 *Curriculum Vitae*

**Harry Eugene Peery**

**AAS, BS, MS,** **PhD**

**RN (Arizona)**

***Award-Winning Teaching Professor***

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**Citizenship:** US, Canada

**Marital Status:** Married

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| **Academic Qualifications and Experience** |

A city with trees and mountains in the background

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**Foothills Medical Centre where the Cumming School of Medicine at the University of Calgary is located. I do my research here. The Rocky Mountains are 60 km to the west.**

**2021- Adjunct Professor, Johns Hopkins University, Krieger School of Arts and Sciences, Program in Biotechnology, Baltimore, Maryland.** Teach immunology to graduate students. Interaction with students is through Blackboard/Canvas and Teams is the communication medium.

**2021- Associate Member, Hotchkiss Brain Institute, Cumming School of Medicine, University of Calgary, Calgary Alberta.** I have a great interest in glioblastoma as well as other brain pathologies. I grow glioblastoma and neuroblastoma cell lines.

**2019- Associate Member, Arnie Charbonneau Cancer Research Institute, Cumming School of Medicine, University of Calgary, Calgary, Alberta.** I do cancer research in three areas: (1) imaging small tumors that cannot be seen with conventional MRI; (2) looking at the relationship between INGs (ING 1-ING-5) an epigenetic protein, on cancer. I use glioblastoma and neuroblastoma cell lines for my research; and (3) paraneoplastic neuroautoimmune disorders, the most common of which is anti-NMDA receptor encephalitis.

**2018- Affiliate Assistant Professor, Department of Bioengineering, College of Engineering and School of Medicine, University of Washington, Seattle, Washington.** Teach online courses for their Masters’ program. I teach a course in molecular and cell biology in the fall quarter and pathophysiology in the winter quarter and Drug Development in the summer quarter. I give a live lecture/discussion session twice a week for two hours through Zoom. These are recorded and podcast. I develop course activities and post my lectures via Canvas.

**2018-2020 Instructor, Online Nurse Practitioner Program, Athabasca University.** Taught N516 and N517, pharmacology and pathophysiology to nurse practitioner students. Interface with the students is through Moodle. Interaction with students is through Adobe Connect. In 2020, the College and Association of Registered Nurses of Alberta stated that only nurse practitioners could teach in the program, ending my association.

**2017-** **Instructor, Ambrose University**. (Part-time) Developed and taught The Impact of Diseases, Disorders and Drugs on World Events, Basic Medical Endocrinology, Sports Injuries Pathology and Pathophysiology, Medical Parasitology, and Human Embryology. Interaction with students is through Moodle and online through Zoom.

**2017 Helped organize indigenous First Nation tour.** This tour of the anatomy facility was for Chiniki Community College on the Stoney Nakoda First Nation Reserve in Morley, Alberta.

**2017 Anatomy course coordinator, Courses 3 and 4, Cumming School of Medicine, Undergraduate Medical Education, Preclerkship Years.** I gave the lectures, coordinated and set up all labs for anatomy and assisted in those for pathology, set-up, administered and took down the peripatetic anatomy and pathology exams (lab practicals).

**2017 Invited Speaker, Annual Meeting, Alberta College of Medical Diagnostic and Therapeutic Technologists.** Lecture title: Finding small tumors. Calgary, Alberta.

**2016** **Instructor, Department of Medical Radiologic Technology, Camosun College**, Victoria BC. (part-time, summer session),Taught a course in anatomy and a course in pathology.

**2015-2017 Volunteer High School Host, Cumming School of Medicine. University of Calgary,** Calgary, Alberta. Scheduled and hosted over 3,000 Southern Alberta high schools Biology 30 and other students who are interested in a career in health sciences over a two-week period twice each year. The students have a tour of the anatomy lab where I give interactive talks as I demonstrate normal and pathological material in the laboratory. At the end, the students are given time to explore on their own as I answer questions.

**2015-2017 Volunteer College and University host, Cumming School of Medicine. University of Calgary,** I scheduled and hosted students from **Medicine Hat College** (also gave lectures to this group), **Ambrose University** (general biology and pathophysiology), and the University of Calgary.

**2015-** **Research Associate, Laboratory of Karl T. Riabowol, Department of Oncology and Department of Biochemistry and Molecular Biology, and Arnie Charbonneau Cancer Research Institute, Cumming School of Medicine, University of Calgary.** Work on small tumor imaging using immunohistochemical microscopy techniques.

**2015-2019** **Adjunct Assistant Professor**, **January 1, 2015 – 2019. Department of Cell Biology and Anatomy, Cumming School of Medicine, University of Calgary**, Calgary, Alberta. Taught anatomy primarily to medical students, but also to undergraduate and graduate students. Also assisted with pathology instruction.

**2015-2017 Post-Doctoral Fellow, January 1, 2015 – December 31, 2017** (3-year fellowship)

**Undergraduate Medical Education and Department of Cell Biology and Anatomy, Cumming School of Medicine, University of Calgary**, Calgary, Alberta. Taught anatomy assisted with teaching pathology and help develop new approaches for medical education.

**2014-2015**. **Research Associate, Department of Obstetrics and Gynecology, Faculty of Health Sciences, Michael G. DeGroote School of Medicine, McMaster University**. Hamilton, Ontario. Part-time in the laboratory of Dr. Warren G. Foster, Division of Reproductive Biology, I continued tumor biomarker studies, smoke toxicant-induced changes in mitochondrial dynamics and anti-NMDA receptor encephalitis research.

**2013 Degree: PhD (neuropharmacology and toxicology)**. **October 27, 2013.** **Department of Pharmacology, College of Medicine, University of Saskatchewan**, Saskatoon, Saskatchewan. Developed an efficient and fast ratiometric microscopy technique for toxicity which was used to study the effect of mirtazapine and citalopram on cytoplasmic and mitochondrial calcium flux using live cell imaging.

**2012-2014 Post-Doctoral Fellow, March 1, 2012 – February 28, 2014**. (2-year fellowship) **Medical Physics and Radiation Biology, Faculty of Science, McMaster University** but paid for by **Atomic Energy of Canada (AECL)** on project site at AECL’s **Chalk River Nuclear Laboratories, Environment Technologies Branch,** Chalk River, Ontario. Dr. Carmel Mothersill, McMaster Supervisor; Dr. Marilyne Stuart, AECL supervisor. I studied the effect of low levels of radiation on mammals and started tumor biomarker immunohistochemistry studies.

**2012-** **Founding Director** and **Basic Research Director.**  Established (with three others), **The Anti-NMDA Receptor Encephalitis Foundation, Inc.,** a non-profit organization headquartered in Ottawa, Ontario. This foundation promotes education and awareness of this serious disease and helps to connect patients with physicians around the world. The Foundation website is: <http://www.antinmdafoundation.org/>

**2010-2012** **Doctoral Research Stipend**. University of Saskatchewan with the research being completed full-time at McMaster University.

**2007-2010** **Lecturer, Department of Biology, Department of Kinesiology, Department of Community Health, Brock University**, St. Catharines, Ontario. Sessional and Limited-Term appointment while completing my PhD research at McMaster University**.** Taught musculoskeletal anatomy, physiology, pharmacology, and human biology to undergraduates.

**2006-2007 Instructor, Faculty of Medicine, University of British Columbia.** Taught medical/dental histology lab under Dr. William Ovalle and facilitated small medical group of students for Doctor, Patient and Society course under Dr. Brian Conway.

**2006-2007 Lab Manager (Limited Contract) – Prionet/University of British Columbia, Department of Medicine, Division of Neurology,** **Brain Research Centre.** I assisted in setting up two permanent and one temporary prion laboratories. January 1, 2006 - May 30, 2007.

**2004-2005** **Seminole and Valencia Colleges, Hillsborough Community College, and St. Petersburg College, all in Florida**. Taught anatomy and physiology, environmental science, microbiology, pharmacology, general biology to nursing students while helping family during father-in-law’s terminal illness.

**2002-2004** **Instructor, Department of Pathology and Laboratory Medicine, University of Saskatchewan.** Taught a complete pathology course to undergraduates and pharmacy students and gave lectures to medical students.

**2002-2013** **PhD** **Graduate Student** (neuropharmacology) **Department of Pharmacology, College of Medicine, University of Saskatchewan.** Most of the research was done in the **Department of Pathology and Molecular Medicine, Michael G. DeGroote School of Medicine, Faculty of Health Sciences, McMaster University**, Hamilton, Ontario. Research focus: calcium imaging (ratiometric and linear) using spinning disc confocal microscopy and fluorescent microscopy to study glutamate excitotoxicity.

**2000-2002** **Trauma rounds, University of Arizona Health Sciences Centre.** I worked as an RN with surgeons on trauma where I assisted surgeons in debriding, reducing and repacking wounds. Also, I worked with a neurosurgeon to develop an MD resident program in neurosurgery.

**2000-2002 Adjunct Instructor, Arizona State University, Glendale Campus**, **College of Science**. Part-time. Taught immunology, parasitology, epidemiology, advanced human physiology to undergraduates; taught complete graduate course in neuroanatomy. Left due to 9-11 state budgetary cuts.

**2000-2001 Adjunct Instructor, Department of Pharmacology, College of Pharmacy, Midwestern University, Phoenix Campus**. Taught neurology case studies, pharmacology. Left due to 9-11 state budgetary cuts.

**1999-2002** **Instructor, Department of Pharmacology, College of Pharmacy and Department of Biobehavioral Health, College of Nursing (joint appointment), University of Arizona, Tucson, Arizona.** Taught pharmacology to nursing and pharmacy students, taught biochemistry to pharmacy students, taught several mini courses related to health in the College of Nursing. Left due to 9-11 state budgetary cuts.

**1988-1998 Lecturer, Department of Physiology and the Department of Pharmacology and the Department of Anatomy, University of Toronto, Faculty of Medicine.** Taught anatomy, histology, physiology, and pharmacology courses to undergraduates and medical students. Did research on the aluminum in etiology of Alzheimer disease. Lecturers eliminated due to provincial budgetary cuts.

**1986-1988 Adjunct Associate Professor, Department of Comparative Medicine, New York State College of Veterinary Medicine at Cornell University,** Ithaca, New York. (Part-time Summer Session) Taught human anatomy and physiology using cadaver prosections to veterinary and anthropology graduate students. Left to accept full-time position at the University of Toronto.

**1985-1988** **Research Assistant, Department of Veterinary Microbiology and Department of Pathology,** **New York State College of Veterinary Medicine at Cornell University,** Ithaca, New York. Set up and managed electron microscopy laboratory. Studied feline cardiomyopathy with the electron microscope. Studies directed by Dr. Charles G. Rickard, DVM, Chair, Department of Pathology and Associate Dean and Dr. James H. Gillespie, DVM, Chair, Department of Veterinary Microbiology and Immunology. Also, worked with Dr. Alexander (Sandy) de Lahunta on dog heartworm disease. Left to accept full-time position at the University of Toronto.

**1985-1986** **Medications Clinical Instructor, Department of Nursing, SUNY Tompkins Cortland Community College, Dryden, New York.** Worked with nursing students on clinical rounds and taught them clinical pharmacology.

**1984-1988** **Registered Nurse, Tompkins Community Hospital.** Did med-surge, critical care, ER nursing. I worked with internal medicine specialists in cardiology and neurology.

**1984-present Registered Nurse** (New York State License # 371510: 1984-88 inactive since 1988; Arizona License # RN 108316 Registered from 1999- present, active).

**1984 NCLEX-RN** Exam taken and passed.

**1984 Degree: Associate in Applied Science** (**Nursing),** **With Honors**. Tompkins Cortland Community College, Dryden, New York.

**1980-82** **Adjunct Assistant Professor**, **Division of Nursing, State University of New York College of Technology (now SUNY Polytech Institute),** Utica, New York. I taught advanced physiology, medical genetics, and epidemiology to graduate nursing students.

**1980-81** **Adjunct Assistant Professor**, **Department of Physical Therapy, School of Health Sciences and Human Performance,** **Ithaca College**, Ithaca, New York. Taught anatomy to physical therapy students for an instructor on sick leave.

**1978 Degree: ABD, Master of Science** **(microbiology/immunology – environmental toxicology),** The Ohio State University, Columbus, Ohio. Electron microscopy studies were done on the effects of chlorinated hydrocarbon pesticides on cellular ultrastructure of *Flavobacterium* sp. Isolated from Lake Erie. Virology, immunology, and epidemiology including food microbiology were an extensive part the educational program. **Protein biochemistry** was the subject area of the required minor.

**1977-1982** **Adjunct Assistant Professor**, **College of Health Sciences, Alfred University,** Alfred, New York. Part-Time. Taught EKG-Coronary Care, Medical Virology and Hospital Infection Control to graduate nurses.

**1975-1988** **Assistant Professor** and then **Associate Professor**. **Department of Biology and Department of Nursing,** Tompkins Cortland Community College (provided biology and nursing (1984-88) instruction. I taught anatomy, physiology, pharmacology, acid-base balance (workshop), biology, microbiology to pre-health professions and nursing students. Courses taught were accepted at Cornell University.

**1974-75** **Instructor,** **Department of Biology, SUNY College at Cortland**, Cortland, New York. Full-time (sabbatical leave replacement). Taught anatomy and physiology and general biology.

**1973-75 Substitute Teacher, Jamesville-Dewitt and Fayetteville-Manlius School Systems (New York State).** Taught advanced math and science and biology and earth sciences to students in middle and high schools.

**1966-1972 MD Basic Sciences part of MD-PhD program:**  **College of Medicine, Ohio State University**, Columbus, Ohio. All basic science coursework and some clinical work equivalent to that of the first two years plus of an MD program (which included genetics, immunology, embryology, microbiology, pathology, epidemiology, statistics) but as a PhD student on an NIH Pre-doctoral Fellowship, Officially, I lack the clinical part of the program (it was then - and still is - not funded by the NIH).

**1966 Bachelor of Science, Syracuse University, Syracuse, New York** (Major: microbiology and immunology; Minors: Chemistry, genetics, German**)**

**1962** **Laboratory Instructor**, **Department of Zoology, Arizona State College (now Northern Arizona University),** Flagstaff, Arizona. Taught labs for Zoology and Comparative Anatomy; in the fall of 1962, coordinated all labs in the Department.

**1961-1962** (No Degree**). Department of Zoology, Arizona State College at Flagstaff (now Northern Arizona University)**. Transferred to Syracuse University for completion of degree.

**Clinical work**: 6 years total part time in ICU, CCU, Trauma and ER Departments as well as on wards as a medical student (unofficial) and as an RN.

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| **Research Interests** |

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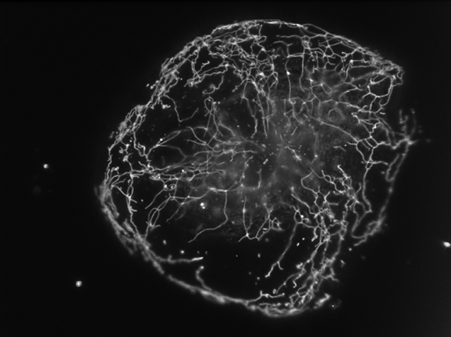
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**Immunohistochemistry of a potential biomarker on live glioblastoma cells. Confocal 60x. Atto 390 conjugated with antibody. Harry E. Peery**

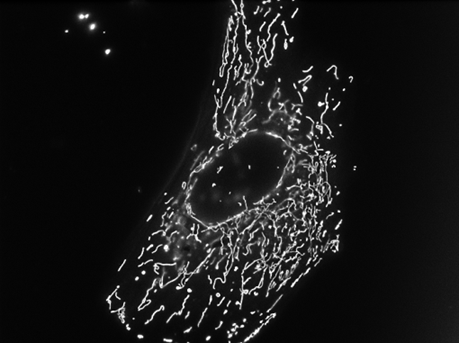
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**Neuroblastoma cells from a bone metastasis. Live cells. Flo4, 100x oil. Confocal. Harry E. Peery**

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**Unstressed mitochondria in a live human granulosa cell from an ovarian follicle. The mitochondria form a network within the cell. Mito tracker deep red is the fluorophore, and it was imaged by a Cool Snap CCD camera using a 1 x 81 Olympus scope equipped with a spinning disc and a red filter set. Light source was ExCite. X 63. Harry E. Peery**

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**Stressed mitochondria in a live human granulosa cell. They are no longer totally networked but instead are rolling up into balls (dots of light) and circling the nucleus.  The stressor was benzo [a] pyrene a known toxicant present in cigarette smoke. Mito tracker Deep Red is the fluorophore. Same system set up as with the above image. Harry E. Peery**

**A. Diagnostic and Intraoperative Tumor Imaging**

At the present time, a tumor cannot be imaged until it has reached 30 divisions. By using immunohistochemical techniques to target unique surface tumor markers, the goal is to image tumors below the current threshold of one million cells. This concept has been observed in vitro using glioblastoma and neuroblastoma cell lines.

Using the same approach but different contrast media, a second goal is to provide intraoperative imaging of the tumor and its extensions. This is particularly important in brain tumors, whose extensions are currently impossible to delineate, leading to the resurgence of the tumor and lethal outcome. A recent advance has been the ability of antibodies to passage the blood brain barrier. By coupling that technique with immunofluorescent technology, the intracranial extent of the tumor can be better visualized by the surgeon. Extracranially, the same technique will enable the surgeon to find not only the primary tumor but also metastases.

**C. Tumor Metastasis and Transformation**

Malignant neoplasms undergo transformation and how this occurs is the object of a research grant that was awarded by the Canadian Cancer Society to Karl Riabowol and Harry E. Peery.

**B. Paraneoplastic Neuroautoimmune Disorders**

Anti-NMDA receptor encephalitis (NMDA receptor encephalitis, ANMDAR encephalitis) is a new paraneoplastic neuroautoimmune disorder first characterized in 2007 and affects primarily female adults and children. Recently (April 2016), it has also been found in a polar bear. Initially associated only with imageable tumors, it has since been diagnosed in patients without imageable neoplasms. Putatively, most of those growths are below the critical number of cells (one million) in a tumor mass needed for imaging. Using the techniques described above, it will be possible to visualize the location of previously unseen tumors that are believed to trigger the disorder.

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| **Publications Related to the Above Research Interests** |

1. Peery HE, Day G, Doja A, Xia, C, Fritzler, M, Foster, WG. Chapter: Anti-NMDA Receptor Encephalitis in Children. In *Elsevier’s Handbook of Clinical Neurology: Pediatric Neurology*. May 2013. *2 citations*.
2. Day, GS, and Peery HE. Autoimmune synaptic protein encephalopathy syndromes and the shrinking divide between mental illness and neurological disorders. *Health Science Initiative, 2013* *Advances, Challenges and Controversies in the Diagnosis, Treatment and Management of Mental Health and Neurological Disorders.* 2013.
3. Peery HE, Day G, Dunn S, Fritzler M, Prüss H, Doja A, Xia C, Mossman K, Resch L, De Sousa C, Sakic B, Foster WG. Anti-NMDA receptor encephalitis. The disorder, the diagnosis and the immunobiology. *Autoimmunity Reviews*. 11:863-872 (2012). *31 citations*.

**Other Publications**

1. Rapkiewicz, A., MD (NYU). Alpert, J., MD (NYU), Evans, L., MD (NYU) and Peery, H.E., PhD (University of Calgary) integrated anatomy, histopathology, physiology, pathology, and radiology for students. In preparation. I am one of two coordinators of this project (contract signed)

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**Published March 2021. I am the corresponding author, editor, and recruiter for the textbook.**

1. Holt, E, MD (Yale University) Lee, G**.,** MD (Yale University), Lupsa, B., MD (Yale University), Bassyouni, H., MD (University of Calgary) and Peery, HE, PhD (University of Calgary). Basic Medical Endocrinology, 5th ed. (Elsevier, March 26, 2021). I am the corresponding author and editor of this project.
2. Pritchett-Corning K, Peery HE, Wyatt H, Crossland J, Stuart M, Mothersill C. Re-derivation of deer mouse, *Peromyscus maniculatus*. *Journal of the American Association for Laboratory Animal Science*. Jul;54(4):439-44, 2015.
3. Walsh S, Satkunam M, Su B, Festarini A, Bugden M, Peery HE, Mothersill C, Stuart M. Health, Growth and reproductive success of mice exposed to environmentally relevant levels of Ra-226 via drinking water over multiple generations. *International Journal of Radiology*, Jul;91(7):576-84, 2015.
4. Burnside, D., Moteshareie, M., Galvan-Marquez, I., Hooshyar, M., Samanfar, B., Samanfar, B., Omidi, K., Peery, H., Smith, M.L., and Golshani, A. Use of chemical genomics to investigate the mechanism of action for inhibitory bioactive natural compounds In G. Brahmachari (Ed.), Bioactive Natural Compounds: Biology and Chemistry. Wiley-VCH, Weinheim, Germany, 2015
5. Peery HE. Citalopram and Mirtazapine Effects in Changes in Fura2 and FuraFF Ratiometric Fluorescence Levels in C6 and SH-SY5Y Cell Lines Using Microplate and Ratiometric Microscopy. PhD Thesis. Department of Pharmacology, University of Saskatchewan. April 2013.

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**Published in 2010. The two volumes together had almost 1,000 pages**.

1. Peery HE, and Peery SB. Biology: A Human Health Perspective: A Case-oriented pathophysiological approach to human biology. Volume II, Pearson Canada, 2010. 544 pp.
2. Peery HE and Peery SB. Biology: A Human Health Perspective: A Case-oriented pathophysiological approach to human biology. Volume I, Pearson Canada, 2010. 407 pp.
3. Lehto MT, Peery HE, and Cashman NR. Current and future molecular diagnostics for prion diseases. *Expert Review in Molecular Diagnostics 6*(4): 597-611, 2006. *11 citations*.
4. Peery HE, Strohmeyer R, Rogers J. Cellular and molecular mechanisms of Alzheimer’s disease inflammation. Chapter 1, in Rogers J., ed. *Neuroinflammatory mechanisms in Alzheimer’s disease*. Birkhauser Press, Boston. 2001. *2 citations*.
5. Peery HE. Two women: The impact of their health care on the discovery of digitalis. *Journal Society of Obstetricians and Gynaecologists of Canada*. April 1993 (333-335)
6. Peery HE. Tuberculosis, women’s fashion, and the romantic period. *Journal of The Society of Obstetricians and Gynaecologists of Canada*, February 1993 (214-216)
7. Peery HE. Alexander Gordon and the mode of transmission of puerperal fever. *Journal Society of Obstetricians and Gynaecologists of Canada*, January 1993 (97-99)
8. Peery HE. Magnesium sulfate. *Journal Society of Obstetricians and Gynaecologists of Canada*, December 1992.
9. Peery HE and Singer MA. *Microbiology Study Guide*, Macmillan, 1984 (416 p).

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| **Fellowships, Scholarships, Awards and Nominations** |

1. 2018. February 6, 2018. Medical School Excellence in Teaching. Cumming School of Medicine’s Class of 2019: “A special class award and class jersey, in acknowledgment of your outstanding contributions to our pre-clerkship training 2015-2017.”
2. 2017. February 7, 2017. Medical School Excellence in Teaching. Cumming School of Medicine’s Class of 2018: “A class jersey and a special class award, in acknowledgment of your outstanding contributions to our pre-clerkship training in 2016.” Medical School Excellence in Teaching. One of 8 recipients out of a teaching faculty (clinical and basic science) of over 200.
3. 2016. Honour Roll: recognizing outstanding faculty for their excellent teaching during pre-clerkship training of the Cumming Medical School class of 2017.
4. 2015-2017. Postdoctoral Fellowship and Adjunct Assistant Professorship, Department of Cell Biology and Anatomy and Undergraduate Medical Education, Cumming School of Medicine, University of Calgary, Calgary, Alberta, Canada. January 1, 2015 - December 31, 2017.
5. 2012-2014. McMaster/AECL Postdoctoral Fellowship, Chalk River Nuclear Laboratories, Chalk River, Ontario. March 1, 2012 – February 28, 2014.
6. 2008. Nomination, Ontario Lecturer of the Year. TVO Ontario, 2008.
7. 2003. CIHR Young Scientist Scholarship to attend the prion conference held in Edmonton, Alberta, September 25-27, 2003.
8. 1989-1998. “Highly Recommended Lecturer” SAC (Student Administrative Council), Anticalendar, University of Toronto, 1989-98.
9. Honorable Mention, Excellence in Teaching, Student Administrative Council, University of Toronto.
10. Nomination for State University of New York Chancellor’s Award for Excellence in Teaching.
11. NIH Pre-Doctoral Fellowship, Ohio State University
12. NSF Undergraduate Research Fellowship, Syracuse University.

**Teaching Statement**

My method of teaching is to relate, as much as possible, the content to clinical situations using case histories wherever possible. This promotes interest on the part of the student and helps him or her retain the information.

I am student-focused, with a goal to ascertain knowledge level and learning objectives at the outset so that the course material and depth can be best suited to the learners.

This is followed by mid-term and end-of-term assessment of how well the learning objectives were achieved though student questionnaires.

I am sensitive to alternative learning styles and the benefits of having material on the web so that students can access the material when they are most ready to consume the learning materials.

Depth of information presented is adjusted for undergraduate, graduate, medical, dental, and nursing students.

All material is in PDF PowerPoint format and is uploaded to Blackboard, D2L, Canvas, Moodle or a similar web-based portal. Interaction with online students is through Adobe Connect, Zoom, or Teams.

**University/Upper Division College Courses Taught**

A bookshelf with many books

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**Part of my medical library and 3 of my 4 computer screens.**

***Anatomy:***

**Anatomy**: Lectures only

**Camosun** **College** (Taught second half of course to medical radiology technician students.)

**Comparative Anatomy**

**Northern Arizona University** (Taught zoology and comparative anatomy labs and gave some of the lectures. Animals dissected in included the eel, shark, frog, fish, bird, fetal pig, and cat.)

**Gross Human Anatomy: Cadaver dissection**

**University of Calgary** (Taught pathology residents, medical and graduate students.)

**Gross Human Anatomy** using **human cadaver prosections**:

**Cornell University** (Proposed, developed, taught, and arranged with SUNY Upstate Medical Center to collaborate in providing cadaver prosections and arranging for a funeral director to deliver same for a complete course in gross anatomy and human physiology to graduate veterinary students and graduate anthropology students.)

**Tompkins Cortland Community College/Cornell University** (Proposed, developed, taught, and arranged with SUNY Upstate Medical Center to collaborate in providing cadaver prosections and arranging for a funeral director to deliver same for a complete course in gross anatomy and human physiology for pre-med, pre-health professions and nursing students.)

**University of Calgary** (Taught medical students and graduate students - several courses.)

**University of Toronto** (Taught complete course to pre-med students.)

**Gross Anatomy** using monkey cadavers:

**Ithaca College** (Taught complete course to physical therapy students.)

**Histology:**

**University of Calgary** (Taught normal histology to pathology residents.)

**University of British Columbia** (Taught lab to medical and dental students.)

**University of Toronto** (Taught complete course.)

**Musculoskeletal Anatomy**

**Brock University** (Taught complete course to kinesiology and nursing students.)

**Neuroanatomy:** **Arizona State University** (Proposed, developed, and taught complete graduate course using human cadaver material.)

**Clinical neurology problem-based learning**:

**Midwestern University, Arizona campus** (Wrote problems and facilitated complete course.)

**University of Arizona** (Wrote problems and facilitated small groups for pharmacy course.)

***Anatomy and Physiology:***

**Cornell University, Ithaca Campus. College of Veterinary Medicine:** (Proposed, developed, taught, and arranged with SUNY Upstate Medical Center to collaborate in providing cadaver prosections and arranging for a funeral director to deliver same for a complete course in gross anatomy and human physiology to graduate veterinary students and graduate anthropology students.)

**Seminole State College,** Sanford, Florida: (Taught complete course.)

**State University of New York College at Cortland:** (Taught complete course.)

**University of Calgary**: (Taught most of anatomy and physiology for biomedical sciences in the Faculty of Engineering.)

**Athabasca University, Calgary Campus.** Teach anatomy and physiology to BSc nursing students. One section of 28 students. This is a live lecture – unusual for a university that is almost completely online.

***Biochemistry*:**

**University of Arizona** (Gave lectures and facilitated small group tutorials.)

***Biology***:

**Non-Majors Biology**

**Brock University** (Developed, wrote a textbook for, and taught a complete course including an on-line version of the course. My class had 1,000 students divided into two lecture and 50 lab sections. I taught the lecture section and coordinated the lab sections.)

**Majors Biology**

**State University of New York College at Cortland** (Developed and taught complete course.)

***Biostatistics:***

**University of Ottawa** **at Pembroke,** BScN (nursing) Program. (Developed and taught complete course.)

***Cardiology (ECG-Coronary Care):***

**Alfred University,** Alfred, New York. (Developed and taught complete course for graduate nurses.)

***Cell and Molecular Biology:***

**University of Washington, Seattle Campus. Department of Pharmaceutical Bioengineering.** (Developed and taught complete course in cellular and molecular biology in their Masters’ program.)

**Tompkins Cortland Community College/Cornell University.** Dryden/Ithaca, New York. (Proposed, developed, and taught complete course as first term of anatomy and physiology course.)

***Comparative Vertebrate Anatomy*:**

**Northern Arizona University** (Taught labs and gave some lectures.)

***Electron Microscopy:***

**Ohio State University,** Columbus, Ohio(Taught labs and gave some lectures.)

***Embryology:***

**Ambrose University** Calgary, Alberta. (Proposed, developed, and taught complete course.)

**Northern Arizona University** (Taught labs and gave some lectures.)

***Endocrinology***

**Ambrose University (Calgary)** (Proposed, developed, and taught complete course in medical endocrinology).

***Epidemiology:***

**Arizona State University** (Developed and taught complete course.)

***Genetics and Epigenetics:***

**SUNY College of Technology** (Developed and taught complete course in medical genetics)

**University of Washington** (as part of the cell and molecular biology course, genetics and epigenetics was a major part of the course which I developed and taught online).

***Geriatrics:***

**University of Arizona, Tucson, Arizona** (Developed and held a workshop on geriatric cardiology.)

***History of Medicine***:

**Ambrose University** (Calgary). Taught complete course on The Impact of Diseases, Disorders and Drugs on World Events. Integrated basic biology behind the clinical problem afflicting the subject of the lecture.

**University of Saskatchewan** (Gave lectures to medical students.)

***Hospital Infection Control:***

**Alfred University,** Alfred, New York(Developed and taught complete course.)

***Immunology:***

**Johns Hopkins University** (Developed lectures and taught complete course)

**Arizona State University** (Developed and taught complete course.)

**University of Ottawa,** Pembroke Campus: (Topic integrated with microbiology. Developed and taught complete course.)

***Impact of diseases, disorders, and drugs on history****:*

**Ambrose University (Calgary)** (Developed course and gave all lectures.)

**University of Saskatchewan** (Gave lectures to medical students.)

***Medical Ethics and Legal Medicine*:**

**University of Saskatchewan**: (Gave lectures to medical students.)

**University of British Columbia** *Doctor, Patient and Society Course*, (Facilitated small group discussion.)

***Medical Genetics:***

**State University of New York College at Utica/Rome** (Developed/taught complete course.)

***Medical Parasitology:***

**Ambrose University,** Calgary, Alberta (Proposed, developed, and taught complete course.)

**Arizona State University** (Proposed, developed, and taught complete course.)

***Microbiology (medical):***

**Ohio State University** (Gave lectures, taught labs.)

**University of Ottawa,** Pembroke Campus: (Topic integrated with immunology. Developed and taught complete course.)

***Hospital Infection Control:***

**Alfred University,** Alfred, New York(Proposed, developed, and taught complete course.)

***Molecular Biology***

**University of Washington, Seattle Campus. Department of Pharmaceutical Bioengineering.** (Developed and teach complete course in cellular and molecular biology in their Masters’ program.)

***Neurology***

**Clinical** **Neuroanatomy**: **Arizona State University** (Proposed, developed and taught complete graduate course.)

**Clinical neurology problem-based learning**:

**Midwestern University**, Arizona campus (Wrote problems and facilitated small group course.)

**University of Arizona** (Wrote problems and facilitated small groups for course.)

***Pathology (introductory):***

**University of Saskatchewan** (Taught complete course.)

**Camosun** **College**, Victoria, BC (Taught complete course.)

***Pathology (medical):***

**University of Calgary (**Gave lectures to pathology residents and assisted in teaching medical students.)

**University of Saskatchewan** (Gave lectures.)

***Pathophysiology****:*

**Athabasca University,** Athabasca, Alberta. Taught complete sections for nurse practitioner program

**Ryerson University,** Toronto, Ontario (Developed and taught complete course.)

**University of British Columbia** (Gave lectures for the nurse practitioner program.)

**University of Washington, Seattle Campus** (Developed course and gave lectures for Masters’ program in pharmaceutical bioengineering)

***Pharmacology:***

**Athabasca University** (Taught sections for nurse practitioner program)

**Brock University** (Developed and taught complete course.)

**St. Petersburg College** (Developed and taught on-line and in-class pharmacology.)

**University of Arizona** (Developed and taught complete course.)

**University of British Columbia** (Gave lectures to nurse practitioner program.)

**University of Saskatchewan** (Gave lectures in medical and undergraduate courses.)

**University of Toronto** (Gave lectures.)

***Physiology******(medical****):*

**Arizona State University** (Proposed, developed, and taught complete course.)

**University of Saskatchewan** (Wrote problems and facilitated small group problem-based learning for medical students.)

**University of Toronto** (Taught four complete courses and gave lectures to medical students.)

***Veterinary Medicine***

**Cornell University/State University of New York Veterinary College, Ithaca, New York**. Taught graduate veterinary students human anatomy and physiology and some human pathology.

***Virology (medical):***

**Alfred University,** Alfred, New York (Proposed, developed, and taught complete course.)

***Zoology:***

**Northern Arizona University** (Taught labs gave some lectures.)

**Two-Year College Courses Taught**

***Anatomy and Physiology:*** (Taught complete course to nursing students.)

**Centennial College**, Toronto, Ontario

**Hillsborough Community College**,Tampa, Florida

**Maria Regina College,** Syracuse, New York

**Phoenix College**,Phoenix, Arizona

**Pima Community College**,Tucson, Arizona

**Saskatchewan Institute of Applied Science and Technology (Kelsey Campus),** Saskatoon, Saskatchewan

**Seminole State College,** Sanford, Florida

**Tompkins Cortland Community College**, Dryden, New York

**Valencia College**, Orlando, Florida

***Biology***: (taught complete course)

**Valencia College** (Orlando, Florida)

***Chemistry:*** (taught complete general chemistry course)

**Centennial College,** Toronto, Ontario

***Environmental Science:*** (Developed and gave complete course - including many field trips - to university stream students.)

**Seminole State College,** Sanford, Florida

**Valencia College**, Orlando, Florida

***Medical Terminology*** (taught complete courses)

**Centennial College**, Toronto, Ontario

**George Brown College**, Toronto, Ontario

***Microbiology (medical)*** (Taught complete course to nursing students.)

**Centennial College**, Toronto, Ontario

**Hillsborough Community College**, Tampa, Florida

**Pima Community College**, Tucson, Arizona

**Tompkins Cortland Community College**, Dryden, New York

**Valencia College**, Orlando, Florida

***Pathophysiology****:* (Taught complete course to nursing students.)

**George Brown College**, Toronto, Ontario

**Centennial College**, Toronto, Ontario

***Pharmacology:***(Taught complete course.)

**Pima Community College**, Tucson, Arizona

**Tompkins Cortland Community College**, Dryden, New York

**Laboratory Skills and Techniques**

**1. Tissue culture of cells including cancer cell lines.**

**2. Microscopy:**

**a. Inverted microscope live and fixed cell fluorescent microscopy.**

i. LED illumination source.

ii. Confocal laser illumination source.

iii. Excite illumination source with a spinning disc.

iv. Ratiometric microscopy imaging intra-mitochondrial and intracellular calcium using Fura FF, Fura2, Flo4.

v. Fluorescent dyes: Mitotracker Deep Red, Anexin V, Propidium iodide, Calcein, etc.

**b. Phase contrast and differential interference contrast (DIC) microscopy (Nomarski).**

**c. Electron microscopy – transmission (using Zeiss, Philips, JEOL, and Hitachi scopes).**

i. Staining.

ii. Fixation and thin sectioning (using Sorvall MT2B, Reichert, and LBK ultramicrotomes with diamond or glass knives).

iii. Electron energy loss spectroscopy (EELS).

**3. Fluorescent immunohistochemistry.**

**4. Histology.**

**5. Histopathology.**

**6. Microplate preparation, seeding and reading.**

**7. Live and fixed cell imaging.**

**8. Anatomical and microscopic pathology.**

References

**Laboratory Research**

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