



# McGill

Faculty of  
Medicine and  
Health Sciences

Faculté de  
médecine et des  
sciences de la santé

## Gerald Bronfman Department of Oncology



### ONCO 620: Best Practices in Biomedical Research (Winter 2022 Session)

A course open to all graduate students enrolled in the  
Faculty of Medicine and Health Sciences

(required course for the graduate diploma in oncology)

#### **Course Coordinator:**

Eduardo L. Franco, O.C., MPH, DrPH, PhD (Hon), FRSC, FCAHS  
James McGill Professor and Chairman, Department of Oncology  
Director, Division of Cancer Epidemiology, McGill University  
Editor-in-Chief, *Preventive Medicine*, *Preventive Medicine Reports*  
Senior Editor, *eLife*

# Course ONCO 620: Best Practices in Biomedical Research

## Department of Oncology, McGill University

### Course Overview

ONCO 620 provides an overview of professional and scholarly requirements that guide biomedical research, from inception to dissemination of findings. It reviews the best practices in the health sciences field with respect to planning research studies, earning funding, leading a research team, conducting investigations, and publishing results. It also provides an overview of ethics and integrity in research and professional conduct.

### Learning Outcomes

By the end of this course students should be able to:

- Understand best practices in protocol design and grant writing.
- Read and review a scientific paper; understand the value of peer review and of the process of scientific communication.
- Appreciate the steps involved in writing and publishing a scientific paper; dealing with editors and reviewers; and contributing as peer reviewer.
- Appreciate the importance of ethical principles in biomedical research. Know how to apply ethical principles when conducting research on human subjects and animals.
- Understand the importance of integrity in science and of the dangers of plagiarism and fabrication to the scientific record.
- Understand the need for transparency in research; managing conflicts of interest.
- Understand best practices in managing a laboratory and a research team.

**Term:** Winter 2022: January 10 to April 11 (Mondays, 2 to 5 PM EST)

Course pre-requisite(s): None

Course co-requisite(s): None

Number of Credits: 3

**Course Location:** Because of the fluidity of the public health situation, we expect that the course will be taught mostly via Zoom (McGill myCourses platform) in 2022. Some classes may be held in person at Room 740, 5100 de Maisonneuve Blvd West (the Department of Oncology's HQ)

### Assessment:

- Assiduity and in-class participation: 15%
- Ethics self-tutorial completion: 20%
- Mid-term exam: 20%
- Student presentation or debate: 20%
- Final exam: 25%

Note: The mid-term exam will include several exclusively multiple-choice questions. The final exam will have two parts: a selection of multiple-choice questions and a few questions to be answered in 200 words or less. Both are take-home exams.

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### Course Program in 2022

Month	Day	Session	Time (PM)	Lecturer	Lecture or Content
January	10/01/2022	1	2:00 - 3:25	Eduardo Franco	Introduction to the course
		2	3:35 - 5:00		A career in academia and the value of peer review as the cornerstone of scientific research and knowledge translation; Reading and writing well: using logic and scientific reasoning in research and mentorship; The process of research communication and publishing; Improving the quality and value of a paper to its scientific audience; Dealing with editors and reviewers; Rules of authorship, strategies to avoid conflict; How to select journals, metrics of scientific value and impact; The dangers of predatory publishing, vanity presses, and for-profit conferences; The shifting paradigm of scholarly publishing: the open access revolution, the advent of sound science journals, competing models of peer review, preprint archiving.
	17/01/2022	3	2:00 - 3:25		
		4	3:35 - 5:00		
	24/01/2022	5	2:00 - 3:25		
		6	3:35 - 5:00		
	31/01/2022	7	2:00 - 3:25		
		8	3:35 - 5:00		
February	07/02/2022	9	2:00 - 3:25	Eduardo Franco	
		10	3:35 - 5:00		
	14/02/2022	11	2:00 - 3:25		
		12	3:35 - 5:00		
	21/02/2022	13	2:00 - 3:25		
		14	3:35 - 5:00		
28/02/2022	No class (reading week)				
March	07/03/2022	15	2:00 - 3:25		Student presentations and mid-term exam
		16	3:35 - 5:00		
	14/03/2022	17	2:00 - 3:25	Randy Schekman	Challenges in publishing important work in biomedical science
		18	3:35 - 5:00	Ivan Oransky	Research Integrity: learning from tracking retractions
	21/03/2022	19	2:00 - 3:25	Christina Wolfson	Research integrity: the role of institutions
		20	3:35 - 5:00	Abraham Fuks	Ethical Aspects of the Design of Trials Involving Human Subjects
	28/03/2022	21	2:00 - 3:25	Carolyn Ells	The Role of Institutional Review Boards in Research Ethics Oversight
		22	3:35 - 5:00	Roderick McInnes	Grantsmanship: earning research funding
April	04/04/2022	23	2:00 - 3:25	Saleem Razack	Diversity, equity, and social accountability in biomedical research
		24	3:35 - 5:00	Jonathan Kimmelman	Conflict of interest in research
	11/04/2022	25	2:00 - 3:25	Stephen Robbins	Scientific Leadership: Managing a Research Unit
		26	3:35 - 5:00	Eduardo Franco	Overview of material; release for take-home exam

TO REACH THE INSTRUCTOR:

Email: [eduardo.franco@mcgill.ca](mailto:eduardo.franco@mcgill.ca)

Office phone: 514-398-6032

Zoom calls: <https://mcgill.zoom.us/my/eduardo.franco>

Cell phone: 514-975-3237 (quick consultations by text messages, WhatsApp, and voice) *Reasonable hours please*

# Course ONCO 620: Best Practices in Biomedical Research

## Department of Oncology, McGill University

### Faculty Members (in chronological order) (1/3)



Dr Eduardo Franco, DrPH, PhD (Hon), O.C., FRSC, FCAHS is James McGill Professor and Chair, Department of Oncology, and Director, Division of Cancer Epidemiology, McGill University. He also holds joint or cross-appointments in the Departments of Epidemiology & Biostatistics, Obstetrics and Gynecology, Pathology, and Faculty of Dentistry, at McGill. He is Editor-in-Chief, *Preventive Medicine* and *Preventive Medicine Reports*, and Senior Editor at *eLife*.



Dr Randy Schekman, PhD, FRS, is Howard Hughes Institute Investigator and Professor of Cell and Developmental Biology, Department of Molecular & Cell Biology, University of California at Berkeley. He is member of the National Academy of Sciences (US). He is former editor-in-chief of *Proceedings of the National Academy of Sciences*, and of *eLife*. He has received the Gairdner (1996) and Lasker (2002) prizes. In 2013, he received the Nobel Prize in Physiology or Medicine for his work on intracellular vesicle traffic.



Dr Ivan Oransky, MD, is Editor-in-Chief of Spectrum, co-founder of Retraction Watch, and Distinguished Writer-in-Residence at New York University's Arthur Carter Journalism Institute. He is President of the Association of Health Care Journalists and former vice-president of editorial at Medscape, Global Editorial Director of MedPage Today, Executive Editor of Reuters Health, and held editorial positions at Scientific American and The Scientist. A 2012 TEDMED speaker, he is the recipient of the 2015 John P. McGovern Medal for excellence in biomedical communication from the American Medical Writers Association, and in 2017 was awarded an honorary doctorate from University of the South (Sewanee).

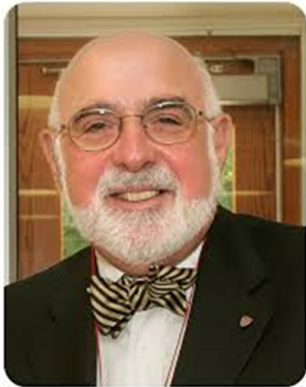


Dr. Christina Wolfson, PhD is a Professor in the departments of Epidemiology, Biostatistics & Occupational Health, and Medicine, at McGill University, and is a senior scientist in the Brain Repair and Integrative Neuroscience Program at the Research Institute of the McGill University Health Centre. She is the Research Integrity Officer at McGill University.

# Course ONCO 620: Best Practices in Biomedical Research

## Department of Oncology, McGill University

### Faculty Members (in chronological order) (2/3)



Dr Abraham Fuks, MD, CM, is a Professor in the Departments of Medicine, Pathology and Oncology at McGill and a member of the Clinical Trials Research Group. He was Chairman of the Institutional Review Board at McGill for a number of years and has also had experience teaching immunology, molecular aspects of malignancy and research ethics. He is former Dean, Faculty of Medicine, and former Research Integrity Officer, McGill University.



Dr Carolyn Ells, RRT, PhD is an Associate Professor in the Department of Medicine, based at the Biomedical Ethics Unit. She also has appointments as Associate Member of the Division of Experimental Medicine, and the Departments of Family Medicine and Social Studies of Medicine, and Associate Researcher at the Lady Davis Institute for Medical Research. She is former Chair of the Interagency Panel on Research Ethics, and Member Representing the Canadian Bioethics Society on the Canadian Council for Animal Care, serving on the Standards Committee and Ethics Principles Subcommittee.



Dr Roderick McInnes, CM, MD, PhD, FRSC, is the Director of the Lady Davis Institute of the Jewish General Hospital, Alva Chair in Human Genetics, Canada Research Chair in Neurogenetics and Professor of Human Genetics and of Biochemistry at McGill University. Former President of the American Society of Human Genetics. Former Interim Director, Canadian Institutes of Health Research.

# Course ONCO 620: Best Practices in Biomedical Research

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Faculty Members (in chronological order) (3/3)



Dr Saleem Razack, MD, FRCPC, is the Director of the Office of Social Accountability and Community Engagement, and a Professor of Pediatrics and Health Sciences Education at McGill University. He practices as a pediatric critical care medicine physician. His major interests in medical education include assessment, equity issues, and social accountability in health professions education. His current research interests: Selection for medical school (best practices in admissions); diversity, equity, and social accountability in health professions education.



Dr Jonathan Kimmelman, PhD, is a James McGill Professor in the Biomedical Ethics Unit / Social Studies of Medicine. He has cross appointments in Experimental Medicine, Epidemiology, Biostatistics and Occupational Health, and Human Genetics. Kimmelman holds a PhD in Molecular Biophysics and Biochemistry from Yale University and joined McGill in 2005. His research revolves around the ethical, social and policy dimensions of translational research. He is Director of Biomedical Ethics Unit, McGill University.



Dr Stephen Robbins, PhD is Professor, Departments of Oncology and Biochemistry and Molecular Biology, University of Calgary. As of March 2021, he assumes the position of Director of the Lady Davis Institute, Jewish General Hospital, Montreal, and Professor in the Department of Oncology at McGill University. At McGill, he is the holder of the Glaxo Smith Kline Endowed Chair in Pharmacology. He is also Scientific Director, Institute of Cancer Research, Canadian Institutes of Health Research.