrolytes

Course Director for 12 week Physics and Fluids Core Series for
anesthesia residents

Examiner for LMCC

