Contributors

Alexander Barry is a Junior at Newark Charter School. He is interested in Mechanical Engineering and Materials Science.

Brendon Frankel is a senior at Hampton High School with a keen interest in pathogen-related science and research. He plans to expand upon the implications of the presented research, focusing on antibiotic resistant bacteria, as well as explore the possibilities of immunologic or viral research in the future.

Uma Kamath is currently a 11th grader at the Obra D. Tompkins High School in Katy, Texas. Uma has been conducting independent research since she was in middle school. The research project she completed in her 7th grade was awarded with an Honorable Mention in Mathematics Category at the Science and Engineering Fair of Houston. Uma holds leadership positions or participates in the Science Fair Scholars Club, TEDx Club, Future Business Leaders of America Club, National Honor Society, and Artists for Healing Club. In addition to enjoying Science and Math classes, Uma is an accomplished artist. Her high school artwork has been selected for the Houston Rodeo School Art Auction twice in two years. Uma enjoys helping others and believes art has a lot of power to heal others. She founded the Artists for Healing Club in her high school and enjoys working with her fellow Club members to complete service projects. As a recognition for her service at the start of the COVID-19 pandemic, she was featured in the Houston Chronicle in June 2020. Uma has been conducting art classes at various senior living homes, which led her to venture into this research project. Most of all, though, Uma loves spending time with her loved ones and being able to make memories with them, especially through travel across the world.

Dhiraj Kanneganti is a junior at DuPont Manual HS in Louisville, KY. Dhiraj has always been interested in machine learning and web design, so over the past year, he has been working on a research project that combines both of his passions. In his free time, Dhiraj enjoys watching football, baking, and listening to podcasts.

Alexandra McWatters is a rising senior at Newark Charter High School in Newark, DE, USA. She is heavily involved in the school's extracurricular offerings, including, but not limited to, Science Olympiad, Technology Student Association, Women in STEM Experience, and Lacrosse. She tied her passion for mathematics and computer programming in her research.

Manisha Palaniappan is a student at Bergen County Technical High School in Teterboro. Her interests include data science research, particularly within the natural language processing sector of artificial intelligence.

Justin Sousa is a high school student at Bergen County Technical High School - Teterboro in the Strategic Asset Management program. He is studying topics such as economics and equity and derivatives trading, and he is working to become Bloomberg Certified. He is interested in economics, education policy, mathematics, and financial analysis.

Breanna Villarreal is an eleventh-grade AP student who is passionate about both investigating and uncovering knowledge regarding the Black Latina community. When Breanna is not spending time completing her research, she can be found on the stage, or participating in service events for her community.

Jessica Yu is a grade 12 student in Toronto, Canada. Most of her work centres around economics and equality, and she has participated in a behavioural economics project at Binghamton University as a summer researcher. Jessica hopes to conduct more research into behavioural economics in the future.

Pool of Consulting Editors of the Journal

Anthony Campbell

BA, MA, PhD

Anthony Campbell established Grow for Good Urban Teaching Farm in 2013 as a business model innovation laboratory and learning centre for young entrepreneurs. He spent time working throughout North America, Europe, Australia, Asia and now resides in his hometown of Toronto.   Examples of Anthony's work are documented in *The Innovator's Field Guide* (2014), co-authored by David Crosswhite and Peter Skarzynski, as well as multiple Harvard Business School and Corporate Executive Board case studies chronicling the innovation and capability-building efforts of companies such as Samsung, Whirlpool, Best Buy and McDonald's. Previously, Anthony taught Film Studies, Writing and English Literature at The University of Western Ontario.

Jeremy B. Caplan

ScB, PhD

Jeremy Caplan is an Associate Professor in the Psychology Department at the University of Alberta, where he is also the Principal Investigator at the University of Alberta Computational Memory Lab. The lab is focused on human verbal memory behaviour and its basis in cognitive and neural processes. The team takes several approaches towards research, including mathematical modeling, measures of behaviour in the cognitive psychology tradition, and measures of brain activity using electroencephalography (event-related potentials and oscillations) and functional magnetic resonance imaging. He has been a referee for 38 academic journals.

Nathan Chow

BSc, Msc, BEd

Nathan Chow teaches Physical Sciences at Royal St. George's College (RSGC) in Toronto and consults on educational material at Perimeter Institute for Theoretical Physics in Waterloo. He has worked with Ontario's Ministry of Education to develop research-based teaching resources for Physics teachers within the province and across the rest of Canada. His academic research explored whether or not we understand how gravity behaves at intergalactic distances and provided possible explanations for our observations of dark energy. He has presented this research and led teacher training workshops around the world. In addition to AP Physics 1 and C, he teaches the AP Capstone Research course at RSGC.

Hance Clarke

BSc, MSc, MD, PhD, FRCPC

Dr. Clarke is the director of Pain Services and the medical director of the Pain Research Unit at the Toronto General Hospital. He is appointed to the Institute of Medical Sciences at the University of Toronto and is a graduate of the Royal College Clinician Scientist Program. His research interests include identifying novel acute pain treatments following major surgery, identifying the factors involved in the transition of acute postsurgical pain to chronic pain, studying the genetics of acute and chronic pain after surgery, and identifying risk factors associated with continued opioid use and poor health related quality of life after major surgery as well as the efficacy of hyperbaric medicine. Over the past five years he has authored 47 peer reviewed manuscripts.

Will Fripp

BA, MA

Will Fripp is a public affairs and political risk analyst for Canadian and international clients. A B.A. in History and Political Science from Victoria University at the University of Toronto and an M.A. in Intelligence and International Relations from the University of Salford in Manchester, England, he is a historian specializing in intelligence and espionage, and its modern influences. Will anchored www.spiesintheshadows.com, a web based curriculum outlining Canadian foreign intelligence history and its impacts on Canada's national development. An occasional lecturer, Will's writings and review articles appear in peer-reviewed academic journals like Intelligence and National Security, and elsewhere.

Michael Gemar

BSc, BA, PhD

Michael Gemar received undergraduate degrees in Psychology and Philosophy from Rice University, and a PhD in experimental psychology from the University of Toronto. He has worked as a researcher at the Centre for Addiction and Mental Health, examining the cognitive and neural correlates of mood disorders, and was involved in a landmark study demonstrating the efficacy of mindfulness meditation to prevent depressive relapse. He has co-authored numerous journal articles, and taught for over a decade at U of T. More recently, he has worked in the area of health policy, and is currently at a Canadian non-profit.

Jennifer Goldberg

BA, BEd, MA

Jennifer Goldberg holds an M.A. in History from the University of Toronto. Her graduate studies focused on teacher misconduct in 19th century Ontario, and her research is published in *Historical Studies in Education*. She currently leads the English department and teaches at Havergal College, where she has also served as Chair of Teaching and Learning. In this capacity, she has explored the role of feedback in student learning, and has presented on this work at the National Coalition of Girls' Schools and Conference of Independent Teachers of English.

Margaret S. Herridge

BSc, MSc, MPH, MD, FRCPC

Margaret Herridge is a Professor of Medicine and Senior Scientist at the University of Toronto. She is also a senior clinician in Critical Care and Respiratory medicine at University Health Network. Her research focus is on long-term outcomes after critical illness for patients and families and specifically on functional, neuropsychological, healthcare utilization and quality of life metrics. Her graduate studies were in Cell and Molecular Biology at Queen's University where she subsequently obtained her degree in Medicine. After completing her clinical training in Internal Medicine/Respirology and Critical Care at the University of Toronto, she obtained her Master of Public Health in Epidemiology and Statistics from the Harvard School of Public Health.

Ted Higginbotham

BSc, MSc (Candidate)

Ted Higginbotham is a graduate student at The University of Toronto and Hospital for Sick Children. His research is focused on further delineating the role of genomic structural variation in autism spectrum disorder and human disease. Ted is a contributing member of the Clinical Genome Resource (ClinGen), an international consortium working to define the clinical relevance of genes for use in precision medicine and translational research.

Tim Hutton

BA, MLIS

Tim Hutton is a teacher-librarian at Royal St. George's College. He has a BA in History and American Studies from the University of Toronto and a Masters in Library and Information Science from San Jose State University. At the secondary level, he has taught courses in the social sciences, humanities and communications technology, including a locally designed interdisciplinary course in urban studies.

Ira Jacobs

Dip Phys Ed, MHK, DrMedSc

Professor Ira Jacobs became dean of the Faculty of Kinesiology & Physical Education at the University of Toronto on July 1, 2010, and was re-appointed to his current second decanal term. Before assuming this role, Jacobs was chair of York University's School of Kinesiology and Health Science from 2007 until 2010, and a federal government scientist from 1982 until 2007.

Jacobs earned his doctorate in clinical physiology from Sweden's Karolinska Institute, where he specialized in skeletal muscle metabolism. For the next 25 years, he did extensive exercise physiology research in Canada's human sciences laboratory, operated by the Department of National Defence. There, Jacobs rose to the position of chief scientist and led a unique international research group that helped to enhance the performance of military special operations units through their research into physiological, nutritional and pharmacological strategies.

He is a past president of the Canadian Society for Exercise Physiology and the Canadian Council of University Physical Education and Kinesiology Administrators. He is a fellow of the American College of Sports Medicine, an international fellow of the US National Academy of Kinesiology, and in 2016, he was named a Fellow of the Canadian Academy of Health Sciences.

Jacobs' research has led to the publication of more than 200 scientific articles, reports and book chapters about his research interests that include the physiological responses to physical exertion in environmental extremes, performance enhancement through pharmacological and nutritional manipulation of metabolism, and exercise pharmacology.

During his term as dean, the Faculty of Kinesiology & Physical Education has been rated as among the top academic programs in the world for kinesiology, physical education, sport and exercise sciences.

John Lambersky

BA, MA, BEd, PhD

John Lambersky is a teacher and head of the Canadian and World Studies department at Royal St. George's College in Toronto, where he leads the AP Capstone program. He has presented his work on teaching practice at the conferences of the International Boys' School Coalition, the National Association of Independent Schools, and the Canadian Accredited Independent Schools. His academic research is focused on school culture as a mechanism for school improvement. His work has been featured in *Leadership and Policy in Schools, The Dalhousie Review,* and *The Nashawaak Review.*

Blake Lee-Whiting

BA, MPP

Blake Lee-Whiting is a third year PhD student in the Department of Political Science at the University of Toronto. He received his BA from Queen's University and his MPP from the University of Toronto. He is interested in Canadian politics, public policy, and electoral politics. He is a member of the Policy, Elections, & Representation Lab at the Munk School of Global Affairs & Public Policy where he is currently working on projects related to the health of politicians, electoral success, and electoral candidacy.

Lori Loeb

BA, MA, PhD

Lori Loeb is Associate Professor of Modern British history at the University of Toronto. She has a Masters in Museum Studies and a PhD in History. A specialist in the Victorian period, she is the author of *Consuming Angels: Advertising and Victorian Women.* Generally, she writes about things in nineteenth-century Britain. A past Deputy Chair and Associate Chair (Graduate) of the History Department, she is currently MA Coordinator. She teaches courses in nineteenth and twentieth-century British history, Victorian material culture and the English country house.

Gaven MacDonald

BSc, BEd

Gaven MacDonald is a Physics and Mathematics teacher at Havergal College, where he is the faculty advisor for the Robotics Team. He is a member of the school's Blended Learning Team, which focuses on developing methods to combine online education resources with in-person classroom teaching. Gaven has designed physics simulations on the website www.cutequbit.com, that teachers can use to assist with their teaching, or to make individualized student assessments. Gaven also runs an educational YouTube channel which focuses on electronics and programming.

Jaime Malic

BA (Hons), MA, BEd, PhD

Jaime Malic completed her PhD in Educational Leadership and Policy at the Ontario Institute for Studies in Education at the University of Toronto; her research focused on leadership values and practices in independent schools in Ontario. Jaime has fifteen years of experience as an educator in both independent and public schools. She currently teaches both AP Capstone Seminar and AP Research, as well as senior English courses at St. Clement's School. Jaime has served as a Reader for AP Capstone Seminar, written for *Independent Teacher* and *Independent Ideas*, and presented on various topics at the American Educational Research Association's Annual Conference, the Conference of Independent Teachers of English Annual Conference, the Ontario Advanced Placement Administration Conference, and the Advanced Placement Annual Conference.

William J. McCausland

BASc, MEng, MA, PhD

William McCausland is an associate professor of economics at the Université de Montréal. His research applies Bayesian statistical methods in two main areas. The first is discrete choice, at the interface of economics and psychology, where researchers study how people make choices from a small menu of available options. The second is time series modelling in economics, which has many applications in macroeconomics and financial economics. His undergraduate studies were in Engineering and he received his Ph.D. degree in economics from the University of Minnesota.

Matt Mooney

BA Hons., BEd

Matt Mooney is currently a secondary teacher in the Canadian & World Studies department at Royal St. George's College in Toronto, where he also serves on the Excellence in Teaching and Learning Committee. Matt earned an Honours BA from The University of Toronto, with a double major in History and Geography, and his Bachelor of Education from the Ontario Institute for Studies in Education. He has been teaching in Ontario since 2011 and has experience with curriculum development, such as his work on the Education Committee for Magna Carta Canada. Since 2019, Matt has helped to oversee *The Young Researcher*.

Gurbir Perhar

BSc, PhD

Gurbir Perhar received his academic training at the University of Toronto. His Doctoral work focused on mathematically modelling the transmission of highly unsaturated fatty acids in aquatic food chains, culminating in a suite of cybernetic models. His post-doc work saw him consulting for the governments of Canada, USA, South Africa, and China. These days Gurbir runs the Data Intelligence strategy in a multi-billion dollar corporation.

Kate Schumaker

MSW, PhD

Kate Schumaker is the Manager of Quality Assurance & Outcome Measurement at the Catholic Children's Aid Society of Toronto, and holds the position of Assistant Professor (status only) at the Factor Inwentash Faculty of Social Work, University of Toronto. She has worked for over 20 years in child welfare and children's mental health, including front-line clinical positions and 10 years producing and implementing child welfare policy for the provincial government. In 2011-12 she worked for the Commission to Promote Sustainable Child Welfare, supporting accountability framework development, including the establishment of a set of standardized performance indicators for the child welfare sector in Ontario. Her areas of practice and research interest include poverty, child neglect, trauma-informed practice, child welfare decision-making, and evidence-informed policy and practice.

Eva Serhal

BA, MBA, PhD

Eva Serhal is the Director of Virtual Mental Health and Outreach at the Centre for Addiction and Mental Health in Ontario, Canada and Director of the ECHO Ontario Superhub, a collaboration between CAMH and UHN that provides training and implementation support to new ECHO telementoring projects throughout Canada. Eva completed a PhD in Health Services Research at the University of Toronto, with a focus on outcomes and evaluation in virtual models of healthcare. Eva's current research assesses the implementation, adoption and economic factors of virtual care in Ontario. Eva also has significant experience with leadership and governance; she currently co-chairs the Toronto Telemedicine Collaborative and sits as a board member of the Children's Aid Society of Toronto.

Michael Simmonds

BPE, M.A., Dip.Ed., MEd, EdD

Michael Simmonds has worked in independent schools for over two decades. He taught science, biology, chemistry, physics, and math before becoming an administrator and Head of School. He earned graduate degrees from both McGill and Columbia universities respectively before receiving his doctorate from the University of British Columbia in Educational Policy & Leadership. His work on accountability synopticism is published in the peer-reviewed, *The International Education Journal: Comparative Perspectives*. He currently works at Havergal College as the VP School Life, Operations & Student Wellness.

Sydney Stoyan

B.A, M.A., Ph.D.

Sydney Stoyan holds a B.A. in French Literature from the University of Toronto, and an M.A. and a Ph.D in English Literature from the University of Ottawa. Her doctoral thesis, "The Widow's Might: Law and the Widow in British Fiction, 1689-1792," won the Governor General's Gold Medal for the Arts in 2002. She has since written freelance and worked as an editor for various publications and projects.

Alumni Editor

Andrew Pyper is an analyst at Charles River Associates in Washington DC, working in the Antitrust & Competition Economics Practice; in this role, he produces economic analysis for clients with antitrust-related litigation and regulatory issues. He graduated from the University of Chicago in 2022, where he majored in economics and political science, and graduated from Royal St. George's College in 2018, where he completed the AP Capstone program. His AP Research paper, published in The Young Researcher, examined RSGC students' perceptions of the school's implementation of formative assessment. In university, he continued his education work by advising local high school students on the university application process and continued to engage with academia as a data research assistant for a suicide attack research project and as an intern for the Milken Institute, supporting research on building more sustainable capital markets in developing countries.

Guidelines for Contributors

The Young Researcher is a peer-reviewed journal dedicated to publishing the best original research from secondary school students.

The journal's mission is to provide a larger audience for the original academic research of ambitious secondary students, provide a forum for peer-review, and create a community of young researchers. In addition, the journal strives to advance the quality of academic writing in secondary schools.

The Young Researcher is edited by secondary school students working closely with scholars and active researchers at universities and in the community. The journal operates a blind peer-reviewed review process, following those found in academic research journals.

The journal encourages submissions of original research (including relevant replication studies) from a wide range of academic disciplines within the social sciences, humanities, and sciences.

Submission Guidance:

- No more than 5,000 words, excluding references and appendices (in English)

- Articles should have the following sections or equivalent:
>
> Introduction
> Literature Review
> Method, Process, or Approach
> Findings or Results
> Discussion, Analysis, and/or Evaluation
> Conclusion and Future Directions
> References

- Papers should be formatted using discipline-appropriate methods
   (MLA, APA, and Chicago are acceptable).

- Papers should have an abstract (no more than 150 words) and have 4-6 keywords

- All units of measurement should be in metric wherever possible

- All studies involving human participants must have been approved by a Research Ethics Board

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 Please direct any questions to TheEditors@TheYoungResearcher.com