

CURRICULUM VITAE

VINCENT TABARD-COSSA



DATE OF BIRTH: DECEMBER 6TH 1977

PLACE OF BIRTH: RIMOUSKI (QUÉBEC)

COUNTRY OF CITIZENSHIP: CANADA, FRANCE

LANGUAGES: FRANÇAIS, ENGLISH

DEPARTMENT OF PHYSICS

UNIVERSITY OF OTTAWA

150 LOUIS-PASTEUR, STEM COMPLEX RM421

OTTAWA, ON, K1N 6N5 CANADA

E-MAIL TCOSSA@UOTTAWA.CA

URL: WWW.TCOSSALAB.NET

TEL: (613) 562-5800 EXT6964

DEGREES:

Ph.D. Physics, McGill University, Canada, 2006.

B.Sc. Physics, McGill University, Canada, 2000.

EMPLOYMENT HISTORY:

2024-present	Vice-Dean, Innovation and Strategic Partnerships Faculty of Science, University of Ottawa.
2022-present	Full Professor, Department of Physics, University of Ottawa
2022-present	Cross-appointed, Department of Chemistry and Biomolecular Sciences, University of Ottawa.
2021-present	Member of the Ottawa-Carleton Institute of Biomedical Engineering.
2020-2023	Co-founder and Chief Scientific Officer (part-time), Northern Nanopore Instruments.
2015-2022	Associate Professor, Department of Physics, University of Ottawa.
2017-2022	Cross-appointed, School of Electrical Engineering and Computer Science, University of Ottawa.
2016-2020	Adjunct Professor, Department of Physics, McGill University.
2010-2015	Assistant Professor, Department of Physics, University of Ottawa.
2010-2010	Visiting Scholar, Physics Department, McGill University.
2010-2010	Consultant, Stratos Genomics.
2008-2010	Postdoctoral Fellow, Department of Electrical Engineering and Biochemistry, Stanford Genome Technology Center, Stanford University.
2006-2008	Postdoctoral Fellow, Department of Physics and Astronomy, University of British Columbia.

ACADEMIC HONOURS:

- Department of Physics Faculty Award for Excellence in Mentorship 2023.
- University Research Chair in Nanoscale Biophysics and Nanopore Science 2022-2027.
- Canadian Association of Physicists (CAP) Industrial and Applied Physics Medal 2021.
- Member of the Royal Society of Canada's College of New Scholars, Artists and Scientists, 2019.
- University of Ottawa Young Researcher of the Year Award, 2017-2018.
- Ontario Early Researcher Award, 2016.

SCHOLARLY AND PROFESSIONAL ACADEMIC ACTIVITIES:

Invited Panel Discussions

- 2025 "Founders Panel – licensing challenges" Simple Agreement for Innovation Licensing (SAIL) roundtable, Ottawa, February 18th, 2025.
- 2025 "Starting my company: the journey and challenges I faced" MaQTech NSERC CREATE, February 12th, virtual, 2025.
- 2024 "Licensing Options: A look at commercialization through spinout or licensing" Turning Ideas into Impact, University of Ottawa, Innovation Support Services, December 4th, 2024.
- 2024 "Facilitating Innovation: Leveraging NSERC for Industry Partnerships" Turning Ideas into Impact, University of Ottawa, Kanata North, December 3rd, 2024.

Invited Talks:

- 2025 "Single-molecule colliders at low energies: Nanopores for biomolecular analysis", Ottawa Carleton Institute of Physics Research Symposium Ottawa, Canada, December 9th, 2025
- 2025 "A pinhole to the proteome: The physics of the polymer translocation process through nanopores", University of British Columbia, Department of Physics & Astronomy Colloquium, Vancouver, Canada, November 21st, 2025
- 2025 "A pinhole to the proteome: The physics of the polymer translocation process through nanopores", University of British Columbia, Department of Physics & Astronomy Colloquium, Vancouver, Canada, November 20th, 2025
- 2025 "A pinhole to the proteome: The physics of the polymer translocation process through nanopores", University of Victoria, Department of Physics & Astronomy Colloquium, Victoria, Canada, November 19th, 2025
- 2025 "Sizing Proteins with Nanopores" Gordon Research Conference on Label Free Single-Molecule Sensing, Stonehill College, Easton, MA, United States June 8-13th, 2025.
- 2025 "Nanopores beyond DNA Sequencing – toward applications in proteomics" McGill University, department of Biomedical Engineering seminar, February 7th, 2025.
- 2025 "Les nanopores comme outil d'analyse de biomolécules uniques avancées fondamentales vers des applications en protéomique" Université de Montréal, Colloque, département de physique, January 17th, 2025.
- 2024 "Nanopores beyond Sequencing – Accelerating research toward applications in proteomics" Polytechnique Montréal, Génie physique, November 21st, 2024.
- 2024 "Nanopores beyond Sequencing" University of Ottawa, Department of Physics Student Association, Pizza talk, January 31st, 2024.
- 2023 "Single Molecule Colliders at low energy: Nanopores beyond DNA Sequencing" University of Toronto Department of Physics Colloquium, November 30th, 2023.
- 2023 "Accelerating Solid-State Nanopore Research" Black Forrest Nanopore Meeting, Freiburg,

- Germany November 7th, 2023.
- 2023 “Nanopore-based digital assays” 1st THINK Symposium on Diagnostics and microfluidics, Bellairs Research Institute of McGill University, Barbados, February 3-10, 2023.
- 2022 “Dynamics of Translocation of Nanostructured DNA through Nanopores” From Solid-state to Biophysics, from Basic to Life Sciences 11, Nanopore and Nanofluidics, Cavtat, (Croatia) on June 12 – 17, 2022.
- 2021 “Using Static Shock to Sculpt Matter at the Nanoscale from understanding nanopore formation to commercializing a nanofabrication technology” Canadian Association of Physicists (CAP) Medal Lecture [virtual]
- 2021 “Solid-State Nanopore Sensors for Biomolecular Characterization and Digital Diagnostics” Department of Chemistry Colloquium, University of Ottawa, Ottawa [virtual], Canada
- 2021 “Elucidating transport of DNA nanostructures through nanopores for biosensing applications” 2021 Biophysical Society of Canada Meeting, Single-Molecule Biophysics session, May 26-28, 2021 [Halifax - virtual]
- 2021 “Elucidating transport of DNA nanostructures through nanopores” Virginia Commonwealth University, Richmond, VA (USA) Colloquium, Department of Physics, April 23, 2021 [virtual]
- 2020 “Quantifying Biomarker Concentration” BiophysicsTO lunch time Seminar, University of Toronto, Ontario, Canada, November 26, 2020 [virtual]
- 2020 “Quantifying Protein Concentration from Serum using Solid-State Nanopores” Nanopore Electrochemistry Meeting on October 10 – 12, 2020, Nanjing, China [virtual]
- 2020 “Challenges and Opportunities of Electronic Sequencing with Solid-state Nanopores” Keynote at Applied Materials Inflection Forum, Beyond Moore’s Law session, Las Vegas, (USA) on December 16, 2020. [cancelled due to pandemic]
- 2020 “Solid-State Nanopores electronic tools for analysis of polymers” Institut Charles Sadron, UPR22-CNRS, Strasbourg, (France) on June 16, 2020. [cancelled due to pandemic]
- 2020 “Capture and Translocation of Nanostructured DNA through Nanopores” From Solid-state to Biophysics, from Basic to Life Sciences 10, Nanopore and Nanofluidics, Cavtat, (Croatia) on June 6 – 14, 2020. [cancelled due to pandemic, but moved to 2022]
- 2019 “Exploring Capture and Passage of Linear & Nanostructured DNA through Nanopores” California State University Northridge, Department of Physics, Northridge, CA (USA)
- 2019 “Advancing Nanopore Sensing with DNA nanostructures and Nanofilters” University of Utah, Department of Chemistry, Salt Lake City, UT (USA)
- 2019 “Counting is easier than integrating - advancing nanopores for biomarker detection” National Institute of Standard and Technology - NIST, Gaithersburg, MD (USA)
- 2019 “Nanofabrication of Nanofluidic Devices for Single-Molecule Detection” NanoCanada at Kanata North, Ottawa, Canada
- 2019 “Nanomembranes and Nanopores for Ultra-sensitive Biomarker Detection” Center of Advanced MAterial Research (CAMaR), Bio and Nanomaterials for Clinical Translation Workshop, Ottawa, Canada
- 2018 “Applications of Nanofiltered-Nanopore Devices: from Conformational Control to Entropic Trapping” From Solid-state to Biophysics, from Basic to Life Sciences 9, Nanopore and Nanofluidics, Cavtat, (Croatia)
- 2017 “Commercialization of Solid-State Nanopore-based Technologies”, Barriers to Commercialization Panel, Converging on Nanomanufacturing, NanoCanada Symposium, Montreal, QC (Canada)
- 2017 “Kinetics of polymer translocation through nanopores under nanoscale pre-confinement” presented by K. Briggs, Biophysical Society of Canada, Montreal, QC (Canada)
- 2017 “Nanopores and Nanomembranes for Single-Molecule Biophysics” ONEBiophysics Meeting Schedule, University of Toronto at Mississauga, Mississauga ON (Canada)

- 2016 “Democratizing Nanopore-based Single-Molecule Research”, SciX Conference, Minneapolis, MN (USA)
- 2016 “The Potential and Challenges of Solid-State Nanopore-based Single-Molecule Sensing” BioMolar seminar, Department of Chemistry and Biomolecular Sciences, University of Ottawa, Ottawa ON (Canada)
- 2016 “Nanopores and Nanomembranes for Biomedical Applications”, Rochester Advanced Material Program Annual Symposium, Frontiers in Materials Science for the 21st Century MEMS and Membranes, University of Rochester, Rochester NY (USA)
- 2016 “Democratizing Solid-State Nanopore Research” Physics seminar, Brown University, Providence RI (USA)
- 2015 “Nanomanufacturing Nanopore-based Technologies” 6th Annual NanoOntario Conference, University of Ottawa, Ottawa ON (Canada)
- 2015 “Sequencing on an iPhone”, Physics seminar, Carleton University, Ottawa ON (Canada)
- 2015 “Interfacing Solid-State Nanopores with Gel Media to Slow DNA Passage Speeds”, Selective transport through nanopores: physics meets biology conference, Lenzerheide (Switzerland), 2015
- 2014 “Democratizing Nanopore-based Research”, McGill Physical Society Colloquium, McGill University, Montréal QC (Canada), 2014
- 2014 “Democratizing Nanopore-based Single-Molecule Studies”, Gordon Research Conference, Single-Molecule Approaches to Biology, Renaissance Tuscany Il Ciocco Resort, Barga (Italy), 2014
- 2014 “Low-Cost, Scalable Fabrication of Nanopore Devices for Sequencing and Clinical Diagnostic Applications”, 4th Next-Generation Sequencing Meeting, Nucleic Acid Summit, San Diego CA (USA), 2014
- 2014 “Nanopore-based DNA Sequencing – toward testing on the i-STAT?”, Abbott Point-of-Care, Ottawa ON (Canada), 2014
- 2014 “Nanopores Fabricated by Controlled Dielectric Breakdown for Nucleic Acid Analysis”, University of Rochester, Rochester NY (USA), 2014
- 2013 “Nucleic Acid Analysis with Nanopores”, University of Saskatchewan, Department of Biochemistry, Saskatoon SK (Canada) 2013
- 2013 “Single-Molecule Biophysics and Electronic Sequencing with Nanopores”, University of Toronto, Department of Physical and Chemical Sciences, Mississauga ON (Canada), 2013
- 2013 “Control of DNA Capture and Passage by Nanofluidic Transistors”, Canadian Association of Physicists, 68th CAP congress, Montreal QC (Canada), 2013
- 2013 “Extremely low-cost fabrication of solid-state nanopores by controlled dielectric breakdown in aqueous solution”, National Human Genome Research Institute (NHGRI) Advanced Sequencing Technology Development Meeting, San Diego CA (USA), 2013
- 2013 “Single-Molecule Biophysics with Nanopores”, Dalhousie University, Department of Physics, Halifax NS (Canada), 2013
- 2012 “Solid-State Nanopores: Electronic Tools for Single-Molecule Analysis”, keynote lecture at the Symposium D7. Pits and Pores 5: A symposium in Honor of David Lockwood, 222nd ECS Meeting, Honolulu Hawaii (USA), 2012
- 2012 “Solid-State Nanopores: Electronic Tools for Single-Molecule Biophysics” NRC-IMS, Ottawa ON, (Canada).
- 2011 “Solid-State Nanopores: Electronic Tools for Single-Molecule Biophysics” Ottawa Carleton Institute for Physics 2011 Christmas Symposium, Ottawa ON, (Canada).
- 2011 “Nanopores - Electronic Tools for NanoBiotechnologies” Centre Énergie Matériaux Télécommunications de l’Université INRS, Varennes QC, (Canada).
- 2011 “Nanopores: Electronic Tools for Single-Molecule Biophysics and Bio-Nanotechnologies”

- Molecular Devices, Axon Conventional Electrophysiology Webinar CA, (USA).
2011 “Nanopores à l’état solide – perspectives pour le séquençage de l’ADN” session 215 -
Biophysique cellulaire et moléculaire – ACFAS, Sherbrooke QC, (Canada).

Referee, Editorial and Event Administration Activities:

- Member of the Executive Committee of the Biophysical Society of Canada, 2022-present.
- Subject Editor (2020-2023), Editorial Board Member, FACETS - Canada’s first multidisciplinary and interdisciplinary open access science journal.
- Member of National Human Genome Research Institute (NHGRI) special emphasis panel for their Advanced Nucleic Acid Sequencing Technology 2018, 2019, 2020 and 2021 competition.
- Organizing Committee, 2022 BSC Conference (Biophysical Society of Canada) May 2022
- Program committee, ICN+T 2020/2021 in Vancouver (International Conference on Nanoscience and Technology, Conference, 2021/7 - 2021/7
- Organizing Committee, 2016 CAP Congress (Canadian Association of Physicists), Conference, 2016/6 - 2016/6
- Member of the NSERC Research Tools and Instrumentations (RTI) Review Committee (Physics - 1605) for the 2016-2017 competition.

Academic Collaborations:

Network of national and international collaborators composed of:

Active collaborations:

- Prof. P. Branco, Computer Science, uOttawa
 - Funding: NSERC Alliance 2023-2024
- Prof. Peter Jones, Biomedical Micro and Nano Engineering, at the NMI Natural and Medical Sciences Institute at the University of Tübingen (Germany)
- Prof. W. Houry, Biochemistry, University of Toronto
 - Funding: NFRF-E grant 2021-2023
- Prof. J. Harden, Physics, uOttawa
 - Funding: NSERC Alliance 2023-2024
- Prof. J. McGrath, Biomedical Engineering, University of Rochester (USA)
 - Publications: 3
 - Funding: NIH R21 2017-2020, NIH R01 2021-2025
- Prof. M. Godin, Physics, uOttawa
 - Publications: 7
 - Funding: NIH grant 2021-2025

Previous collaborations:

- Prof. W. Dunbar, Computer Engineering, UCSC (a publication in PLoS ONE in 2016)
- Dr. A. Balijepalli, Physical Measurement Laboratory, National Institute of Standards and Technology - NIST (a publication in Analytical Chemistry in 2016)
- Prof. A. Hall, School of Medicine, Wake Forrester University (a publication in Nanotechnology in 2017)
- Prof. G. Slater Physics, uOttawa (funded through NSERC CRD grant 2016-2018 and a publication in Electrophoresis in 2015)
- Prof. S. Leslie, Physics, McGill (Funded through NSERC RTI in 2015 and CRD grant 2015-2018)
- Prof. J. C. Scaiano, Chemistry and Biomolecular Sciences, uOttawa (funded through a Genome Canada grant 2016-2018)

- Prof. Robert Slinger, Children's Hospital of Eastern Ontario (CHEO), Medicine uOttawa (Infectious Disease Diagnostics) (Funded through a CHEO Research Growth Award 2019-2021, and a publication in ACS Sensors in 2022)
- Prof. J. Pezacki, Chemistry, uOttawa (Funded: NSERC Alliance – Special COVID-19 funding 2020-2022, and 1 publication in RSC Sensors and Diagnostics 2024)
- Prof. H. de Haan, Physics, UOIT (Funded: NSERC CRD grant 2019-2022, 3 publications in Nano Letters 2018 and ACS Applied Nano Materials 2019 and Nanoscale 2023)

Industrial Collaborations (past 8 years):

- Oxford Nanopore Technologies Canada (Ottawa, ON, Canada) – active
- Oxford Nanopore Technologies (Oxford, UK; Boston, USA) – active
- Western Digital (San Jose, CA, USA) – active
- Abbott Point-of-Care (Ottawa, ON, Canada)
- Abbott Diagnostics (Chicago, IL, USA)
- Norcada (Edmonton, AB, Canada)
- SiMPore (Rochester, NY, USA)

SUPERVISION:

Graduate Supervision Completed: 14

In progress: 3 Ph.D. + 3 MSc

COMPLETED

Names of Completed Graduate Students:

- Wing Hei Harold Kwok (Ph.D.), Solid-State Nanopore Fabrication by Controlled Dielectric Breakdown, May 2011 – December 2014.
- Jose Bustamante (M.Sc.), Nano- and Microfluidics for single-molecule spectroscopy, August 2012 – August 2014.
- Matthew Waugh (M.Sc.), Modifying translocation kinetics and capture rate of biomolecules by interfacing a solid-state nanopore with a gel, May 2013 – April 2015.
- Radin Tahvildari (Ph.D.), Arrays of Solid-State Nanopore Biosensors Integrated with Microfluidics, September 2012 – December 2016 (co-supervised with Michel Godin)
- Philipp Karau (MSc.), Capture and Translocation Characteristics of Short Branched DNA Labels, January 2016 – January 2018
- Kyle Briggs (Ph.D.), Applications of Solid-State Nanopores, September 2013 – August 2018.
- Eric Beamish (Ph.D.), Multiplexed Detection of Analytes with Solid-State Nanopore Sensors, September 2012 – August 2019. (co-supervised with M. Godin)
- Martin Charron (MSc.), Capture of DNA fragments by Solid-state Nanopores, September 2016 – December 2019.
- Simon King (MSc.), Counting of NA fragments for infectious disease diagnostics, January 2019 – December 2021.
- Dmytro Lomovtsev (M.A.Sc. Mechanical Engineering, co-supervised with Prof. St-Gelais), Instrumentation for Temperature Controlled Nanopore Sensing January 2020 – May 2022
- Liqun He (Ph.D.), Translocation of DNA origami structures through Nanopores, May 2018 – August 2022
- Zachary Roelen (Ph.D.) Transducing Signals and Pre-Concentrating Molecules for Enhanced Solid-

State Nanopore Biosensing, September 2014 – December 2023.

- Deekshant Wadhwa (MSc. Computer Science, co-supervised with Prof. Paula Branco), Nano Trees: Machine Learning Enhanced Signal Processing of Nanopore Data, May 2023 – September 2024.
- Martin Charron (Ph.D.) Nanopore Resistive Sensing: Bridging Theory and Experiments, September 2020 – 2024.

Names of Completed Postdoctoral Fellows, Research Associates and Engineering Researchers:

- Dr. Benjamin Watts (Physics) July 2014 – August 2015.
- Aidan Baker-Murray (Physics) December 2015 – December 2016
- Dylan Gunn (Engineering Physics) January 2016 – December 2017
- Dr. Ali Najafi Sohi, PhD (Mech. Eng.) January 2016 – October 2019 (co-supervised with M. Godin)
- Dr. Autumn Carlsen, PhD (Physics) January 2014 – December 2019
- Dr. Reza Rhanbabaie, Ph.D. (Physics), October 2019- April 2020 (co-supervised with M. Godin)
- Dr. Daniel Tessier, PhD (Biology) September 2016 – August 2020
- Quinn Ingram (Chem. Eng) – Research Assistant July 2020 – December 2020
- Dr. Kyle Briggs, PhD (Physics), November 2018 – December 2021
- Dr. Erin McConnell, PhD (Chemistry), November 2020 – August 2022
- Dmytro Lomovtsev (M.A.Sc. Mech. Eng.), May 2022 – August 2022
- Gengyang (Albert) Mu (M.A.Sc. Mech. Eng.), May 2022 – August 2022
- Deekshant Wadhwa (MSc Comp Sci), October 2024 – November 2024
- Dr. Zachary Roelen, Ph.D. (Physics) January 2024 – November 2024
- Matthew Waugh, MSc, MBA (Physics/Biochemistry) May 2015 – April 2025

Names of Completed Undergraduate Students:

- Mathew Rigby (Physics) January 2011 – May 2011.
- Jean Luc Rukundo (McGill Physics) May 2011 – August 2011.
- Edward Percy (Queen's Physics) May 2011 – August 2011.
- Mathew Waugh (Biochemistry) September 2011 – December 2011.
- Christopher Wlodarczyk (Physics) September 2011 – April 2012.
- Matthew Windeler (Physics) May 2012 – August 2012.
- Julien Thibert-Leduc (Physics) May 2012 – August 2012.
- Kyle Briggs (Physics) September 2012 – December 2012.
- Julie Montgomery (Physics) September 2012 – April 2013.
- Nicholas Yelle (Physics) January 2013 – April 2013.
- Callan Jessiman (high school) July 2013 – August 2013.
- Martin Charron (Physics) May 2013 – December 2013, and then May 2015 – August 2016.
- Pierre Janusz (Lyon, France Physics) September 2013 – April 2014.
- Timothea Le (Biochemistry) May 2014 – August 2014.
- Sanmeet Chahal (Physics) May 2014 – August 2014.
- David Hobson (Physics) May 2015 – August 2015.
- Erick Espindola (Physics) May 2015 – August 2015.
- An Duong (Biochemistry) May 2016 – August 2016.
- Giulio Pregnolato (UBC Engineering coop) September 2016 – December 2016
- Caroline Tippins (Physics) September 2015 – May 2017
- France Manigat (Biochemistry) January 2017 – August 2017
- Samuel Berryman (UBC Engineering coop) January 2017 – August 2017
- Mohammed Sayeem (Biochem./Chem. Eng. – full-time coop) Sept. 2017 – December 2017
- Amanda Alain (Biochemistry/Chem. Eng. – part-time honours) May 2017 – April 2018

- Melissa Jimenez (Bio Mech. Eng. – full-time coop) September 2017 – April 2018
- Michelle Vandeloos (Biochemistry – full-time coop) January 2018 – April 2018
- Michelle Lam (UBC Biophysics – full-time coop) September 2017 – August 2018
- Simon King (Biochemistry, minor in Biophysics) full-time coop and part-time researcher from May 2016 – December 2018
- Nathaniel Leslie (Chemistry – fulltime coop), September 2018 – December 2018
- Quinn Ingram (Biochem./Chem. Eng. – full-time coop, and part-time researcher from January 2018 – December 2018
- Guillaume Pregliasco (Chem. Eng.), fulltime coop and part-time researcher, September 2018 – April 2019
- Chelsea Leung (Waterloo, Nanoscience program) fulltime coop January 2019 - August 2019
- Smile (Xi Man) Peng (Engineering UofT) summer research May 2019 - August 2019
- Derek Boase (Physics), summer research and part-time researcher from May 2018 – December 2019
- Matthaïos Tsangaris (Biochemistry), Honours Project in BCH4040, then part-time, May 2018 – December 2019
- Guillaume Roballo (Brazil, Military Engineering Institute) exchange Electrical Engineering student
- Marie-Pier Laberge (Biomed Eng.) fulltime coop Sept 2019 – December 2019
- Dmytro Lomovtsev (Biomed Eng.) COOP, then USRA, then part-time Sept. 2018 – Dec 2019
- Ahmed Rezk (Physics), Honours project 2020, January 2020 – April 2020
- Lucas Philipp (UBC Physics – fulltime coop), May 2019 – April 2020
- Yassine Bouhamidi (uOttawa, EE) part-time January 2021 – April 2021; Full-time May-August 2021; part-time September 2021- April 2021
- Alison Nandram (uOttawa, Biomedical Mech. Eng. & Comp. Tech.) Coop student May 2022 – August 2022
- Karolina Kropop (uOttawa, Biochemistry) fulltime Coop student May 2022 – August 2022.
- Katrine Labonté (uOttawa, Biomedical Engineering) full-time coop student May 2023 – August 2023
- William Mcleigh (uOttawa, Biochemistry) full-time student researcher May 2023 – August 2023
- Sofia Zaynullina (uOttawa, Physics) full-time and then part-time student researcher May 2023 – April 2024
- Breeana Elliot (uOttawa, Physics) fulltime, coop and then part-time student researcher May 2022 – April 2024
- Pauline Turpin-Vitry (EPISEN, France) – Mitacs GGlobalinks May 2024 – August 2024
- Arkya Jyoti Ghosh (Indian Institute of Technology (BHU) Varanasi, India) – Mitacs GGlobalinks May 2024 – August 2024
- Nada Kerrouri (uOttawa, Physics) full time May 2024 – August 2024, then part-time September 2024-December 2024
- Emma Saunders (uOttawa, Biomedical Engineering) full-time coop student May 2023 – August 2023, part-time September 2024-May 2025
- Raghav Bhargava (uOttawa, Biochemistry) part-time student researcher September 2023 – April 2024, then full-time May 2024 – August 2024, part-time September 2024-May 2025

CURRENT (11 HQPs)

Names of Current Graduate Students (5):

- Philipp Mensing (Ph.D. Student in Physics), Decoding Digital Information Stored on Molecules, January 2021 – present.
- Yassine Bouhamidi (Ph.D. Student, in Biomedical Engineering), multi-channel nanopore platform,

May 2022 – present.

- Benjamin Hyatt (MSc. Student in Physics), Protein Analysis with Nanopores, July 2024 – present.
- Kara Zhao (MSc. Student in Physics), Nanopore-based Glycans Analysis, September 2024 – present.
- Nada Kerrouri (PhD. Student in Physics), Nanopore-based multiplexed bioassays, January 2025 – present.
- Taelor Hendrick (MSc. Student in Molecular Biosciences), Digital Bioassays, May 2025 – present, co-supervised with Prof. Michel Godin.

Names of Current Postdocs, Research Associates, Lab Manager (3):

- Dmytro Lomovtsev (M.A.Sc. Mech. Eng.), May 2022 – present
- Michel Stephan (M.A.Sc. Mech. Eng.), July 2023 – present
- Dr. Martin Charron (PhD), January 2025 – present

Names of Current Undergraduate Students (3):

- Amélie Lemieux (Biotechnology, uOttawa) full-time summer student May 2025 – August 2025, then part-time September 2025-April 2026
- Carolina González González (uOttawa, Software Engineering) full-time May 2024 – August 2024, part-time September 2024-April 2025, full-time May 2025- August 2025, part-time September 2025-December 2025
- Elvin Okotie-Eboh (Biochemistry, uOttawa) full-time summer student May 2025 – August 2025, then part-time for honours project, September 2025-April 2026

PUBLICATIONS:

1) Life-time summary:

- Papers in <u>refereed</u> journal.....	64
- Papers in <u>refereed</u> conference proceedings	3
- Book Chapters	2
- Patents	6

Non-Refereed Publications & Book Chapters

[3] K Briggs, M Waugh, V Tabard-Cossa – Chapter 1: “Fabricating Solid-State Nanopores for Single-Molecule Sensing” in Solid State Nanopores: From Fabrication to Biosensing, pages 1-33, Springer International Publishing (2023)

[2] Ying, YL; Ivanov, A.P.; Tabard-Cossa, V. “No small matter”, Nature Chemistry 13, 216–217 (2021). [Invited meeting report]

[1] Tabard-Cossa, V. “Engineered Nanopores for Bioanalytical Applications - Chapter 3: Instrumentation for Low-Noise High-Bandwidth Nanopore Recording” pages 59-88 editors: Edel, J. B. and Albrecht, T.; Elsevier (2013)

Pre-prints and/or manuscripts under review (HQPs underlined or with *):

[1] M Charron, Z Roelen, D Wadhwa, V Tabard-Cossa *Predicting Resistive Pulse Signatures in Nanopores by Accurately Modeling Access Regions*, arXiv:2411.05589.

Webapp: <https://www.tcoosalab.net/signalGenerator>

[2] Zhao*, K; Waugh*, M; Briggs, K; Jamshidi, M P; Sauvageau, J; Tabard-Cossa, V. (2025). Dynamics of Heparin Translocations through Solid-State Nanopores. under review at Electrophoresis

[3] He*, L; Elliott*, B; Mensing*, P; Briggs, K; Godin, M; Flax, J; McGrath, J; Tabard-Cossa, V. (2025). Digital Immunoassay for Sensitive Quantification of Blood Biomarkers using Solid-State Nanopores. ACS Nano (under review, doi:10.26434/chemrxiv-2025-zth1z).

Refereed Publications (HQPs underlined or with *):

[67] Bouhamidi*, M Y; Roelen*, Z; Tabard-Cossa, V. Unraveling Clogging of Solid-State Nanopores by Selective Polymer Coating: Surface Potential Measurements and Sensing of Long Single Stranded DNA. RSC Applied Interfaces 2, 1661-1673 (2025).

[66] Lomovtsev*, D; He*, L; Waugh*, M; St-Gelais, R; Tabard-Cossa, V. A Platform for High-Bandwidth Nanopore Sensing with Thermal Control and Low Electrical Noise. Review of Scientific Instruments. 96:085202. (2025)

[65] Wadhwa*, D; Mensing*, P; Harden, J; Branco, P; Tabard-Cossa, V; Briggs, K. Nano Trees: Nanopore signal processing and sublevel fitting using Decision Trees. RSC Digital Discovery. 4: 1743-1750 (2025).

[64] Mohamed Yassine Bouhamidi, Chunhui Dai, Michel Stephan, Joyeeta Nag, Justin Kinney, Lei Wan, Matthew Waugh, Kyle Briggs, Jordan Katine, Vincent Tabard-Cossa, Daniel Bedau *A Method for Fabricating CMOS Back-End-of-Line-Compatible Solid-State Nanopore Devices* Nanotechnology 36(27): 275602 (2025)

[63] Philipp Mensing, Martin Charron, Mohamed Yassine Bouhamidi, and Vincent Tabard-Cossa, *Folding dynamics of linear ssDNA-dsDNA heterostructures through solid-state nanopores*, Macromolecules, 58(8): 4094–4102 (2025)

[62] Charron*, M; Elliott*, B; Kerroui*, N; He*, L; Tabard-Cossa, V. Velocity fluctuation and force scaling during driven polymer transport through a nanopore. ACS Nano. 19(34): 30950–30960 (2025).

[61] M Charron, Z Roelen, D Wadhwa, V Tabard-Cossa, *Improved Conductance Blockage Modeling of Cylindrical Nanopores, from 2D to Thick Membranes* Nano Letters 24 (34), 10527-10533 (2024).

Webapp: <https://www.tcoosalab.net/porecalc/>

[60] B Elliott, M Charron, J Pezacki, E McConnell, V Tabard-Cossa, *Solid-state nanopore counting of amplicons from recombinase polymerase isothermal amplification* RSC Sensors & Diagnostics 3 (10), 1733-1742 (2024)

[59] Z Roelen, V Tabard-Cossa “*Synthesis of length-tunable DNA carriers for nanopore sensing*” Plos One 18 (8), e0290559 (2023)

[58] Mohamed Yassine Bouhamidi, Dmytro Lomovtsev, Gengyang Mu, Martin Charron, Matthew Waugh, Vincent Tabard-Cossa “*Characterizing Surface Charge Density of Solid-State Nanopore Sensors for Improved Biosensing Applications*” IEEE Sensors Applications Symposium (SAS), 1-5 (2023)

[57] Z Roelen, K Briggs, V Tabard-Cossa “*Analysis of nanopore data: classification strategies for an unbiased curation of single-molecule events from DNA nanostructures*” ACS sensors 8 (7), 2809-2823 (2023)

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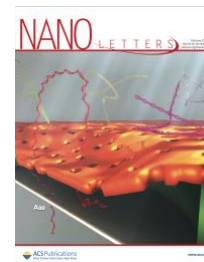
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- [6] “Preprocessing of Nanopore Signals” Inventors: Jose Bustamante, Kyle Briggs, Vincent Tabard-Cossa, Paula Branco, and Deekshant Wadhwa. Priority date: September 2024. Patent Pending **Licensed**
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