



UNIVERSITY OF ALBERTA

Faculty of Medicine & Dentistry DEPARTMENT OF MEDICINE Annual Report 2016

## COVERS



**Shereen Hamza**, PhD, *University of Alberta*

Dr. Hamza studies the complex cross-talk between heart and kidneys. As a post-doctoral fellow at the University of Mississippi Medical Center, she developed a novel way to record renal sympathetic nerve activity in conscious mice. She is now doing her second post-doctoral fellowship in the Department of Medicine, with Dr. Branko Braam. Shereen also is a teaching assistant professor in the Department of Physiology. With her extensive mentoring, research and teaching record, we anticipate that she will have a successful career in health research.



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This year, we are launching a new format for the Department of Medicine Annual Report. We have always prepared reports for the Dean, for Alberta Health Services, and for Alberta Health, but they tended to be highly technical, detailed and dry and fell short of telling and sharing the story...or stories...of our community.

I am hopeful that this new annual report format will not only serve to tell each other, and the community around us, who we are and what we do—but will also capture our stories for posterity.

*Dr. Barbara J. Ballermann*

# Chair's Message



**In all its complexity, the Department of Medicine is Community. Together, we learn and teach, we help and sometimes cure, we search for understanding and for better ways of doing things. We each contribute our part, whether as a shining example of progress, scholarship or leadership, as teacher, clinician or investigator, as learner, administrative or research staff, we all contribute in many, many ways and for the greater good.**

2016 was a year of some anxiety about money. We had to recognize that AHFMR funding will draw its final breath in 2017, and that there are ceilings on university and Alberta Health Services (AHS) derived support. The Canadian Institutes of Health Research (CIHR) reform created research funding gaps and challenges, and we anticipate more changes at Alberta Innovates. We have been heavily engaged in creating a new province-wide funding plan for academic physicians, into which our Academic Alternate Relationship Plan (AARP) will transition in 2017. Probably most important is the realization that research and innovation will increasingly require financial support from non-government sources. Even with these challenges we continue to do well. Without question, the foresight of leadership that established our AARP some 15 years ago allowed us to absorb some of the recent punches felt more keenly by non-AARP departments.

In 2016, we began to see elements of our 2014 strategic plan bear fruit. We had aimed to put in place a core group of trained quality improvement (QI) experts who would enhance efficacy, safety and cost-effectiveness of patient care, and who would provide QI training for residents and other learners. We wanted QI work to become a natural part of our residents' future practices. Narmin Kassam took the lead in establishing the Strategic Clinical Improvement Committee. With support from Pam Mathura, and the QI leads from all our clinical sections, the committee has launched several QI projects aimed at improving outcomes for hospitalized patients and those treated in our many multidisciplinary and specialty clinics. This QI initiative is also a nod to Ann Colbourne, former General Internal Medicine (GIM) Division Chief, whose leadership on the Care Transformation QI project has resulted in a sustained ~15 per cent shorter-than-expected length of stay for patients admitted to our GIM units. We are very proud of this achievement and can credit sustainability to the hard work of Narmin and her GIM team. We can be justly proud of our solid organ and islet cell transplant programs, noting that the pulmonary transplant team took on lung transplantation for the Manitoba program in 2016 and has few rivals when it comes to patient outcomes.

**Also in 2016, we saw a major effort towards the development of the new residency training curriculum to address the Royal College of Physicians and Surgeons of Canada's Competence by Design (CBD) initiative. Under the leadership of Darryl Rolfson and Bruce Fisher, the Core Internal Medicine Residency Program has developed a comprehensive plan that will also support the transition to CBD by our other 13 residency programs. The core internal medicine program will launch CBD one year early in 2017. Many clinician teachers have stepped up to serve as advisors and I hear that our residents are embracing the change. I smile when I see these young colleagues adopting mobile apps to support their own steps towards competency. Clearly, the future is now.**

While we can unabashedly take pride in the excellence of our Core GIM, specialty and subspecialty clinical training programs, too few of our residents opt for rigorous research training, even though it is the best way of assuring subsequent career success in academic medicine. Our graduate program in experimental medicine, now under the leadership of Sean McMurtry, has enjoyed many years of success, with well over 50 students working towards their MSc or PhD at any given time. The relatively new Translational Medicine Program developed and led by Evangelos Michelakis, Raj Padwal and Hari Vliagoftis, has added a needed element to the graduate program, being accessible and relevant to residents and fellows as well as non-MD graduate students. It teaches research concepts and methodology across the preclinical, clinical, outcomes and health services pillars and is ideally suited for those who wish to begin their coursework towards the MSc during clinical training. Now in its fourth year, the Translational Medicine Graduate Program is a wonderful example of personal initiative that is propelling this department forward.

In 2016, the City of Edmonton launched its strategic Health City initiative, aiming to put Edmonton squarely on the world map as a recognized hub for health technology and health research development. Advances in technology by investigators in our department all align with this initiative.

For instance, the molecular microscope approach developed by Phil Halloran; the advanced practice of spyglass cholangioscopy led by Gurpal Sandha; and the bionic prostheses and wearable devices that can sense their environment, being developed by Vivian Mushahwar, Jacqueline Hebert and Patrick Pilarski.

Advanced MRI imaging to diagnose heart transplant rejection and cardiac toxicity of cancer chemotherapy developed by Ian Paterson; spine imaging to define the severity and progression of ankylosing spondylitis developed by Walter Maksymowych; and Sanjay Kalra's work aiming to use brain MRI as a biomarker for amyotrophic lateral sclerosis, are all gaining worldwide attention. Research to define molecular and cellular mechanisms of disease includes, the discovery by Jack Jhamandas that amylin receptor blockage markedly slows progression in a model of Alzheimer's disease; the work by Evangelos Michelakis showing that mitochondrial energy metabolism plays a major role in out-of-control cell proliferation; and Andrew Mason's findings that the human beta retrovirus may be a disease-causing agent in primary biliary cirrhosis are all examples of work that will undoubtedly be translated into therapy for our patients in the future.

A major advantage of the Alberta health-care system has been the accumulation of massive amounts of health information stored in provincial databases. Together with Alberta's Strategy for Patient Oriented Research (SPOR) SUPPORT Unit, originally developed under the leadership of our own Finlay McAlister, members of our department now have unparalleled access and support for patient-oriented research. Among the many investigators in the department taking advantage of this infrastructure are Sumit Majumdar, who is defining optimal approaches to fracture risk in patients with osteoporosis; Finlay McAlister, who is defining cardiovascular risk and therapeutic strategies; and Raj Padwal, Ross Tsuyuki and Jennifer Ringrose, who are tackling hypertension control from the perspective of patient, community and population.

Edmonton is also recognized internationally for patient-oriented research and clinical trials in cardiovascular disease, under the leadership of Justin Ezekowitz and Paul Armstrong; for viral hepatitis research led by Stephen Shafran, for stroke research led by Ken Butcher, Tom Jeerakathil and Ashfaq Shuaib; and for inflammatory bowel disease work by the team of Richard Fedorak, Karen Kroeker, Karen Madsen and Leo Dieleman.

Finally, because of our unique geographic location, about 40 per cent of the people we serve live outside Edmonton, in northern Alberta, northeast British Columbia, northwest Saskatchewan and the Northwest Territories. This vast area, some of which can only be accessed by air, certainly needs approaches in care delivery that are different from those that work well in your run-of-the mill urban environment.

Development of IT solutions to deliver better health care at a distance has been championed by Aminu Bello in nephrology, by the Telestroke Program, by Richard Long for tuberculosis management and by Nizam Ahmed for epilepsy training and consultation, among others. Work in this area clearly has global reach, particularly for countries with underdeveloped health systems where local access to health care is poor.

Challenges facing our Indigenous communities, including food security, access to clean water and preventive approaches to health are being tackled by Sangita Sharma whose focus is on nutrition and disease prevention in First Nations and peoples of the North. Even so, the care gap for our Indigenous people, whether living in remote communities or right here in Edmonton, still needs much greater attention, something we need to tackle.

There is not enough room for me to give credit to and highlight the achievements of every person in this large department, so forgive me if I did not mention you or your team this year. Please dig a little in these pages to discover more, and come back next year. On behalf of the department members I want to thank the many donors who have provided us with funding, the University Hospital Foundation for tremendous support, the Faculty of Medicine & Dentistry and University of Alberta for help at every turn, and the Ministry of Health for funding of the AARP and all the clinical work we do. From my vantage point, I can see how support turns into achievement and I get to understand how we move medicine forward through the work we do. Thanks for letting me share some of this with you.

**Barbara J. Ballermann, MD**

*Professor and Chair, Department of Medicine, University of Alberta  
Head, Clinical Department of Medicine, AHS Edmonton Zone*

The Department of Medicine in all its complexity is a true community. Together, we learn and teach, mentor and support, search for understanding and for better ways of doing things.

*Dr. Barbara J. Ballermann*



# SPOT LIGHT

There were many notable achievements by department members in 2016. Among the most significant are the following:

## **Dr. Branko Braam**

*Kidney Health Research Chair,  
Translational Research*

## **Dr. Justin Ezekowitz**

*Faculty of Medicine and Dentistry Tier 2  
Excellence in Mentoring Award*

## **Dr. Philip Halloran**

*Prix Galien Canada Research Award  
Honorary Doctorate, Sorbonne University*

## **Dr. Scott Klarenbach**

*Kidney Health Research Chair –  
Health Outcomes*

## **Dr. Dennis Kunimoto**

*Outstanding Service Award from the  
International Tuberculosis Union*

## **Dr. Evangelos Michelakis**

*2016 Canadian Institutes of Health  
Research (CIHR) Foundation Grant*

## **Dr. Anna Oswald**

*University of Alberta Rutherford Award for  
Excellence in Undergraduate Teaching*

## **Dr. Patrick Pilarski**

*Canada Research Chair Tier 2  
Machine Intelligence for Rehabilitation*

## **Dr. Arya Sharma**

*University of Alberta Killam Professorship*

## **Dr. Harissios Vliagoftis**

*Glaxosmithkline/Canadian Institutes  
of Health Research Chair in Airway  
Inflammation*

## **Dr. David Westaway**

*Fellow, Canadian Academy of  
Health Sciences*

## **Dr. Douglas Zochodne**

*Fellow, Canadian Academy of  
Health Sciences*

# WHO

Our 2016 E. Garner King Memorial Lecture, "Getting Beyond a Blind Date with Science," was presented by Alan Alda, the actor who played Hawkeye Pierce in the highly successful television series *M\*A\*S\*H*. Alda is passionately interested in science and in the communication of science to the public. He is the co-founder of the Alan Alda Center for Communicating Science at Stony Brook University (New York), and leads workshops that help scientists communicate through the media or directly with people. His lecture reflected his belief that we should make it easier for all people to understand and relate to the scientific discoveries that affect them.

# Department of Medicine Leadership Team

**Barbara Ballermann**  
*Chair*  
 Department of Medicine

**Adrian Wagg**  
*Deputy Chair*  
*Assistant Chair*  
 Finance

Division  
 Directors

**Barb Hiscock**  
*Assistant Chair,*  
 Administration

**Len Wong**  
*Business Manager*  
 Finance

**Lilly Siik**  
*HR Manager/Partner*

**Francois Bouman**  
*Manager*  
 Operational Planning  
 and Analysis

**Bruce Fisher**  
*Associate Chair*  
 Education

**Darryl Rolfson**  
*Assistant Chair*  
 PGME

**Steven Caldwell**  
*Assistant Chair*  
 UGME

**Evangelos Michelakis**  
*Associate Chair*  
 Research

**Sean McMurtry**  
*Assistant Chair*  
 Graduate Studies

**Bill Dafeo**  
*Associate Chair*  
 Faculty Affairs

**John Bradley**  
*Assistant Chair*  
 Clinical Faculty

**Narmin Kassam**  
*Associate Chair*  
*Deputy Head*  
 Clinical Affairs

**Heidi Choi**  
*Clinical Informatics*  
*Lead*

**Joanne Homik**  
*Ambulatory*  
*Clinics Lead*

AARP  
 DMPA

Strategic Planning  
 Major Projects  
 Academic Staff HR  
 Career Development  
 Promotions  
 Non-Academic  
 Staff HR  
 Admin Support:  
 DoM, Divisions  
 Communication & IT  
 Finance

Clerkship Program  
 Residency Program  
 Accreditation  
 CaRMS Matching  
 Faculty RRDP  
 Education Scholarship  
 CPL

Faculty RRDP  
 Research Resources  
 Research Training  
 Speaker Program  
 Awards Program  
 Research Day  
 Strategic Initiatives

Collegiality & Conflict  
 Learner Relationships  
 Career & Faculty  
 Development  
 Promotions  
 Mentorship Workshop  
 Faculty Member  
 Advisor  
 Liaison with  
 FoMD Faculty Affairs  
 Committee

AHS Liaison  
 Workforce Planning  
 Learner Relationships  
 Quality Assurance  
 Quality Initiatives  
 Clinical Innovation  
 Clinical Care Delivery  
 Ambulatory Clinics  
 Clinical IT Deployment

**Steering Committee**

*Chair, Deputy Chair, Associate and Assistant Chairs, Division Directors, Site Chief UAH,  
 Clinical Informatics and Ambulatory clinics representatives.*

**Executive Committee**

*Chair, Deputy Chair, Associate Chairs, Assistant Chairs of Finance and Administration.*

# DEPARTMENT OF MEDICINE 2016 DIVISIONAL LEADERSHIP



**Wayne Tymchak**  
*Cardiology*



**Robert Gniadecki**  
*Dermatology*



**Peter Senior**  
*Endocrinology  
& Metabolism*



**Sander van Zanten**  
*Gastroenterology*



**Narmin Kassam**  
*General  
Internal Medicine*



**Adrian Wagg**  
*Geriatric Medicine*



**Joseph Brandwein**  
*Hematology*



**Karen Doucette**  
*Infectious Diseases*



**Kailash Jindal**  
*Nephrology*



**Douglas Zochodne**  
*Neurology*



**Shaun Gray**  
*Physical Medicine  
& Rehabilitation*



**Sebastian Straube**  
*Preventive Medicine*



**Harissios Vliagoftis**  
*Pulmonary Medicine*



**Steven Katz**  
*Rheumatology*

# Medical Education

## LEARNING IN COMMUNITY



**Dr. Bruce Fisher**  
Associate Chair, Medical Education,  
Department of Medicine

**“Medical education is not just a program for building knowledge and skills in its recipients...it is also an experience which creates attitudes and expectations.”**

*Abraham Flexner, medical education reformer (1866 – 1959)*

Training future physicians and researchers who will serve and also reflect all Canadians begins with medical school admission. The rigorous admissions process includes targeted recruitment of qualified individuals from under-represented populations in the Indigenous and rural or remote communities and those whose socio-economic status affects educational choices. Attracting future clinician-scientists is also a priority, so that medical research will continue to benefit patients.

The four-year undergraduate medical education program consists of in-class and experiential learning, and, in the final two years, clinical rotations in the 14 clinical specialities and subspecialties of this department. The eight-week in-patient rotation in internal medicine during the third year of medical school is one of the more important foundational experiences provided by this department to all of our students.

In addition to providing knowledge and expertise required in the undergraduate medical education program, the Department of Medicine offers graduate programs (PhD, MSc in Medicine, and MSc in Translational Medicine), specialty and subspecialty residencies and post-doctoral fellowships. The department promotes educational excellence and best practices through its relationships with Alberta Health Services, Edmonton Zone hospitals and clinics, and other stakeholders in the broader health community.

### UNDERGRADUATE MEDICAL EDUCATION

Undergraduate Medical Education in the Department of Medicine continues to build on its successful 2014 accreditation. We find that students excel particularly in internal medicine on their national exams (MCCQE I), and our program remains highly rated in the Canadian Medical School Graduation Questionnaire.

Undergraduate Medical Education committees at the department and faculty levels carried out recommendations from the Association of Faculties of Medicine of Canada to define and clarify entrustable professional activities (tasks that a supervisor can safely delegate), part of a medical student's transition to residency. This complements the integration of competence-based education into post-graduate medical education.

In 2016, the faculty's undergraduate curriculum was strengthened by members of this department who introduced new or expanded approaches to team learning, quizzes and clinical shadowing. Our own Vijay Daniels, an expert in assessment, significantly influenced the approach to examinations. These are now all electronically based and documented, providing same-day or next-day test results to the students.

### POST-GRADUATE MEDICAL EDUCATION AND COMPETENCE BY DESIGN

The department is implementing Competence by Design, an initiative of the Royal College of Physicians and Surgeons of Canada, the national professional association that oversees the medical education of specialists. The aim is to improve physician training and lifelong learning.

The department's residency programs are leading nationally in the implementation of Competence by Design. The core Internal Medicine program will have completed most of the required changes one year in advance of the official date for implementation and is sharing the experience with other programs across the country.

Competence by Design has triggered changes in all aspects of residency training, including changes to rotation timing, use of hand-held devices to capture direct observation at the bedside, a new team of academic advisers and a new competence committee.

## RECOGNITION

Educators as a group in the undergraduate gastrointestinal and cardiology blocks, as well as numerous individual teachers, were honoured for their excellence by the Medical Students' Association. A highlight was the university's Rutherford Award for Excellence in Undergraduate Teaching awarded to Dr. Anna Oswald in 2016 (see profile).

Medical education research is also well represented outside the university with publications addressing topics such as neurobiology and learning and online educational interventions. Local scholarly contributions are encouraged through a collaboration with the editorial staff of MedEdPortal, the Association of American Medical Colleges' peer-reviewed repository of medical educational resources.

## EDUCATION PROFILE

Dr. Anna Oswald has worked for more than a decade to make medical education at the University of Alberta outstanding. Her successes mean that medical students will not only become doctors but the best caregivers possible.



Dr. Anna Oswald is a rheumatologist and associate professor who also holds a master's degree in medical education. She spent a year as a visiting scholar in medical education at McGill University.

## ACCREDITATION

Medical schools in Canada are peer-reviewed every eight years to ensure they are offering the best medical education according to the highest standards in North America. Accreditation is necessary for medical schools to operate.

She came to the university when the medical school was significantly revamping courses to improve student learning. She took on the task of transforming the lecture-based curriculum to problem-based learning. Her goal was to align curriculum and training with the realities of medical practice because, as she says, when physicians are faced with cases where they don't know what to do, they have to recognize and identify the information they need and fill the information gap.

In medical school, team-based learning has refined this approach. Students study material pre-class. In class, they are quizzed individually and in groups on what they've learned and then apply their learning to challenging clinical cases. While the team approach has been shown to improve knowledge, it isn't always easy for the students. But being uncomfortable, Dr. Oswald says, is part of meaningful learning.

One difficult part for students was non-anonymous peer assessment, which is part of a student's final grade. "This mirrors what happens in practice," Dr. Oswald says. "When we have a problem with a peer, we talk with them about it." Medical practice is a self-regulating profession, she says. "The public expects us to be adept at addressing concerns with our peers and promoting best practice."

Dr. Oswald's recent appointment as director of Competence Based Medical Education for the faculty includes implementing the Royal College of Physicians and Surgeons of Canada's multi-year Competence by Design approach in residency training and specialty practice. Competence by Design provides integrated steps to excellence in learning and practice along a physician's career, from residency to retirement.

For her contribution to medical education, Dr. Oswald won one of the University of Alberta's most prestigious honours in 2016: *the Rutherford Award for Excellence in Undergraduate Teaching*. For Dr. Oswald, the award is an honour and a challenge to continue on the path to improving medical education. "My passion is to make our education system as sound and evidence-based as possible, so that trainees become not just doctors but great clinicians for their whole lives."

## Statistics

**Number of learners: 135 in core internal medicine, 161 in specialties and subspecialties**

# Clinical Innovation

## A COMMUNITY TRANSFORMING CARE



**Dr. Narmin Kassam**  
Associate Chair, Clinical Innovation,  
Department of Medicine

**“Quality is not an act,  
it is a habit.”** Aristotle

**“To have striven, to have  
made the effort, to have  
been true to certain ideals  
– this alone is worth the  
struggle.”** William Osler

Providing high quality service for patients requires continuous clinical innovation by a community of clinical care-givers. Collaboration, partnerships, creativity and innovation are hallmarks of an excellent clinical delivery system. In Alberta, the Academic Alternate Relationship Plan (AARP) allows remarkable collaboration. This innovative funding model encourages us to make a real, lasting impact on the health and wellness of the community we serve, and ensures that our patients get the best acute care possible—no matter where in northern Alberta they live.

To further build a connected, accessible and continuously improving system, a joint Department of Medicine/Alberta Health Services committee was formed in 2016, funded by AARP. The Strategic Clinical Improvement Committee for Edmonton Zone Medicine engages stakeholders and works closely with Alberta Health, AHS, Covenant Health and the Primary Care Networks to carry out the Department of Medicine’s strategic clinical initiatives focused on delivering the highest possible quality of care.

Co-chaired by Dr. Narmin Kassam and Natalie McMurtry, executive director, Medicine and Surgery Programs, Alberta Health Services, and with the support of Pam Mathura, the committee includes physician representatives from each division in the department and all five sites, along with AHS operational leaders from five hospitals in the Edmonton Zone. Clinical innovation is enabled by care-focused quality improvement methodology. In 2016, the committee introduced performance scorecards, clinical innovator academic pathways, quality improvement education and a consultant to manage the quality agenda.



*Members of the Strategic Clinical Improvement Committee for  
Edmonton Zone Medicine.*

Physician- and resident-led quality improvement projects are underway with results shared and spread in the Edmonton Zone. The Department of Medicine’s Access Partnership Project was launched to improve integration and referral processes between acute and specialty care through the development of standardized referral guidelines.

# Research

## CREATING GLOBAL IMPACT IN HEALTH



**Dr. Evangelos Michelakis**  
Associate Chair, Research,  
Department of Medicine

**“As you set out for Ithaca, hope the voyage is a long one, full of adventure, full of discovery....”**

*C.P. Cavafy*

Research is a critical component of our work. The research done by department members spans the spectrum from molecules to machine learning. Department research, supported from concept to discovery to application, encompasses: investigating molecular and sub-molecular levels of life; deciphering mechanisms of disease; improving diagnostic approaches; developing and refining imaging, robotics and machine learning methods; involving patients in research inquiries that include clinical trials, epidemiology and outcomes work; and applying research in health services delivery and health economics. We are fortunate to have considerable strength in all of these research areas, and we continually strive to expand and replenish our talent pool.

### FUNDING AND PUBLICATIONS

In 2016 Department of Medicine researchers obtained grants above national success rates, despite the challenges produced by the CIHR program reform. Matching the funding success, department researchers were published in such high-ranking journals as *The New England Journal of Medicine*, *The Lancet* and *Nature Reviews Cancer*.

### RECRUITMENT AND RECOGNITION

Oxford recruit Dr. Gopinath Sutendra was awarded the Alberta Innovates – Health Solutions Translational Chair in Cardio-Oncology. Stroke expert Dr. Glen Jickling was recruited back to the University of Alberta from the University of California Davis, where he was director of the Stroke Program in the Department of Neurology. Drs. Patrick Pilarski and Ken Butcher were awarded Canada Research Chairs and Drs. Douglas Zochodne and David Westaway were elected fellows of the Canadian Academy of Health Sciences. The prestigious international award *Prix Galien* was awarded to Dr. Philip Halloran for his research and clinical achievements, mentorship and leadership.

### INNOVATION IN TRANSLATION

Putting research into practice is an important measure of success for funders, governments and the public. In response, the Department of Medicine created a training program in translational research, now in its fourth year. Four trainees from the Faculty of Medicine & Dentistry and the University of British Columbia received their master’s degrees in translational medicine in 2016.

### RESEARCH FUNDING

- 12 department researchers received new CIHR or Tri-Council grants totaling nearly \$7.7 million
- 110 grants from foundations for a total of \$8.67 million; 22 grants (\$1.72 million) received in 2016
- 271 clinical trials ongoing in 2016, funded with \$15.12 million
- Ten team grants received, totalling \$8.38M
- \$26.52 million from endowed chairs; \$1.46 million in 2016 annual allocation
- \$1.56M from donations (University Hospital Foundation and other donors)
- Five Canada Research Chairs in the DoM

### Statistics

**Graduate students: 108 graduate students**

**Publications: 702 publications by faculty;  
95 publications by graduate students**

# Faculty Affairs

## MENTORSHIP IN A COLLEGIAL COMMUNITY



**Dr. William Dafoe**  
Associate Chair, Faculty Affairs,  
Department of Medicine

**“The delicate balance of mentoring someone is not creating them in your own image, but giving them the opportunity to create themselves.”**

*Steven Spielberg*

**“The future of our department is being created by our talented and inspiring new faculty.”** *Dr. William Dafoe*

The success of junior faculty is a priority for the department. Mentorship and professional development guide younger faculty as they pursue tenure and academic success. Mentorship creates a collegial atmosphere in which department members across divisions can share information and professional standards with their younger colleagues.

### ACADEMIC LEARNING SERIES

The Academic Learning Series (formerly called the Academic Excellence Series), launched in 2015-16, featured sessions led by senior faculty members and outside speakers on a range of topics pertinent to junior faculty members. Topics included tenure and promotion, teaching effectiveness and research writing and publishing. The series has evolved into half-day workshops because of the interest and positive feedback of attendees.

### ACADEMIC LEARNING SERIES WEBSITE

The department collaborated with the Centre for Teaching and Learning at the University of Alberta to record and edit the 2015-16 Academic Learning Series sessions. An internal website was developed that is available to department faculty, trainees and staff.

### MENTORSHIP PROGRAM

Group mentorship was tried in 2016, given the challenges of finding enough mentors for junior faculty. However, both mentors and mentees indicated the group mentorship model was difficult to implement. As a result, in late 2016, the department returned to a one-on-one model.

### WOMEN IN ACADEMIC MEDICINE

Dr. Oksana Suchowersky runs a forum for new female department members to discuss career advancement and other pertinent issues that are unique to this group.

### IN MEMORIAM



Chuck Morrison, the department's career development officer, who administered the Mentorship Program and the Academic Learning Series, died unexpectedly in September 2016. The series presentations were dedicated to his memory—he worked tirelessly to bring the series to fruition.

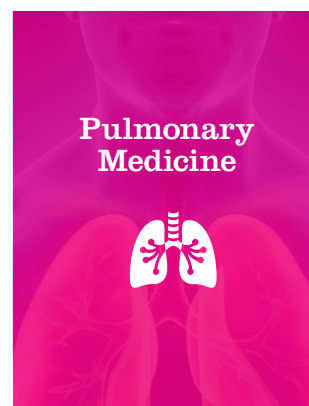
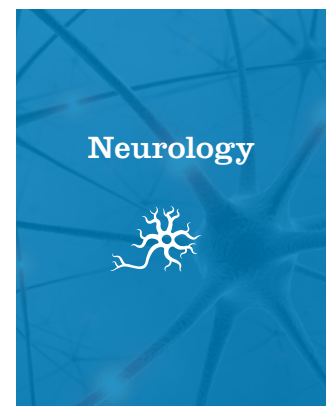
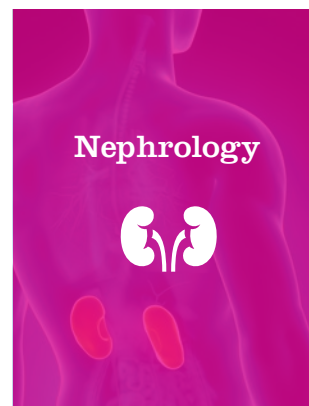
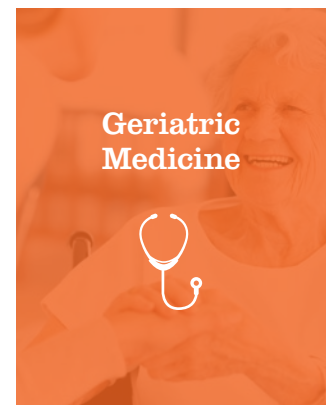
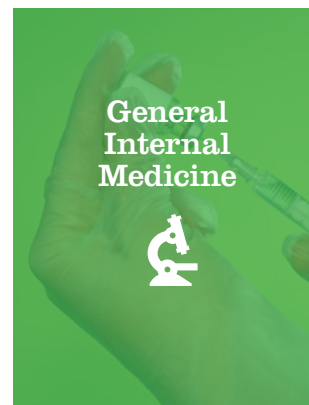
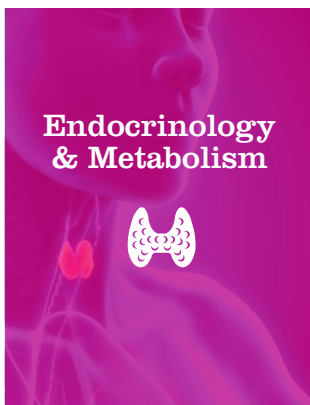
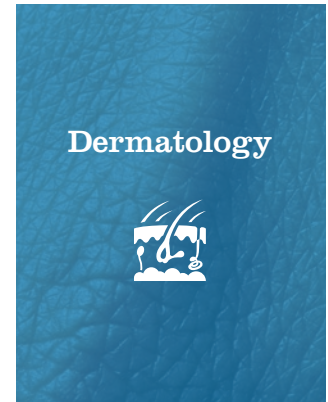
### Statistics

**Faculty:** 539 department faculty throughout Edmonton Zone, of which 63 are new members in the Department of Medicine and in the community; 28 faculty members were promoted (10 on the academic track, 18 on the clinical track)

**Honours and Awards:** 48 members received Department of Medicine honours or awards in 2016; 17 members received Faculty of Medicine & Dentistry honours and awards; six received University of Alberta awards; 49 received regional, national or international awards



# DEPARTMENT OF MEDICINE DIVISIONS



# Cardiology



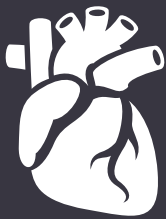
OUR MISSION IS TO DELIVER THE HIGHEST LEVEL OF CARE TO PATIENTS WITH HEART AND CARDIOVASCULAR DISORDERS, SPANNING THE SPECTRUM FROM PREVENTION THROUGH DIAGNOSTICS AND MANAGEMENT THROUGH TO REHABILITATION.

The multidisciplinary cardiology team includes leading academic cardiologists who conduct research, teach the next generation of physicians and researchers, and provide top-notch clinical services for patients in Alberta and from British Columbia, Yukon, Nunavut, the Northwest Territories and Saskatchewan.

## LEADERSHIP

**Dr. Wayne Tymchak**, *division director, Edmonton Zone section chief*

# Cardiology



## CLINICAL EXPERTISE

- Interventional cardiology
- Advanced heart failure
- Multimodality imaging
- Adult congenital heart disease
- Cardiac transplantation
- Care for patients with complex arrhythmias

## CLINICAL INNOVATION

New protocols Vital Heart Response (VHR) for acute myocardial infarction have resulted in the lowest mortality rates in patients with acute myocardial infarction in Canada for 2016 (5.3%).

## RESEARCH

The division has three well-established research groups: VIGOUR for clinical trials; EPICORE for clinical trial operational and statistical expertise; and the Cardiovascular Research Group for bench and translational research.

The Alberta Cardiovascular and Stroke Research Centre (ABACUS), supported by the Heart and Stroke Foundation, conducts research on and performs clinical cardiovascular ultrasound.

The division hosts an annual Cardiac Sciences Research Day, one of Canada's largest and most comprehensive local cardiac sciences meetings with more than 60 abstracts presented and speakers participating from across Europe and North America.

The division's research excellence is reflected in peer-reviewed research funding, which in 2016 was approximately \$14 million. Members of the Division of Cardiology produced 189 publications in 2016 and trainees published a further 47.

Dr. Evangelos Michelakis received a \$3.86 million CIHR Foundation grant.

Dr. Michelle Graham from Cardiology together with Dr. Neesh Pannu from Nephrology received a \$750,000 Partnership for Research and Innovation in the Health System (PRIHS) award from Alberta Innovates.

Dr. Rupri Sandhu and Dr. Padma Kaul received a \$330,000 CANet (Canada Arrhythmia Network of Canada) grant.

## RESEARCH

- Pulmonary Hypertension
- Advanced Heart Failure
- Atrial Fibrillation
- Multimodality Imaging
- Explanted Heart Program
- Ex-vivo Lung Program

## EDUCATION

The division has one of Canada's largest cardiac training programs, with 10 to 12 core cardiology trainees and up to eight fellows at any given time. Fellowship training is offered in interventional cardiology, electrophysiology, adult congenital heart disease and advanced heart failure.

In 2016, two division programs, Interventional Cardiology and Echocardiography, were accredited by Areas of Focused Competence (Diploma) Program of the Royal College of Physicians and Surgeons of Canada, meaning these programs will establish national standards for training and specialist competence. The accreditation, Diplomate of the Royal College of Physicians and Surgeons of Canada, enables fellows to acquire nationally and internationally portable credentials.

Several division members hold leadership positions such as scientific program chair and cardiology guidelines chair within the Canadian Cardiovascular Society, the premier body for best practices, research application, professional development and leadership.

# InProfile

# Cardiology



## *Faculty Recruit*

### DR. MINH VO



Recruited from the University of Manitoba in 2016, Dr. Minh Vo is known internationally for his expertise and leadership in chronic total occlusion and complex high-risk interventional procedures. For some heart patients who have multiple health issues, Dr. Vo's innovative techniques for treating blocked blood vessels mean that high-risk surgery can be avoided. Dr. Vo's teaching and mentorship are important assets contributing to the division's interventional training program, research capacity and clinical strengths.

## *Clinical Innovator*

### DR. IAN PATERSON



Some chemotherapies have the potential to cause heart damage. This can result in the early termination of cancer treatment and in severe cases, heart failure and premature death. In 2010, Dr. Ian Paterson established the Edmonton Cardio-Oncology Research (ENCORE) program, which helps more than 250 patients a year complete their cancer therapy. In 2016, Dr. Paterson co-wrote the first Canadian guidelines on cardio-oncology and his program won the Department of Medicine's Team Award for Clinical Innovation.

## *Promoted Faculty*

### DR. NAZNEEM WAHAB

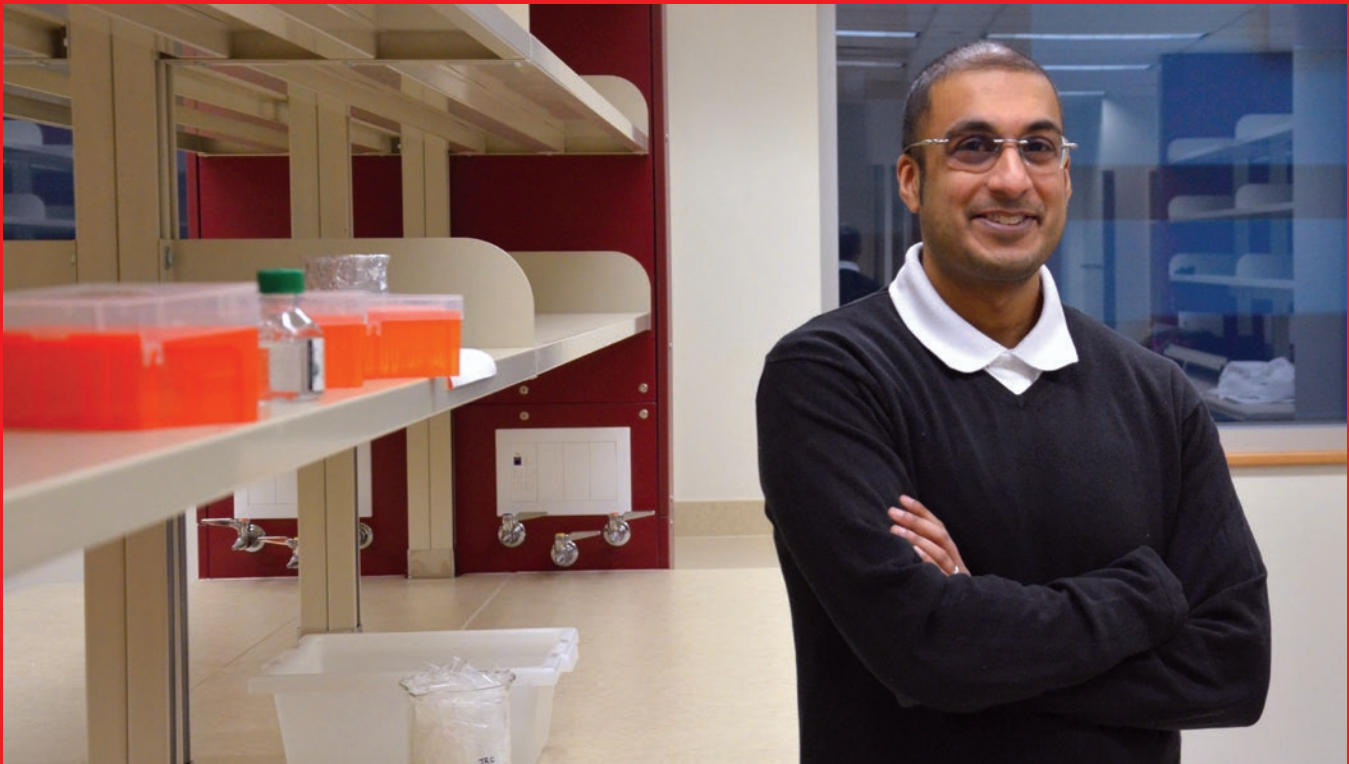


Dr. Nazneem Wahab, an associate clinical professor, is based at the C.K. Hui Heart Centre. A specialist and educator in adult cardiology, echocardiography and obstetrical cardiology, she is cardiac co-lead of a multidisciplinary Maternal Heart Health Program for women with pregnancy-related heart complications. Her commitment to outstanding health education and health care locally and internationally fuels her many collaborations. Dr. Wahab has a master's degree in global health, and her international efforts, including projects with the World Health Organization, focus on improving sustainable cardiac health services in low-income regions.

## Dr. Gopinath Sutendra

*Dr. Gopinath Sutendra is the Alberta Innovates Translational Health Chair in Cardio-Oncology and assistant professor of medicine.*

**“The problem with current chemotherapies is they kill heart cells along with cancer cells. If we are to design more selective therapies, we need to understand the fundamental pathways that control cell fate.”** *Dr. Gopinath Sutendra*



Dr. Gopinath Sutendra is doing something he hopes someday won't be so unusual. He's studying cardiovascular disease in the context of cancer, specifically looking at how to reduce damage to the heart caused by specific drugs used to treat highly aggressive metastatic cancers, lung cancers and breast cancers. Compounding the problem, cancer itself changes the entire metabolism of the patient, Dr. Sutendra says, so scientists don't know at a molecular level its effects on the heart. To find answers, he's looking at genetic biomarkers in blood and the microenvironment in the heart compared with that of tumours.

Knowing more about what protects cancer cells from dying might help researchers develop therapies to protect heart cells from dying, Dr. Sutendra says. And learning more about what makes a heart cell die can help investigators develop better ways to kill cancer cells. “You have to have an open mind when you do this kind of science and not restrict yourself to one disease, or one pathway.”

# Dermatology



WE STUDY, DIAGNOSE AND MANAGE DISORDERS OF THE SKIN, NAILS AND HAIR AND PERFORM SURGICAL PROCEDURES LIKE SKIN BIOPSY AND MOHS SURGERY.

The Division of Dermatology serves patients across northern Alberta, the Northwest Territories, British Columbia, and Saskatchewan, with a strong focus on specialized and more advanced treatments for cancers and other disorders of the skin.

## LEADERSHIP

**Dr. Robert Gniadecki**, *division director, Edmonton Zone section chief*

# Dermatology



## CLINICAL

The division's strong collaborations and networks focus on improving patient care and promoting best practices. Multidisciplinary clinics for melanoma, lupus and lymphoma were established without increased funding and with limited space. Consultation services are provided for in-patients and patients in emergency rooms across the zone as well as in the community.

Division members work in ambulatory clinics at the Kaye Edmonton Clinic and in the community to treat skin disorders. Alberta Telehealth allows the division to extend its expertise to sites across northern Alberta and the Northwest Territories.

## SPECIALIZED CLINICS

- Malignant Melanoma Clinic
- Cutaneous Lymphoma Clinic
- Wound Clinic
- Patch Test Clinic
- Lupus Clinic
- Vulvar Clinic
- Hand Eczema Clinic

Collaborations with colleagues in the broader community have led to clinical innovations. Division members helped develop provincial and international guidelines for diagnosis and treatment of skin diseases. A collaboration with Alberta Health Services resulted in the Key Performance Indicators for improved patient care. A partnership with colleagues from Lymphoma Rounds and from Calgary formed a Multidisciplinary Lymphoma Team. A team approach with Occupational Medicine established a new clinic to treat hand eczema.

## RESEARCH

Based on its strong research record over the past two decades (including two publications, now considered references in the field of dermatology, by Dr. Thomas Salopek and Dr. Loretta Fiorillo), the division re-established a laboratory in the Heritage Medical Research Centre, supported by a startup grant of \$500,000. The laboratory is a research and training centre and includes a PhD student and numerous graduate students among its trainees.

Division members published 23 peer-reviewed papers in 2016. Research projects included a collaboration with Statistics Canada on epidemiology of melanoma in Canada from 1992 to 2010; a study of molecular markers and pathogenesis of T-cell lymphoma; and a perceptual exercise to learn to recognize skin cancer.

## EDUCATION

Medical education is focused on learning to recognize skin cancers. The division had 13 residents in 2016. Elective rotations are offered to learners from other institutions. The division hosts an annual one-day update for family physicians in collaboration with the Office of Lifelong Learning.

# InProfile

# Dermatology



## Clinical Leader

### DR. MARLENE DYTOC



Dr. Marlene Dytoc's leadership as interim Edmonton Zone chief for dermatology was recognized by the department in 2016. Now deputy zone chief, she is the division's lead for the Strategic Clinical Improvement Committee, oversees undergraduate medical education for Dermatology, and is medical director of specialty clinics for hand eczema and vulvar conditions. Dr. Dytoc's research includes developing new treatments for contact dermatitis contracted from gloves and improving First Nations access to dermatologic care. Her collaborations include evaluating the use of a schizophrenia drug for skin damage and assessing new tests for detecting photodermatoses.

## Published Researcher

### DR. JOHN ELLIOTT



Dr. John Elliott's career exemplifies the dynamic interplay between research and clinical innovation. His research focus in molecular immunology, plus late-in-life residency training in dermatology, led him to establish and lead the Patch Test Clinic at the University of Alberta, where referred patients are tested to identify the chemicals they contact that may be causing their itchy persistent rash. His extensive publications include, in 2016, lead authorship of a paper in the *Journal of Cutaneous Medicine and Surgery* on declining rates of neomycin sensitization in Western Canada, and co-authorship of a paper in *Dermatitis* about hypersensitivity to implanted metal devices.



## Dr. Thomas G. Salopek

*Dr. Thomas G. Salopek is a dermatologist specializing in skin cancer and a professor in the Division of Dermatology.*

**The Multidisciplinary Melanoma Clinic, established in 2007 by dermatologist Dr. Thomas Salopek and his oncology colleagues, is changing how patients with melanoma, the most dangerous form of skin cancer, receive care. Instead of patients making numerous trips to meet with specialists one-by-one, the doctors come together once a week for the clinic, so patients can access the experts they need at one time and in one place.**



Doctors also benefit, Dr. Salopek says. “Collegiality and the ability to quickly tap into the expertise of the others are some of the most important benefits.” He, along with colleague Dr. Robert Gniadecki and specialists from Calgary, is replicating the melanoma treatment model for cutaneous lymphoma with a clinic at the Kaye Edmonton Clinic.

The development of immune checkpoint inhibitor drugs that stimulate the immune system to kill cancer cells shows great promise for melanoma treatment, with seven such drugs now available in Canada. “These drugs are completely changing the treatment landscape for a lot of different cancers,” Dr. Salopek says. “We are using them to shrink tumours for removal by surgery when we couldn’t have done that before. We are changing people’s lives, giving them their quality of life back, even curing some melanomas.”

# Endocrinology & Metabolism



THE ENDOCRINE SYSTEM CONSISTS OF HORMONES AND THE ORGANS AND CELLS THAT SECRETE THEM. ENDOCRINE SYSTEM DISORDERS INCLUDE DIABETES; THYROID, PITUITARY AND ADRENAL DISORDERS; SOME REPRODUCTIVE DISEASES; AND METABOLIC DISORDERS SUCH AS OBESITY AND OSTEOPOROSIS.

The division provides specialized care to people with complex hormone problems. Members are internationally recognized for expertise in islet transplantation, diabetes and obesity. The division also provides in-patient consultation services to the University of Alberta Hospital and other hospitals throughout the region.

## LEADERSHIP

**Dr. Peter Senior**, division director, Edmonton Zone section chief

# Endocrinology & Metabolism



## CLINICAL SERVICES

The division's ambulatory endocrine consultation services cover central and northern Alberta, northeastern B.C. and northwestern Saskatchewan. In-patient endocrine consultation serves medical and surgical patients at hospitals in Edmonton, and includes care of admitted patients with diabetes and their transition out of hospital.

Clinics in the Edmonton Zone provide ongoing care for patients with complex endocrine disorders, particularly patients with pituitary disorders. An urgent access clinic provides ambulatory consultation and service within 24 to 48 hours. Offered jointly with Nephrology, the Diabetic Nephropathy Prevention program runs clinics in eight locations across northern Alberta, where registered nurses and registered dietitians help manage diabetes, hypertension and vascular complications of diabetes.

## SPECIALIZED CLINICS AND SERVICES

- Clinical Islet Transplant Clinic
- Western Canada Combined Pituitary Clinic
- Gestational diabetes
- Thyroid Cancer/Neuroendocrine Tumours Clinic in partnership with Radiation Oncology at Cross Cancer Institute

## CLINICAL INNOVATION

Division members implemented a new in-patient diabetes management clinical template to improve and streamline care. A new team-based approach to safely manage diabetes developing after pancreatectomy was also introduced.

## RESEARCH

Members of the division garnered more than \$780,000 in research funding in 2016 and published 39 peer-reviewed publications.

Canada's first islet cell transplantation was carried out at the University of Alberta nearly 30 years ago. Today the Clinical Islet Transplant Program has performed more than 500 transplantations and continues to be a locus of research, with the following achievements in 2016:

- Stem Cell Network funding for the first human clinical trials using stem cells in diabetes research
- Phase 3 trial of islet transplantation published in *New England Journal of Medicine*
- A novel clinical score to assess islet transplant outcomes in *American Journal of Transplantation*
- Alberta Health Services President's Award for Research—finalist: Clinical Islet Transplant Program

## EDUCATION

The Division of Endocrinology & Metabolism continues to excel in medical education and in 2016, was training four subspecialty residents and three graduate students. Residents also gain additional clinical experience through rotations in pediatric endocrinology, reproductive endocrinology and laboratory medicine.

# InProfile

## Endocrinology & Metabolism



### *Clinical Leader*

#### DR. CONSTANCE CHIK



Endocrinologist Dr. Constance Chik's expertise is in pituitary disorders. She has published extensively about the cellular mechanism of the pineal gland, which secretes melatonin. A professor of medicine, she is also co-director of the Western Canada Pituitary Clinic and the medical director of the Clinical Investigation Unit. In 2016, she became president of the Canadian Society of Endocrinology and Metabolism. Her work in training endocrine fellows is reflected in her roles as former divisional director, program director and chair of the exam board of Endocrinology and Metabolism, Royal College of Physicians and Surgeons of Canada.

### *Award Winning Faculty*

#### DR. ARYA SHARMA



Dr. Arya Sharma is Canada's best-known obesity expert. He is founder and scientific director of the Canadian Obesity Network, professor and chair in Obesity Research and Management and medical director of the Alberta Health Services adult obesity program. In 2016, he received the Killam Annual Professorship. Dr. Sharma believes that managing obesity is achieved through evidence-based approaches supplemented by awareness and education. In addition to publishing more than 400 scientific articles and lecturing the world over, he is frequently featured on TV and radio, and posts about obesity management on his weekly blog, Dr. Sharma's Obesity Notes.

### *Clinician-Scientist*

#### DR. PETER SENIOR



Dr. Peter Senior is the Edmonton Zone clinical section chief, medical director of the Clinical Islet Transplant Program, medical lead for the Regional Diabetes Program and medical co-director of the Diabetic Nephropathy Prevention Program. He is focused on making the lives of people with diabetes better through research to improve islet transplantation, the delivery of diabetic health care and the development and testing of new treatments for diabetes. One of his clinical trials is the first human trial using stem cells as an alternative to islet transplantation for diabetes. In 2016, he was a finalist for the Alberta Health Services President's Award for Research.

## Dr. Sangita Sharma

*Dr. Sangita Sharma is Centennial Professor, Endowed Chair in Indigenous Health and professor of Indigenous and global health research.*



**Indigenous peoples have a life expectancy of up to 12 years less than that of non-Indigenous populations. Dr. Sangita Sharma believes this gap can be closed by promoting the cultural traditions of these communities and the consumption of nutrient-dense traditional foods.**

Her research is two-fold: she identifies risk and improvement factors for chronic disease in Indigenous and new Canadian populations, and she uses evidence to develop effective, culturally appropriate chronic disease prevention programs.

One program, the Caring and Responding Edmonton project funded by the Royal Alexandra Hospital Foundation, worked with vulnerable populations to develop prevention programs based on their needs. Another program, Why Act Now, was co-developed with Indigenous youth to improve nutrition and increase physical activity among urban Indigenous youth in grades 7 to 12 ([whyactnow.ca](http://whyactnow.ca)). A third program assessed attitudes toward cancer screening among people living in remote Arctic communities. It was supported by the community, and input was gathered from interviews, sharing circles, leaders and elders. The resulting, first-of-its-kind data will be used to develop a cancer awareness program with and for the community to improve screening rates.

For Dr. Sharma, improving the health of Indigenous people means utilizing research data to build, implement and evaluate long-term sustainable programs at the community level, based on the community needs. In 2016, Dr. Sharma received one of Global News Edmonton's Woman of Vision awards. In her acceptance speech, she said her vision was for "all Canadians to have access to culturally appropriate nutritious foods to ensure that all are healthier and able to be the best that they can be in work and in play."

# Gastroenterology



PHYSICIANS IN THE DIVISION OF GASTROENTEROLOGY, SPECIALIZING IN DISEASES OF THE GASTROINTESTINAL SYSTEM AND LIVER, ARE LOCATED AT THE UNIVERSITY OF ALBERTA HOSPITAL AND THE ROYAL ALEXANDRA HOSPITAL. THE DIVISION IS BASED AT THE STATE-OF-THE-ART ZEIDLER LEDCOR GASTROINTESTINAL HEALTH CENTRE, CANADA'S FIRST MULTIDISCIPLINARY CLINICAL FACILITY DEDICATED SOLELY TO GASTROENTEROLOGY PATIENT CARE AND RESEARCH. DIVISION MEMBERS TREAT CONDITIONS RANGING FROM ULCERS AND IRRITABLE BOWEL SYNDROME TO CROHN'S DISEASE AND COLITIS. A SUBSET OF GASTROENTEROLOGISTS IN THE DIVISION SPECIALIZE IN THE CARE OF PATIENTS WITH LIVER DISEASES AND LIVER TRANSPLANTATION.

Alberta has one of the highest rates of Crohn's disease and ulcerative colitis in the world. Because patients with these conditions have a high medical need, inflammatory bowel disease remains a core activity of the division. Special inflammatory bowel disease clinics, including the use of advanced nurse practitioners, provide multi-faceted, multidisciplinary care.

## LEADERSHIP

**Dr. Sander van Zanten**, *division director, Edmonton Zone section chief*

# Gastroenterology



## CLINICAL

Ambulatory Gastrointestinal Clinics for general consultation, advanced therapeutic endoscopic procedures and comprehensive colon cancer screening services are provided across the entire Edmonton Zone.

At all centres, the gastrointestinal section provides in-patient and urgent consultation services.

In-patient units are at the University of Alberta Hospital and Royal Alexandra Hospital. The University of Alberta Hospital also provides comprehensive pre-, intra and post-transplant liver transplantation care. Endoscopic Retrograde Cholangio-Pancreatography, endoscopic ultrasound, small bowel endoscopy and radiofrequency ablation therapy are provided at various hospital sites in the Edmonton area.

## SPECIALIZED CLINICS AND PROGRAMS

- Portal hypertension clinic for patients with advanced liver disease
- Cirrhosis care clinic
- Inflammatory bowel disease (IBD) program
- IBD preconception and pregnancy clinic
- Research-integrated fecal transplantation clinic
- Small bowel program with advanced small bowel therapeutic endoscopy
- Gastrointestinal motility lab
- Northern Alberta Nutrition Program provides home enteral and home total parenteral nutrition programs
- Dysphagia clinic

## RESEARCH

The Division of Gastroenterology ranks among Canada's largest, and most productive, gastrointestinal and hepatobiliary disease basic and clinical science research groups.

Division members continue to lead the way in the discovery and treatment of inflammatory bowel diseases, GERD, dyspepsia, Helicobacter pylori infection, viral hepatic and biliary disorders, nutritional disorders, and gastrointestinal cancer.

The division received more than \$4.5 million in research funding in 2016, including \$2.5 million from industry. Division members published 91 papers, and trainees published 15 peer-reviewed papers in 2016.

## EDUCATION

The Division of Gastroenterology has won awards for its undergraduate teaching and has been recognized as one of the best gastroenterology residency training programs in Canada. Nine residents and 22 graduate students are training and learning in the division. The division offers a Royal College accredited program in gastroenterology and hosts visiting clinical fellows yearly.

# InProfile

# Gastroenterology



## Researcher and Clinical Innovator

### DR. DINA KAO



In 2012, Dr. Dina Kao started using experimental fecal transplantation to treat patients affected by recurrent *C. difficile* infections or inflammatory bowel disease. She saw a high cure rate for recurrent *C. difficile* infection and observed dramatic healing of intestine in one patient with Crohn's disease after one treatment. These results led to the establishment of the Fecal Microbiota Transplantation Program. Her team's passion for improving patient care through research has won the Jonathan B. Meddings Clinical Innovation Award as well as the AHS President's Excellence Award for Research and Innovation.

## Trainee

### AMBIKA AGRAWAL



Ambika Agrawal began pursuing her love of research in junior high school. She received multiple Edmonton Regional Science Fair awards and, in 2014, a high school summer research placement with Dr. Karen Madsen. The next year, she won best elevator pitch at the Sanofi Biogenius Canada Competition and placed fifth overall. In 2016, thanks to Alberta Innovates and the Women and Children's Health Research Institute, she continued to work in Dr. Madsen's lab, investigating epithelial inflammatory responses to breast milk from mothers with inflammatory bowel disease. Agrawal is studying honours immunology and infection and aims to become a clinician-scientist.

## Researcher and Educator

### DR. MANG MA



Dr. Mang Ma is an authority on liver transplantation and hepatitis. He is deputy director of gastroenterology at the University of Alberta Hospital. His research in these areas has garnered significant industry support, including funding in 2016 from Gilead and Transgene SA for clinical trials of new drug combination for patients with hepatitis B, and from the Institute of Health Economics to assess a triage clinic approach to improve care for patients with liver disease. He is considered one of the faculty's outstanding teachers and won the Alberta Society of Gastroenterology Distinguished Educator Award in 2016.



## Dr. Andrew Mason

*Dr. Andrew Mason is a professor, gastroenterologist and principal investigator of the Centre of Excellence for Gastrointestinal Inflammation and Immunity Research. He is also director of the Applied Genomic Core and director of research for the Division of Gastroenterology and Hepatology. In 2016, he won the Canadian PBC Society Award for Outstanding PBC Researcher.*



### **Dr. Andrew Mason has discovered the virus behind an uncommon autoimmune liver disease, primary biliary cholangitis (PBC).**

The virus he named the human betaretrovirus was implicated in breast cancer in the 1970s but proved hard to detect. When the AIDS epidemic hit in the 1980s, attention turned to the more obvious threat.

Dr. Mason kept his focus on the human betaretrovirus. He detected the virus in the tissues of patients with PBC and found that cells infected with the virus over-expressed a protein that triggered the patient's immune system to attack its own liver. Autoimmune diseases tend to run in families, which suggested the virus might be turning on the switch in those with the genetic predisposition.

He then used DNA sequencing to show the virus's presence in bile ducts, where it integrates into the human genome in patients with PBC. Laboratory tests showed antiviral medications used to treat HIV had some effect on blocking the betaretrovirus. Clinical trials on PBC patients using HIV drug cocktails followed, and although two-thirds of participants could not tolerate the drug cocktail, those who could had substantial improvement in their liver, including one patient with normal lab tests.

Dr. Mason is collaborating with drug companies to begin clinical trials to test new antiviral drugs that are better tolerated. He is also working to develop a diagnostic test for the virus. In the future, he sees other teams working on a vaccine.

Dr. Mason is also looking at the virus's links to breast cancer. If he can show that having an antibody to the virus is associated with the development of breast cancer, this would be the first step in linking an environmental exposure to the development of breast cancer. He is also investigating lymphoma and autoimmune hepatitis, the latter having links to PBC.

# General Internal Medicine



GENERAL INTERNAL MEDICINE (GIM) SUBSPECIALISTS, KNOWN AS GENERAL INTERNISTS, DIAGNOSE AND CARE FOR ACUTELY ILL PATIENTS, MANY OF WHOM ALSO HAVE COMPLEX MULTI-SYSTEM DISORDERS, AND THEY PROVIDE POST-ADMISSION TRANSITIONAL CARE BACK TO THE PRIMARY PHYSICIAN. IN THE EDMONTON ZONE, THE TOP FIVE DIAGNOSES LEADING TO A GIM ADMISSION ARE PNEUMONIA, CHRONIC OBSTRUCTIVE PULMONARY DISORDER, DIABETES, SEVERE URINARY TRACT INFECTIONS (UROSEPSIS) AND ALCOHOL/DRUG TOXICITY.

General internists provide consultative or direct medical care that includes disease prevention, early detection of disease, screening, patient education, chronic disease management and followup care from hospitalization. General internists also consult on the management of medical conditions during periods of high stress such as before, during and after surgery, and pregnancy.

## LEADERSHIP

**Dr. Narmin Kassam**, *division director, Edmonton Zone section chief*

# General Internal Medicine



## CLINICAL

Members of the Division of General Internal Medicine provide in-patient, consultative and ambulatory services at the University of Alberta Hospital, Royal Alexandra Hospital, Sturgeon Hospital, Grey Nuns Hospital and Misericordia Hospital.

Division members provided care in 2016 for more than 16,000 in-patients with 481 beds. The in-patient care at the five hospital sites is delivered within 12 clinical teaching units.

## SPECIALIZED CLINICS AND PROGRAMS

- Emergency/intensive care unit triaging service
- GIM ambulatory clinics at the Kaye Edmonton Clinic
- GIM ambulatory post-hospital follow-up
- Consultative services to Family Medicine and other medical and surgical specialties

Hypertension and ambulatory blood pressure recording clinics at the Kaye Edmonton Clinic combine patient care and clinical research into best practices. At the Royal Alexandra Hospital, the Obstetrics Medicine unit delivers highly specialized care for women referred for high-risk pregnancies.

## CLINICAL INNOVATION

The *Own our Care* campaign was launched at the University of Alberta Hospital in 2015 to improve care delivery throughout the GIM in-patient units. Front-line staff identified four quality measures to monitor improvement: staff flu vaccination (increased from 85 per cent to more than 90 per cent); hand hygiene (increased from an average of 80 per cent to more than 90 per cent compliance); smoking cessation intervention (new for 2016); and hospital-acquired *C. difficile* infection (decreased from an average of seven to virtually 0). In 2016, more than a dozen members of the GIM patient care team received the University Hospital Foundation Champions of Care award, with more than 40 nominations from patients, families and colleagues.

## RESEARCH

Division research continues to generate almost \$2 million annually in peer-reviewed funding. Division members published 92 peer-reviewed papers.

## EDUCATION

In 2016, 17 residents and four graduate students were training in the division.

Drs. Vijay Daniels and Cheryl Goldstein, core internal medicine residency training associate program directors, developed and implemented Competency Based Medical Education in July 2016 at the University of Alberta. Key components include the role of the new academic advisers and development of a new competency-based assessment framework.

At a national level, divisional members contribute to the certification of residents as members of the Core Internal Medicine Specialty Committee, General Internal Medicine Specialty Committee and the Royal College's Examination Committee.

Nineteen members were recipients of various undergraduate and postgraduate teaching awards.

# InProfile

## General Internal Medicine



### *Educator*

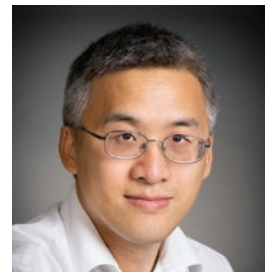
#### DR. JENNIFER RINGROSE



Dr. Jennifer Ringrose is the director of the General Internal Medicine Residency Program, which in 2016 had 15 residents. She has received awards for her teaching and mentorship including, in 2016, the Postgraduate Medical Education Teacher of the Year award from the Grey Nuns Community Hospital and Postgraduate Teacher of the Year from the Grey Nuns Medical Staff Association. She attends the Clinical Teaching Unit and sees a full range of general internal medicine patients in her outpatient practice. She also sees patients in the hypertension clinic and has a related research interest in blood pressure measurement.

### *Faculty Recruit*

#### DR. PETER HWANG



Clinician-scientist Dr. Peter Hwang recently joined the division as an assistant professor. He studies the structure and function of cardiac troponin, a calcium-dependent molecular switch that turns heart contraction on and off with every heartbeat. A single gene mutation can lead to abnormal heart muscle growth, heart failure and fatal arrhythmias because of its effect on calcium sensitivity in cardiac troponin. With support from the Heart and Stroke Foundation of Canada, Dr. Hwang is designing molecules to correct the effect of genetic mutations on cardiac troponin. The work could lead to the first treatments for hereditary cardiomyopathy.

## Dr. Finlay McAlister

**Dr. Finlay McAlister wanted to know if it was possible to reduce hospital stays and ensure patients have the same or better outcomes. He partnered with Alberta Health Service's Care Transformation Initiative, spearheaded by Dr. Ann Colbourne, to find out.**

Their approach was based on listening to patients and care teams and then re-engineering the care to reflect the changes people wanted. From that input, the team developed four key changes: creation of patient cohorts, integration of teams, support of best practice, and optimized transitions.

For example, General Internal Medicine patients were previously scattered across the University of Alberta Hospital in 11 wards across three floors. Daily rounds required walking among the wards and trying to find which nurse was looking after which patient. Patients are now together in three contiguous wards.

Statistics on six other provincial teaching hospitals showed reductions in the lengths of stay during the study period. However, the changes at the University Hospital resulted in an additional reduction of 20 per cent, or 1.5 days, in length of stay.

*Dr. Finlay McAlister is a professor in the Division of General Internal Medicine, general internist and lead for Alberta's SPOR SUPPORT Unit Data Platform.*



Dr. McAlister says the next steps would be to reduce 30-day readmission rates by doing more detailed assessments at discharge. "Part of that is flagging who needs earlier followup with their family physicians once they leave the hospital, because that's been shown to reduce readmission. Part of this would also be increased home care support to transition people back into the community more successfully."

This will have upstream effects, he says. "If there are fewer people coming back to the emergency room, there will be shorter wait times."

# Geriatric Medicine



GERIATRICIANS LOOK AFTER MEDICAL CONDITIONS IN OLDER PEOPLE AND FOCUS ON THE UNIQUE PROBLEMS OF PEOPLE IN LATE LIFE, INCLUDING FRAILITY, DEMENTIA AND IMPAIRED MEMORY, DELIRIUM, FALLS, INAPPROPRIATE DRUG USE AND INCONTINENCE. THESE CONDITIONS COMPLICATE SURGERY AND OTHER MEDICAL CARE; ADD COMPLEXITY TO CHRONIC DISEASES SUCH AS DIABETES, OSTEOARTHRITIS AND HEART DISEASES; AND REDUCE THE ABILITY OF OLDER ADULTS TO CARRY OUT THEIR EVERYDAY ACTIVITIES.

Members of the Division of Geriatric Medicine, although mostly concentrated at the university site, provide diverse clinical services—from acute to community care—to the Edmonton Zone and beyond. They also provide care in specialty clinics in osteoporosis, mild cognitive impairment and bladder and bowel problems.

As the ratio of geriatricians to the large geriatric population is low, division geriatricians provide leadership in organizing Alberta Health Services and the community to meet the needs of the population.

## LEADERSHIP

**Dr. Adrian Wagg**, division director, Edmonton Zone section chief

# Geriatric Medicine



## CLINICAL

Division members provide comprehensive in-patient services at University of Alberta Hospital and Royal Alexandra Hospital. These include an Acute Care of the Elderly (ACE) unit in each hospital to stabilize medical conditions and restore functions in patients, many coming in through the emergency departments.

Specialized clinics in Edmonton assess patients and enable access through a centralized referral and triage system. Outpatient clinics and in-patient consultation services are provided to Sherwood Park, St Albert, Spruce Grove, Fort Saskatchewan, Vegreville and Mayerthorpe. Home assessments and outreach services are also available. The multidisciplinary specialized continence clinic, based at the Glenrose Rehabilitation Hospital, cares for patients of all ages.

## CLINICAL INNOVATION

The division successfully secured funding to build a communal dining facility for older in-patients to improve nutritional state and clinical outcomes from acute illness. It also collaborated in an Alberta Health Services Quality Improvement project for protected mealtimes for patients on the wards. Further funding provided a TV/DVD collection for patient entertainment on the ACE units.

In addition to clinical care, medical education and research, the division provides substantial administrative service to the department, faculty and to Alberta Health Services.

## RESEARCH

The division's research agenda addresses four key themes: cognition, frailty, transition of care and patient safety. Given the unavoidable demographic shift to an older population, the continued work in these areas becomes ever more important.

The division received \$2.5 million in donations and project grant funding from the Canadian Institutes of Health Research. Division members published 18 papers, including the most cited paper in the *Canadian Medical Association Journal* and a paper in the high-impact journal *European Urology*.

Research conducted by division members includes examining the impact of electronic decision aids on prescribing, frailty on clinical outcomes for older people, peer educators on healthy aging behaviours in community-dwelling seniors, as well as the assessment of a geriatric medicine-surgical liaison service. The division also has a large program of research on urinary incontinence.

## EDUCATION

Undergraduate and postgraduate students learn at a weekly academic half-day and are involved in bedside teaching at the University and Royal Alexandra Hospitals. Four residents and three graduate students were training in the division in 2016. Trainees published four peer-reviewed publications. The Dr. Peter N. McCracken Legacy Scholarship was awarded in 2016 to PhD student Stephanie Chamberlain, who is the president of the Canadian Association of Gerontology Student Connection. Division member Dr. Darryl Rolfson contributed to the development and implementation of competence-based curriculums in core internal medicine

The division runs a regular series of community engagement lectures aimed at improving the health literacy of older adults in the community.

# InProfile

## Geriatric Medicine



*Promoted, Award Winning Faculty*

### DR. ANGELA JUBY



Dr. Angela Juby's research interests are in the disorders of aging, including osteoporosis, sarcopenia, exercise, dementia prevention and functional nutrition. Dr. Juby has published and lectured extensively, served as president of the Canadian Geriatric Society, and served on advisory councils related to geriatric health. She advised the team that developed the Health Savvy Seniors program in Alberta, intended to reduce the numbers of seniors admitted to the hospital for preventable reasons. Dr. Juby received the Ronald Cape Distinguished Service Award for lifetime achievement and was promoted to professor of medicine in 2016.

*Award Winning Faculty*

### DR. FRANCES CARR



Dr. Frances Carr was recently recruited to the division as a clinical lecturer. She is the divisional lead for quality improvement and is part of the Westview Geriatric Assessment Team providing specialized geriatric care supporting primary care in Stony Plain. Dr. Carr received a Champion of Care award in 2016 and, in early 2017, was named Seniors Health Clinical Knowledge Lead for Alberta Health Services.



## Dr. Adrian Wagg

*Dr. Adrian Wagg is a geriatrician, professor, division director and the Chair in Healthy Aging.*

**Up to a quarter of women and 12 per cent of men aged 65 and over will experience bladder leakage and the embarrassment and life disruptions that go with it. Few of them, and too few of their doctors, realize something can be done. Geriatrician Dr. Adrian Wagg and his colleagues are changing that with a continence research program and a weekly continence clinic at the Glenrose Rehabilitation Hospital. They are investigating incontinence on multiple fronts and providing a much-needed clinical service to patients of all ages.**



Dr. Wagg has seen the impact of incontinence on sufferers' lives: social isolation, job loss and clinical depression. In care homes, incontinence is a huge challenge for staff, ranking third after pain and behaviour. In private homes, about a third of spousal caregivers show signs of clinical depression. Research confirms that the bladder and bowel problems of older people are not assessed or managed as well as those of younger people.

Dr. Wagg would like to reach people at mid-life with a focus on preventive geriatrics. "The public health message is consistent across any disease you can mention in terms of diet, exercise, smoking, drinking. It's the same with incontinence. Prevention is a huge part of the solution."

In 2016, Dr. Wagg and his colleagues received funding from the Canadian Institutes of Health Research for a multi-province project to engage health-care aides in quality improvement in nursing homes. He and his team also received a \$1.5-million donation from a patient and his wife who wanted to set up a fund for seniors research.

# Hematology



HEMATOLOGISTS FOCUS ON THE BLOOD AND BLOOD-FORMING SYSTEMS, DIAGNOSING, TREATING AND MANAGING BLOOD DISEASES, OF WHICH LEUKEMIA, MYELOMA AND LYMPHOMA ARE THE MOST COMMON. HEMATOLOGISTS ALSO PROVIDE DIAGNOSIS AND CARE FOR HEREDITARY AND ACQUIRED DISORDERS OF COAGULATION—E.G., HEMOPHILIA, AND HEREDITARY DISORDERS OF RED CELL SYNTHESIS LIKE SICKLE CELL ANEMIA.

The Division of Hematology is the major hematology referral centre for the Edmonton region, northern Alberta, northeastern BC and N.W.T.

## LEADERSHIP

**Dr. Joseph Brandwein**, *division director, Edmonton Zone section chief*

# Hematology



## CLINICAL

Division members provide consulting for patients with advanced hematologic malignancy requiring significant expertise and specialized nursing care. The in-patient unit at the University of Alberta Hospital treats acute leukemia, cares for patients with complications due to chemotherapy and manages patients with other blood disorders.

The in-patient unit at the Cross Cancer Institute cares for patients undergoing autologous stem cell transplantation and patients with lymphoma and myeloma requiring hospitalization. An in-patient consultation unit opened at the Royal Alexandra Hospital in 2016. The majority of ambulatory clinics are at the Kaye Edmonton Clinic, where division members manage patients with a wide variety of blood disorders.

## SPECIALIZED CLINICS AND SERVICES

Ambulatory clinics at the Cross Cancer Institute are staffed jointly by division hematologists and Cross Cancer Institute physicians, for patients with lymphoma, multiple myeloma, and post-allogeneic bone marrow transplantation. Thrombosis and infusion clinics are offered at the Royal Alexandra Hospital. Home-based chemotherapy is available for acute leukemia.

## CLINICAL INNOVATION

The Hematology Day Unit at the University of Alberta Hospital provides outpatient support for patients with acute leukemia and other disorders. A cancer-associated thrombosis clinic is also offered at the University of Alberta.

## RESEARCH

Division members brought in almost \$1 million in funding in 2016 and published 25 peer-reviewed papers. The Division has an active clinical trials program covering all treatment phases, and collaborates with scientists at the University of Alberta in pre-clinical translational and correlative research.

## EDUCATION

Four hematology subspecialty residents completed training and passed their Royal College examinations in Hematology: Drs. Andrei Fagarasanu, Mark Hnatiuk, Jameel Abdulrehman and Arabesque Parker.

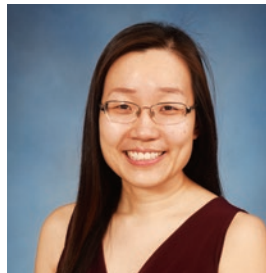
Dr. Abdulrehman obtained a CanVECTOR Thrombosis fellowship in Toronto; Dr. Parker won an American Society of Hematology Abstract award; Dr. Hnatiuk joined the University of Alberta Hospital clinical staff and Dr. Fagarasanu was published in *Annals of Surgical Oncology* and joined the clinical staff at the Royal Alexandra Hospital.

# InProfile

# Hematology

## *Clinical Innovator*

### DR. CYNTHIA WU



Cancer is associated with a four-fold increase of risk for thromboembolism, or blood clots, the second leading cause of death in patients with cancer. Dr. Cynthia Wu, an assistant professor in clinical hematology with a special interest in venous thromboembolism, opened the first cancer-associated thrombosis clinic in Edmonton in 2014. As clinic director, she has overseen the rapid growth of the clinic, with nearly 300 patients referred in 2016. Trainees have an opportunity to learn about thrombosis, including cancer-associated thrombosis at the clinic, through a formal thrombosis elective rotation Dr. Wu created in 2016.

## *Promoted Faculty*

### DR. IRWIN SANDHU



Dr. Irwin Sandhu is a clinical hematologist and newly promoted associate professor. His work in acute leukemia and multiple myeloma, published in the *New England Journal of Medicine* and *Blood*, has contributed to the University of Alberta's reputation as a leukemia centre and the Cross Cancer Institute's strengths in multiple myeloma and bone marrow transplantation. As acting lead for the latter program, he has a special interest in therapeutic apheresis. In 2016, he received a Champion of Care award from a nomination by patient groups.

## Dr. Joseph Brandwein

*Dr. Joseph Brandwein is a clinical hematologist, director of the Division of Hematology and professor of medicine.*



**“One of the problems being faced by every hospital in the country is bed pressures and difficulty getting patients in for planned treatments.”**

*Dr. Joseph Brandwein*

Treatment for adults diagnosed with acute myelogenous leukemia (AML) is long, involving weeks of intravenous drug treatment interspaced with a month of rest, repeated several times. Until 2014, all AML patients in northern Alberta lined up for limited in-patient hematology beds at the University of Alberta Hospital for post-remission (consolidation) chemotherapy. This meant long waiting times and increased patient anxiety.

That changed with an innovative approach, implemented by Dr. Joseph Brandwein and successfully used in other medical centres, to treat AML patients at the University of Alberta’s medical outpatient clinic rather than as in-patients.

Clinic staff rose to the challenge of working with a much more intense and complex treatment. Now, the majority of AML patients are treated entirely as outpatients for the consolidation phase of their treatment, with care delivered by nurse practitioners. More than 500 bed-days are saved each year and the number is increasing as more patients move to outpatient treatment. The success of the clinic led to its expansion, and a further expansion is planned in 2017 to treat febrile neutropenia, in which the immune system is compromised because of a low white blood cell count and patients develop fever.

Surveys show that patients are happy if they don’t have to stay in hospital throughout their treatment, and if they live in the city, they can sleep in their own beds. “They also get less exposure to hospital pathogens, many of which are drug resistant,” he says.

For Dr. Brandwein, seeing the challenges that AML patients face inspires him to find ways to improve their outcomes as much as possible. That translates into finding innovative, evidence-based approaches that put the patient’s needs and desires at the centre of care.

# Infectious Diseases



INFECTIOUS DISEASE SPECIALISTS DIAGNOSE AND TREAT INFECTIONS DUE TO BACTERIA, VIRUSES, FUNGI AND PARASITES IN A WIDE VARIETY OF PATIENTS, INCLUDING MEDICAL, SURGICAL AND CRITICAL CARE PATIENTS.

The Division of Infectious Diseases provides clinical services to all acute care facilities in Edmonton and consultative services to northern Alberta and the western Northwest Territories. Division members contribute to regional and provincial programs in infection prevention and control, antimicrobial stewardship and workplace health and safety. The division enjoys a close working relationship with provincial and regional microbiology laboratories, and with regional public health officials.

## LEADERSHIP

**Dr. Karen Doucette**, *division director, Edmonton Zone section chief*

# Infectious Diseases



## CLINICAL

Division members offer in-patient and ambulatory consultation services across the Edmonton Zone.

## SPECIALIZED CLINICS AND SERVICES

Infectious disease specialists oversee outpatient parenteral antimicrobial therapy at six hospitals in and around Edmonton. An Interdisciplinary Hepatitis Support Program for patients with viral hepatitis includes clinics run by nurses for assessment of hepatic fibrosis and follow-up of inactive hepatitis B carriers. Clinics in two federal and three provincial corrections facilities manage HIV, hepatitis B and C, sexually transmitted and other infections in inmates.

More than 2400 people living in northern Alberta, including remote and Aboriginal communities, are served by the multidisciplinary care offered through the Northern Alberta HIV Program. A transplant infectious diseases service, with a dedicated team of four physicians, provides care to immunocompromised patients with infectious complications at the University of Alberta Hospital and Cross Cancer Institute. An interdisciplinary tuberculosis program at the Aberhart Center provides treatment of latent and active tuberculosis.

## CLINICAL INNOVATION

A new registered nurse-led clinic for inactive hepatitis B virus carriers gives care to about 200 patients formerly treated in doctor-run clinics.

## RESEARCH

Divisional members are extensively involved in outcomes research, clinical trials, epidemiologic research, and basic science research. The division has a long history of conducting clinical trials of antiviral therapy, starting with drugs for herpes simplex virus in the 1980s. In 2016, research funding totalled \$750,000. Division members published 45 papers in peer-reviewed journals.

## EDUCATION

The division offers postgraduate training in infectious diseases and fellowship programs in transplant infectious diseases and viral hepatitis. Eleven residents, fellows and graduate students were active in research in 2016 with numerous abstract presentations (poster and oral) and a total of nine peer-reviewed publications.

## Statistics

**In 2016, there were 49 women with HIV who became pregnant (13 of these were new HIV diagnoses at prenatal screening). Of 25 live births, there were no HIV transmissions to the baby.**

# InProfile

## Infectious Diseases



### *Educational Leader*

#### DR. KAREN DOUCETTE



Dr. Karen Doucette, director of the Division of Infectious Diseases, is a fellow of the American Society of Transplantation. Her clinical interests are viral hepatitis (B and C) and infections in immunocompromised hosts. Her research focuses on the epidemiology and outcomes of infections in organ transplant recipients and quality of care in patients with hepatitis B and C, with and without immunocompromise. In 2016, she and Dr. Leah Remington developed a quality care initiative examining links to care for patients with chronic hepatitis B. She is the educational lead for the transplant infectious diseases and viral hepatitis fellowship programs.

### *Award Winning Faculty*

#### DR. DENNIS KUNIMOTO



Dr. Dennis Kunimoto's research interests are in the immunology and molecular biology of mycobacteria. His clinical interests include tuberculosis, hepatitis C and HIV, and he is the medical director of the Edmonton Tuberculosis Clinic. He was honored in 2016 with a prestigious Outstanding Service Award from the International Tuberculosis Union. Dr. Kunimoto is vice-dean for faculty affairs for the Faculty of Medicine & Dentistry and sits on committees for tuberculosis at the provincial and national level. He is on the executive of the Alberta Society for Infectious Diseases.



## Dr. Rabia Ahmed

*Dr. Rabia Ahmed is an infectious disease specialist, associate professor of medicine and physician lead for provincial infection and control at all provincial corrections facilities.*

**People in correctional facilities have some of the highest rates of infectious diseases such as hepatitis C, HIV and sexually transmitted infections. Dr. Rabia Ahmed is addressing this by bringing specific health services into correctional facilities and monitoring their success.**

As part of the Northern Alberta HIV Program, she and specially trained staff started an HIV clinic in the Edmonton Remand Centre. Resulting data showed that released inmates were managing their disease better than before incarceration. She is also looking at the best way to increase testing for HIV and other sexually transmitted infections, potentially through opt-out testing, after the success of a pilot project using that approach. Close living quarters, frequent transfers and poor health mean inmates have a higher likelihood of acquiring infections and transmitting them into the broader community after they are released. Dr. Ahmed has implemented strict protocols and best practices for infection control in the provincial correctional system.

Incarcerated women often neglect their own health because they are dealing with homelessness, custody of their children, food insecurity, addiction and mental health. Dr. Ahmed started a women's health clinic in the Edmonton Remand Centre to provide services, including breast health, PAP tests, sexually transmitted infection testing and counselling for intimate partner violence. Similar clinics will be opened at the Fort Saskatchewan and other provincial correctional facilities that house women.



Dr. Ahmed, her colleagues and female inmates also developed an inmate's resource manual called *A Woman's Guide to Health in Jail*.

Addressing housing and nutrition is the final and most critical piece for health, Dr. Ahmed says. "As physicians and as academics, we often advocate for patients getting the right drug or the right test or treatment. We also have to advocate for food security. We have to advocate for stable housing."

# Nephrology



NEPHROLOGISTS STUDY, DIAGNOSE AND TREAT DISEASES OF THE KIDNEY, INCLUDING ELECTROLYTE DISTURBANCES AND HYPERTENSION, AND CARE FOR THOSE REQUIRING RENAL REPLACEMENT THERAPY, INCLUDING DIALYSIS AND RENAL TRANSPLANT PATIENTS.

The Division of Nephrology is the main health-care centre for people across northern Alberta suffering from kidney disease. It is part of the Alberta Kidney Disease Network, which includes clinical investigators in Edmonton and Calgary, all focused on clinical research and research training aimed at improving the health and well-being of people with kidney disease.

## LEADERSHIP

**Dr. Kailash Jindal** was division director and Edmonton Zone section chief until November 30, 2016, when **Dr. Branko Braam** became interim division director and Edmonton Zone section chief

# Nephrology



## CLINICAL SERVICES

In conjunction with the Northern Alberta Renal Program, the division is responsible for the largest single-centre renal failure program in Canada. Patients with end-stage kidney disease across northern Alberta are provided services under the umbrella of the program. Those services include the University of Alberta-based Renal Transplantation Program, multi-site hemodialysis, 13 satellite hemodialysis units, and home dialysis and peritoneal services.

Clinics in the Edmonton area offer services to outpatients requiring different levels of care. General nephrology clinics offer patients consultations with specialists. Renal insufficiency clinics are held at the University of Alberta Hospital, the Royal Alexandra Hospital and the Grey Nuns Hospital and aim to slow the progress of kidney disease in patients. Renal transplant clinics serve people with chronic kidney disease, and urgent access clinics provide referrals to kidney specialists.

## SPECIALIZED CLINICS AND PROGRAMS

- Rural clinics in central and northern Alberta
- Diabetic nephropathy prevention program
- Plasmapheresis program at University of Alberta Hospital
- New Glomerulonephritis Clinic

## RESEARCH

The Division of Nephrology is the knowledge hub for nephrologists to research and develop new treatments and prevention strategies in clinical nephrology. The division's research strengths in transplantation immunology include investigations of blood vessel damage and function in kidney disease, kidney injury during transplantation, prenatal environment and later-stage health risks for children, palliative care in end-stage renal disease, and health economics and health outcomes. Peer-reviewed research funding for the division stands at more than \$1.5 million in 2016. Members published a total of 58 publications.

## EDUCATION

In 2016, six graduate trainees completed programs, with seven publications to their credit. Medical education is delivered in the classroom through lectures and seminars, in clinics, through supervision of trainees and residents, grand rounds and medical education events, and in partnerships with developing countries and remote parts of Canada.

Special subspecialty programs offer training in nephrology and renal transplantation. Under the auspices of the Canadian Society of Nephrology, the division contributes to the development of practice guidelines in every aspect of nephrology for the development of national clinical care standards.

# InProfile

# Nephrology



## Published Researcher

### DR. AMINU BELLO



Assistant professor Aminu Bello received his MD in Nigeria, his PhD and clinical training in the U.K., followed by a post-doctoral fellowship in Canada. That global experience is reflected in his interest in improving kidney care and education in developing countries. In 2016, Dr. Bello was invited by the International Society of Nephrology to co-chair the development of the Global Kidney Health Atlas Project, which included 125 countries. The findings, a world first in assessing the current capacity for kidney care globally, were presented at the World Congress of Nephrology, and published by *JAMA* to coincide with the event.

## Clinical Innovator

### DR. STEPHANIE THOMPSON



During her PhD studies, Dr. Stephanie Thompson piloted an exercise trial called Dially-size! The study looked at the different types of exercise people could do during their hemodialysis treatment. The program was so popular with patients that it is being rolled out as a clinical program to other hemodialysis units in the Northern Alberta Renal Program. The study results were published in *BMJ Open* and the *Clinical Journal of the American Society of Nephrology* in 2016. Now an assistant professor, Dr. Thompson is looking at other ways that exercise can improve the care of people with kidney disease.

## Researcher and Educator

### DR. SCOTT KLARENBACH



Dr. Scott Klarenbach, a clinician-scientist, professor, nephrologist and health economist, is a member of the Canadian Task Force on Preventive Health Care, which recommended colonoscopies not be used for routine screening for people at low risk for colon cancer. His research in health economics focuses on the most efficient ways to use health-care resources for the optimal health of the population. In 2016 Dr. Klarenbach received the Kidney Health Research Chair – Health Outcomes.

## Dr. Sara Davison

*Dr. Sara Davison is a nephrologist, bioethicist and professor of medicine and co-chairs the international practice guideline development for kidney palliative care.*

**Dr. Davison's determination to involve patients as true collaborators in their care led her to design the Conservative Kidney Care pathway as an option for dialysis. Launched as an 18-month pilot in 2016, the pathway's interactive website walks patients and caregivers through care pathways together. A milestone achievement is the patient decision aid, a first-in-the-world tool that Dr. Davison hopes will transform kidney disease care locally and internationally.**



### “Walking alongside patients”

The decision aid tool is based not just on survival as an outcome, but on quality of life outcomes. “Patients want to know what they are going to feel like, if they’ll be able to live independently, what their physical and mental capabilities will look like, to determine which pathway is going to serve them better.” As the data improves the prognostic tool, it will be able to predict the impact of various treatments on the quantity and quality of patients’ lives.

Dr. Davison is aiming to launch another, multi-province database. Her goal is to scale, spread and sustain the conservative kidney care approach regionally, at the primary care level, and internationally. By early 2018, the pilot will be complete and Dr. Davison will highlight the results at a national conference.

“The work we’re doing is a model that can be applied to the vast majority of elderly patients with other complex, chronic illnesses,” Dr. Davison says. “It means patients can live a life that has meaning. They can enjoy life while living with advanced disease.”

# Neurology



NEUROLOGISTS DIAGNOSE AND CARE FOR PATIENTS SUFFERING FROM DISORDERS OF THE NERVOUS SYSTEM. DIVISION MEMBERS HAVE EXPERTISE IN STROKE, MULTIPLE SCLEROSIS, MOVEMENT DISORDERS, NEUROMUSCULAR DISEASES, AMYOTROPHIC LATERAL SCLEROSIS, COGNITIVE DISORDERS AND EPILEPSY. THE DIVISION INCLUDES 30 NEUROLOGISTS BASED AT THE UNIVERSITY OF ALBERTA HOSPITAL AND MORE THAN 25 COMMUNITY-BASED NEUROLOGICAL CLINICIANS.

Neurology enjoys close partnerships with the Neuroscience and Mental Health Institute (NMHI) of the University of Alberta, and the divisions of Neurosurgery and Physical Medicine & Rehabilitation.

## LEADERSHIP

*Dr. Douglas Zochodne, division director*

# Neurology



## SPECIALIZED CLINICS AND SERVICES

- Deep brain stimulation in the Movement Disorders Program
- Neurology Palliative Program
- Subcutaneous immunoglobulin therapy for neuromuscular disorders
- Comprehensive Epilepsy Program
- Multiple Sclerosis Centre and Clinic
- Clinical Neurophysiology, Headache, Urgent Neurology, Cognitive, Neuromuscular, and Stroke Clinics

## CLINICAL INNOVATION

Division members achieved a Canadian first with the deployment of the first stroke ambulance (Mobile Stroke Unit). Other activity includes the establishment of a cognitive disorders clinic at the Kaye Edmonton Clinic, the development of a multiple sclerosis outreach wellness coordinator position, and an invitation for the movement disorders program to join the Parkinson's Outcomes Project of the National Parkinson Foundation.

## RESEARCH

The division has a significant research component, with multiple members investigating vascular diseases, epilepsy, movement disorders and neuro-degenerative diseases, including Alzheimer's, neuromuscular diseases and outcomes research. Division members received more than \$7 million in funding and published 80 papers over the past year in peer-reviewed journals.

## EDUCATION

The Division of Neurology's undergraduate program has a neuroscience component in which members participate in a lecture series, small group sessions and in assessment and evaluation of the trainees. The division has five graduate students in training, and its postgraduate program is one of the largest in the country, with 23 full-time residents in training. The stroke fellowship program encompasses basic science training, clinical work and evaluation research. Post-doctoral fellows are also an essential part of the stroke research laboratory, in Alzheimer's and immunology research. Trainees published 15 papers in peer-reviewed publications in 2016.

# InProfile

# Neurology



## *Promoted Faculty*

### DR. VALERIE SIM



Dr. Valerie Sim, a neurologist and prion disease scientist, became an associate professor in the Division of Neurology in 2016. She researches the developmental stages of different strains of prion diseases, caused by protein misfolding in the brain. Protein misfolding is involved in, among others, Creutzfeldt-Jakob disease in humans and bovine spongiform encephalopathy or mad cow disease in animals. Her research is aimed at preventing the ability of prion proteins to shape-shift, elude treatment and infect the brain. Dr. Sim is a passionate public communicator, whose recent TED Talk frames the complexities of prion diseases through compelling storytelling.

## *Faculty Recruit*

### DR. GLEN JICKLING

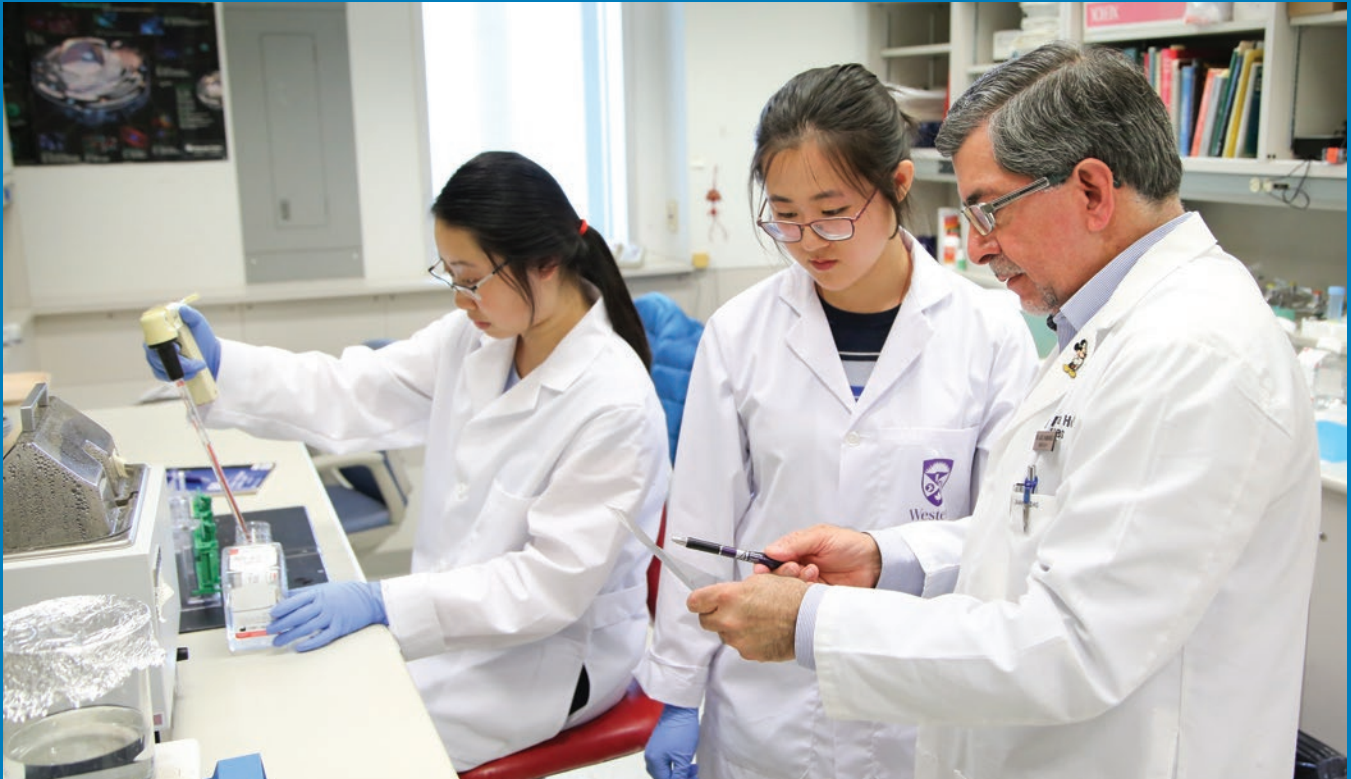


Dr. Glen Jickling, a recognized world leader in gene expression in stroke, was recruited from University of California Davis to the division in 2016. His interests are in vascular neurology, including ischemic and hemorrhagic stroke. His research has shown specific RNA markers (molecules essential in gene activity) in blood can identify stroke and predict cause in strokes of unknown origin. His research has resulted in more than 72 peer-reviewed publications, the identification of new therapeutic targets, and funding support from the National Institutes of Health, the American Heart Association and the Canadian Institutes of Health Research.



## Dr. Jack Jhamandas

*Dr. Jack Jhamandas, neurologist and clinical scientist, is a distinguished university professor.*



**About 50,000 Albertans have Alzheimer's and each person's life affects about a dozen people around them, says Jhamandas. That means 600,000 people, or about one in six Albertans, are affected by this disease.**

"There is a long and interesting history of a link between diabetes and Alzheimer's," Dr. Jhamandas says. "If you have diabetes, you have a significantly higher chance of developing Alzheimer's. There are people who believe Alzheimer's is 'Type 3 diabetes' of the brain."

That's because molecular links exist between the protein amylin, found in the pancreas of diabetic patients, and amyloid protein, found abundantly in the brains of Alzheimer's patients and considered a prime suspect for causing Alzheimer's.

Dr. Jhamandas's research has shown that a diabetes drug, AC253, that blocks the effects of amylin in the pancreas also blocks the effects of amyloid on brain cells. In his experiments, AC253 not only prevented brain cell destruction in Alzheimer's but restored memory in the cells.

In related work, a genetically altered Alzheimer's mouse model he developed with Dr. David Westaway had only half the brain cell receptors for amyloid. He's found that these mice experience a much slower onset and severity of Alzheimer's disease.

Help from pharmaceutical companies will be essential to conduct Phase I trials in humans, he says, but many companies are gun-shy now about treatments for Alzheimer's, as nothing so far has worked.

"As physicians, as human beings, we are all well aware of the burden that this devastating condition places on the individual, their families and loved ones, and our society," he says. "Our job as scientists is to take the discoveries from our laboratories all the way to the clinic."

# Physical Medicine & Rehabilitation



PHYSICAL MEDICINE & REHABILITATION SPECIALISTS DEVELOP AND PROVIDE MEDICAL TREATMENTS AND INTERVENTIONS FOR PEOPLE WITH DISABLING CONDITIONS TO IMPROVE THEIR FUNCTION AND QUALITY OF LIFE. THESE SPECIALISTS HAVE A TEAM-BASED APPROACH TO DISABILITY CARE AND TREATMENT ACROSS THE LIFESPAN FROM PEDIATRICS TO GERIATRICS, ADDRESSING ALMOST ALL TYPES, CAUSES AND CONSEQUENCES OF DISABILITY.

Division members work collaboratively with the Glenrose Rehabilitation Hospital and with Alberta Health Services in the Edmonton Zone and elsewhere. Many division members are located at the Glenrose, one of the largest free-standing tertiary rehabilitation centres in North America with approximately 220 in-patient beds, numerous outpatient programs and state-of-the-art facilities.

## LEADERSHIP

**Dr. Shaun Gray**, *division director*

# Physical Medicine & Rehabilitation



## CLINICAL INNOVATION

Division members Drs. Jacqueline Hebert, Patrick Pilarski and team released open-source software and a design for a robotic arm prosthesis with the intent of stimulating worldwide development of an affordable and widely deployable prosthetic limb.

Division members were awarded two patents in the United States for the development of neural prosthetic and neural integrative technology.

Dr. Vivian Mushahwar and team are developing devices to reduce disability from spinal cord injury.

## RESEARCH

Division members had 26 peer-reviewed publications in 2016 and made 70 local, national and international presentations, many as invited plenary speakers. More than \$31 million in new and ongoing grant funding supports division researchers

In 2016, division members worked on developing national guidelines for treating conditions such as concussion in professional sports (Canadian Football League) and the rehabilitation of severe brain injury.

## EDUCATION

The division has strong academic links with other university faculties and departments such as the Faculty of Rehabilitation Medicine, Faculty of Physical Education and Recreation, Faculty of Engineering, and the Department of Computing Science, as well as the Neuroscience and Mental Health Institute and other medical specialties such as neurology, orthopedics, and anatomy. These links cover the spectrum of rehabilitation from basic science through to different clinical and epidemiological areas.

Division members supervised or served on thesis committees for 29 graduate students in 2016. Division-affiliated graduate students won many awards including Vanier awards, NSERC scholarship awards, a President's Doctoral award and a variety of poster and podium presentation awards. Two residents completed residency training and passed Royal College examinations.

**“Rehabilitation is like clean water—essential to health, but often underappreciated until needed.”**

*Dr. Shaun Gray*

# InProfile

## Physical Medicine & Rehabilitation



### *Medical Educator*

## DR. LALITH SATKUNAM



Spasticity is a condition of exaggerated muscle tone, weakness and poor coordination that results from injury to, or diseases of, the nervous system. Dr. Lalith Satkunam, an internationally recognized spasticity expert, is medical lead of the Spasticity Program for Adults at the Glenrose Rehabilitation Hospital. He is also the medical adviser for the Glenrose's Advanced Rehabilitation Technologies. His passion for medical education has led to a number of teaching awards, the most recent of which was the national Meredith Marks Award for Teaching Excellence in 2016.

### *Researcher and Clinical Innovator*

## DR. JACQUELINE HEBERT



Dr. Jacqueline Hebert is an associate professor with adjunct appointments in biomedical engineering, mechanical engineering and surgery. She leads an interdisciplinary team investigating upper-limb targeted reinnervation surgery and is the medical lead for the Adult Amputee Program at the Glenrose Rehabilitation Hospital. Her research focuses on improving sensory motor control of advanced prosthetic systems in the Bionic Limbs for Improved Natural Control lab. She also develops advanced outcome metrics to assess the impact of new technologies and help translate these advances to improve function and quality of life after amputation.

## Dr. Patrick Pilarski

*Dr. Patrick Pilarski holds the Canada Research Chair in Machine Intelligence for Rehabilitation, is assistant professor in the Department of Medicine and principal investigator with the Alberta Machine Intelligence Institute.*

**Intelligent technology is changing the way the world works, Dr. Patrick Pilarski says, “but it has boots-on-the-ground impact in terms of improving how we live our daily lives and, especially in the medical system, how people live their lives when they have suffered injury, illness or other complications.”**



Dr. Pilarski's PhD and post-doctoral training are in electrical and computer engineering and computing science, expertise he brings to a collaboration with clinician-scientist Dr. Jacqueline Hebert on a group of projects known as Bionic Limbs for Improved Natural Control, or BLINC.

Dr. Pilarski believes that for patients using prosthetic limbs, technology's ability to learn can someday mean the recovery of sophisticated motor skills, such as juggling or playing the piano. A robot limb helping with low-level co-ordination of fingers and other movements could lead to the human-machine partnership beginning to achieve the same level of complex movements of a person with a healthy biological limb.

“This is something we do here that I think very few groups in the world are really looking at with concerted effort—rehabilitation technologies that continue to improve during use in daily life. We are designing prostheses that get better over time by observing the human's actions and the stream of information flowing between the human and the machine,” Dr. Pilarski says.

Looking ahead, the BLINC lab will play a role in Canada's new federal artificial intelligence strategy, announced in early 2017. It recognizes Edmonton as one of the top centres in the world in the field.

# Preventive Medicine



PREVENTIVE MEDICINE FOCUSES ON PROMOTING HEALTH. SPECIALISTS IN THE FIELD FOCUS ON THE ELEMENTS THAT CREATE HEALTH AND PREVENT DISEASE AND DISABILITY. THIS INCLUDES EVALUATING EVIDENCE FOR USE IN DECISION-MAKING, DETERMINING CLINICAL AND POPULATION-BASED APPROACHES THAT PROMOTE HEALTH AND PREVENT DISEASE, AND LEARNING THE OCCUPATIONAL CAUSES OF DISEASES. OCCUPATIONAL MEDICINE, THE INTERSECTION OF HEALTH AND THE WORKPLACE, IS A MAJOR AREA OF ACTIVITY FOR THE DIVISION OF PREVENTIVE MEDICINE. IT INCLUDES ASSESSING FITNESS FOR WORK, EVALUATING CONDITIONS THAT PREVENT PEOPLE FROM WORKING OR LIMIT THEIR WORK, AND APPROACHES TO ENABLE PEOPLE TO WORK.

The division's occupational physicians offer in-patient and outpatient consultations. Other division members practise in the specialty of public health and preventive medicine.

## LEADERSHIP

**Dr. Sebastian Straube**, *division director*

# Preventive Medicine



## CLINICAL INNOVATION

In collaboration with the Department of Medicine's Division of Dermatology and the Department of Psychiatry, a multidisciplinary dimension to the delivery of care was developed in two key areas of occupational health. Dr. Alexander Doroshenko became co-chair for the provincial Risk Assessment Panel that provides recommendations to Alberta Health Services on the risk of contracting blood-borne infections and the need to conduct population "look back" exercises.

## RESEARCH

In 2016, division members reported 13 publications. Research highlights include an international study on back pain resulting in a publication in *Pain*, a novel application of modeling in evaluating public health interventions published in *PeerJ*, and an international workshop held at the National Institute for Nanotechnology on workers' exposure to nanoparticles.

## EDUCATION

Twelve residents and two graduate students trained with the division. Trainees published three publications in 2016.

A new graduate-level course on the epidemiology of vaccine-preventable diseases and immunization programs was developed and offered through the School of Public Health. A course on systematic reviews was re-established and offered through the Department of Medicine and the School of Public Health.

# InProfile

## Preventive Medicine



### *Fellow*

#### DR. DANIEL SOWAH



Post-doctoral fellow Dr. Daniel Sowah was a co-winner of the Poster Prize at the 35th annual scientific conference of the Occupational and Environmental Medical Association of Canada. The poster highlighted research about vitamin D levels and vitamin D deficiency among different occupations. Dr. Sowah is currently focused on two major research topics: back pain prevention in the workplace and vitamin D levels in Indigenous peoples in the Arctic.

### *Resident*

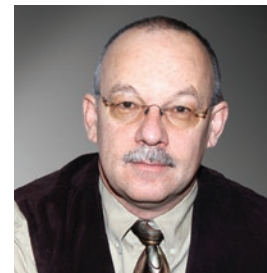
#### DR. MILA LUCHAK



Dr. Mila Luchak, a resident in Family Medicine and Public Health and Preventive Medicine contributes to the improvement of medical education. She was a member of the Political Advocacy Committee of the Canadian Federation of Medical Students, and served on a working group of the Association of Faculties of Medicine of Canada studying the engagement of medical students in public health. At the 2016 Canadian Conference on Medical Education, she was a member of a panel discussing best practices in public health electives for medical students.

### *Medical Educator*

#### DR. HAROLD HOFFMAN



Dr. Harold Hoffman is director of the Occupational Medicine Residency Program at the University of Alberta. He established a joint academic half-day teaching program across all Canadian residency programs in occupational medicine. In addition, although his clinical practice primarily focuses on adults with work-related health problems, he co-founded the Pediatric Environmental Health Clinic at the University of Alberta.



## Dr. Sebastian Straube

*Dr. Sebastian Straube is an associate professor and division director*

**Dr. Sebastian Straube's specialty is using evidence to make decisions in care. Two areas of research focus are occupational medicine and pain, including back pain. "Most people will experience low back pain at some point in their lives. It's associated with a significant amount of time missed from work and interference with work."**

Back schools, originating in Scandinavia in the late 1960s, offer patients with back pain a combination of education, exercise and instruction by therapists. They are common in occupational settings in Europe and around the world as part of workplace health programs. Dr. Straube was part of an international team that assessed what five decades of evidence said about back schools. The results did not provide strong support for their effectiveness. In 2016, he and the team published their findings in the journal *Pain*.

But Dr. Straube says that doesn't mean back schools should be shuttered. Instead, he thinks using modern study methods to investigate back schools would produce better evidence.



"Responder analysis" is a new method that has patient-centred research and care front of mind. It captures how many people achieved meaningful benefit. This can provide more value to the scientific community and regulatory authorities than just using an average of all responses, Dr. Straube says. It's changing how pain trials are conducted and analyzed globally.

"This research is primarily aimed at clinicians," he says. "It's vital to be critical and informed, to look at potential biases and the quality of evidence, before making decisions for clinical practice."

# Pulmonary Medicine



PULMONOLOGISTS DIAGNOSE AND TREAT DISORDERS OF THE RESPIRATORY SYSTEM, INCLUDING DIAGNOSTIC AND THERAPEUTIC BRONCHOSCOPY. MEMBERS OF THE DIVISION OF PULMONARY MEDICINE PROVIDE CONSULTATIVE AND BRONCHOSCOPY SERVICES AND CARE FOR PATIENTS WITH COMPLEX RESPIRATORY DISORDERS IN THE EDMONTON ZONE AND FROM NORTHERN ALBERTA, NORTHERN B.C., SASKATCHEWAN AND THE N.W.T. A SUBSET OF PULMONARY PHYSICIANS CARE FOR PATIENTS PRE- AND POST-LUNG TRANSPLANTATION. MANY PHYSICIANS CARE FOR PATIENTS WITH SPECIFIC RESPIRATORY SYSTEM DISEASES IN MULTIDISCIPLINARY CLINICS.

The division also has physicians offering services in allergy and clinical immunology.

## LEADERSHIP

**Dr. Harrissios Vliagoftis**, *division director, Edmonton Zone section chief*

# Pulmonary Medicine



## CLINICAL

Divisional members are using both traditional and innovative ways to improve patient care in the areas of asthma, lung cancer, transplantation and sleep apnea. They operate 18 beds at the University of Alberta Hospital and 28 beds at the Royal Alexandra Hospital and offer in-patient and ambulatory consultation services across the zone. These include bronchoscopy services at the University of Alberta Hospital, Royal Alexandra Hospital and other hospitals in Edmonton Zone; interventional pulmonary services at the Royal Alexandra Hospital and the University of Alberta Hospital; and lung transplant services for Alberta that also cover a large part of Western Canada. The sleep medicine service provides assessment and treatment of sleep apnea and other sleep disorders.

## SPECIALIZED CLINICS AND SERVICES

- Lung Transplant Program
- Comprehensive Cystic Fibrosis Clinic, Adult
- Chronic Obstructive Pulmonary Disease, Asthma, Chronic Cough and Edmonton Regional Severe Asthma Clinics
- Idiopathic Pulmonary Fibrosis Clinic
- Expertise in the assessment and treatment of hereditary hemorrhagic telangiectasia
- Sleep Medicine Clinic (comprehensive and sleep disorders/apnea)
- Pulmonary Function Laboratory at the University of Alberta Hospital, unique in the Edmonton Zone, offers specialized pulmonary testing

## RESEARCH

Division members received almost \$1 million in research funding in 2016. Members published 33 peer-reviewed publications.

The Pulmonary Research Group at the University of Alberta is a multidisciplinary group of more than 30 faculty and trainees that promotes translational research between basic scientists and clinicians. Research ranges from molecular laboratory-based investigations to health outcome measurements related to disease prevalence and patient care.

## EDUCATION

The division had six residents in pulmonary medicine and 10 graduate students in 2016. Many residents from the core Internal Medicine Program and other programs also completed general and specialized rotations in pulmonary medicine.

# InProfile

## Pulmonary Medicine



### Researcher

#### DR. PAIGE LACY



Dr. Paige Lacy's research focuses on the signalling pathways of immune cells during inflammation and has implications for better understanding of asthma and allergy. Her research is supported by funding from an NSERC Discovery grant and the Lung Association, Alberta & N.W.T. Together with collaborating investigator Bernadette Quemerais from the Division of Preventive Medicine, she is also investigating the application of metabolomics as biomarkers for detecting welding fume exposure in workers, work that received funding in 2016 from the Government of Alberta's Occupational Health and Safety Futures. In 2016, she was elected to the membership in the Collegium Internationale Allergologicum.

### Trainee

#### COURTENAY HEFFERNAN



Courtney Heffernan is the manager of the Tuberculosis Program Evaluation and Research Unit in the Department of Medicine. She is a part-time PhD student and recently received the Pulmonary Research Group Collaboration Award. She has co-written a number of papers that relate to the epidemiology of tuberculosis among Indigenous peoples in the Canadian Prairies. She is working on statistical and machine learning models to predict pulmonary tuberculosis in high-income, low-incidence settings.

## Dr. Michael Stickland



*Dr. Michael Stickland is an associate professor of pulmonary medicine, director of the G.F. MacDonald Centre for Lung Health, and scientific director for the Respiratory Health Strategic Clinical Network.*

**Chronic obstructive pulmonary disease (COPD) is a chronic lung disease, which includes chronic bronchitis and emphysema. It takes time to develop and is usually diagnosed in people 40 years and older, often in seniors. It can make it hard to do even simple tasks, such as walking up stairs. Pulmonary expert Dr. Michael Stickland views COPD as one of the ultimate challenges to physiology because it affects so much of the body.**

Pulmonary rehabilitation, a specialized exercise program for patients that includes sessions on quitting smoking (a major contributor to COPD), breath control, energy management and education on medications, can help people with COPD live better. Patients often shy away from physical activity because of their reduced lung function, Dr. Stickland says. His program aims to get them moving and out of a sedentary lifestyle, which affects more than lung function.

With the help of Alberta Health Services' Telehealth delivery, Stickland delivers classes to sites across Alberta. In Edmonton, patients can participate in the Breathe Easy pulmonary rehabilitation program at the G.F. MacDonald Centre, through referrals by their family doctor or a respirologist. Between the centre and the Telehealth delivery, hundreds of patients are treated annually.

Dr. Stickland is part of a team developing a standardized program for clinicians to start their own pulmonary rehabilitation programs. Funding for the work comes from multiple sources, including the Covenant Hospital Foundation, AstraZeneca Canada Inc. and Boehringer Ingelheim.

"The goal is for patients to get consistent, evidence-based information no matter where they are in Alberta," Dr. Stickland says. Once the web-based program is complete, Dr. Stickland and his colleagues will seek the endorsement of the Canadian Thoracic Society so that it becomes a national program.

# Rheumatology



RHEUMATOLOGISTS STUDY, DIAGNOSE AND CARE FOR PATIENTS WITH MEDICAL AND IMMUNOLOGICAL DISORDERS AFFECTING THE JOINTS AND MUSCULOSKELETAL SYSTEM. THE DIVISION OF RHEUMATOLOGY'S CLINICAL, RESEARCH, AND EDUCATION EFFORTS FOCUS ON MORE THAN 100 CONDITIONS. INCREASINGLY, RHEUMATOLOGISTS USE IMMUNOSUPPRESSIVE AGENTS AND BIOLOGICS FOR THERAPY.

## LEADERSHIP

*Dr. Stephen Aaron* was division director and Edmonton Zone section chief until September, 2016, when *Dr. Steven Katz* became interim division director and Edmonton Zone section chief

# Rheumatology



## CLINICAL

Division members offer ambulatory clinics and in-patient consultation services at every Edmonton Zone hospital. Clinics for patients with inflammatory arthritis, autoimmune disorders and other musculoskeletal diseases serve patients from northern Alberta, the N.W.T., northeastern British Columbia and northwest Saskatchewan. Outside of Edmonton, outreach clinics provide consultation and care to communities including Yellowknife, Red Deer and Fort McMurray.

## SPECIALIZED CLINICS AND SERVICES

- A Lupus/Dermatology Clinic, jointly managed by Rheumatology and Dermatology
- RAPPOR, a nurse-driven surveillance and research program for more than 2000 patients treated with biologic medications

## CLINICAL INNOVATION

In 2016, the On-TRAAC (Treating Rheumatoid Arthritis - providing Access to Care) clinic was launched. It provides care and counselling for patients and is run by a multidisciplinary team, including rheumatologists, staff trained in the Advanced Clinician Practitioner in Arthritis Care (ACPAC) program, trained staff, a physiotherapist, occupational therapist and a nurse.

## RESEARCH

Most members of the division participate in clinical research, either through clinical trials, longitudinal followup studies or medical education research. Division members attracted more than \$1 million dollars in funding in 2016 and had more than 40 peer-reviewed publications.

Dr. Mo Osman, clinical lecturer, was awarded an Alberta Innovates – Health Solutions Clinician Fellowship Grant for research in pulmonary hypertension.

## EDUCATION

Five residents and one clinician fellow are training and learning in the division. Trainees presented numerous abstracts at the national rheumatology meeting in 2016. With the coming introduction of Competence Based Medical Education, the program introduced an electronic documentation and evaluation tool for resident clinical experiences. It has been shared with other residency programs at the University of Alberta and nationally.

# InProfile

# Rheumatology



## *Faculty Recruit*

### DR. ALISON CLIFFORD



Dr. Alison Clifford was recently recruited to the Division of Rheumatology. She completed her rheumatology fellowship at Dalhousie University in Halifax, followed by a vasculitis fellowship at the Center for Vasculitis Care and Research, at the Cleveland Clinic. Dr. Clifford was accepted into the Future Leaders in Rheumatology Training program, run by the Canadian Rheumatology Association. It's a two-year mentorship program offered to rheumatologists who are considered likely to become leaders in research or education.

## *Resident*

### DR. JANET ROBERTS



Dr. Janet Roberts completed her MD at Memorial University in Newfoundland and came to Edmonton to pursue a residency in internal medicine. While in her residency she helped start the mentoring program for the General Internal Medicine group of residents and students. She began a two-year fellowship in Rheumatology in July 2016, and in October, was named Resident Physician of the Month by the Professional Association of Resident Physicians of Alberta. She also received the 2016 Arnold Voth Award and the 2015-16 CanMEDS Award.



## Dr. Walter Maksymowych

**Biologic therapies revolutionized rheumatoid arthritis treatment. But ensuring the treatment is effective depends on early diagnosis—before joint damage occurs—and on therapeutics targeted to the specific characteristics of a patient’s disease.**

Dr. Walter Maksymowych and Dr. Aziz Ghahary, now at the University of British Columbia, are responsible for the discovery that makes this possible. They found a blood protein biomarker that indicates the presence of rheumatoid arthritis, the severity of the disease and the cause of joint inflammation. They developed a blood test from their discovery, now commercialized as JOINTstat, that’s used widely in the United States. In Canada, it’s approved in B.C. and Ontario and is awaiting approval in Alberta.

Dr. Maksymowych is internationally recognized for his contributions to the arthritis field. In collaboration with the University of Alberta Department of Radiology, he has developed imaging technologies for quantifying the degree of inflammation in the spine, hip and knee from other forms of arthritis such as spondylitis (inflammation of the vertebrae) and osteoarthritis. The methodology shows the effects a drug is having on inflammation and is the industry standard for evaluation of new therapeutics in clinical trials.

He led the development of the largest bio-repository for rheumatoid arthritis in North America—a gold mine for researchers. The international project, called the RA BioDam Study, holds patients’ biological samples along with their X-ray information in the search for additional biomarkers.

*Dr. Walter Maksymowych, professor and medical scientist, leads international and provincial collaborations and is the founder and chief medical officer of Canadian Research and Education (CaRE) Arthritis Ltd.*



He co-founded the Spondyloarthritis Research Consortium of Canada to develop biomarkers and imaging technologies for this arthritis. Their work includes development of a genetic screening test with collaborators in Newfoundland, where there is an increase in this disease and a related disease called psoriatic arthritis.

Dr. Maksymowych credits two factors for the major international contributions he and his collaborators have made to advancing understanding and treatment of arthritis in its many forms. The first is the clinical research model at the Department of Medicine, which sees physicians treat patients while conducting related research. “Every single time I see a patient, I learn something. Their continuous stream of questions triggers ideas, which trigger the work that leads to innovation.”

The second factor is the culture of research built over decades that has led to international competitiveness. He was attracted to Alberta from the U.K. by the former Alberta Heritage Foundation for Medical Research. “The politicians and academic leaders who thought up and set up the heritage foundation and implemented it had the most remarkable courage and foresight,” he says.

## RESEARCH FUNDING

Alberta Diabetes Foundation  
 Alberta Heritage Foundation for Medical Research\*  
 Alberta Innovates  
 Alberta Innovates Bio Solutions\*  
 Alberta Innovates Bio Solutions / Alberta Alzheimer's Research Program\*  
 Alberta Innovates Bio Solutions / Alberta Prion Research Institute\*  
 Alberta Innovates – Health Solutions\*  
 American College of Gastroenterology  
 American Gastroenterological Association Research Foundation  
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 Creutzfeldt-Jakob Disease Foundation  
 Crohn's and Colitis Canada  
 CSHP Research and Education Foundation  
 Heart & Stroke Foundation  
 International Society of Nephrology  
 Kidney Foundation of Canada  
 MSI Foundation  
 Multiple Sclerosis of Canada  
 National Parkinson Foundation

\*Now Alberta Innovates

## THE DEPARTMENT OF MEDICINE TRAINING PROGRAM IN TRANSLATIONAL MEDICINE

completed its fourth year and continues to grow. The following students from the University of Alberta Faculty of Medicine and Dentistry and The University of British Columbia received their master's in translational medicine:

- Laura Gioia  
(supervisor *Kenneth Butcher*)  
– 2017
- Maria Lorenzana-Carrillo  
(supervisor *Nadia Jahroudi*)  
– 2016
- Ismail Raslan  
(supervisors *Justin Ezekowitz and Sean Van Diepen*) – 2016
- Thomas Roston  
(*UBC internal medicine resident; supervisor Padma Kaul*)

## ENDOWMENTS AND DONATIONS

### ENDOWMENTS

\$1.46 million in annual allocation

### DONATIONS

\$1.56 million from University Hospital Foundation



**UNIVERSITY OF ALBERTA**  
**FACULTY OF MEDICINE & DENTISTRY**  
Department of Medicine

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