



The Chalk River Experience

A 4-day intensive radiobiology training programme — June 15–18, 2026

University of Ottawa · Canadian Nuclear Laboratories, Chalk River, ON

8 Hands-on Sessions	5 Soft-Skills Workshops	4+ Expert Seminars	1 Annual Retreat
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The **BRIGHT-Canada Annual Bootcamp** is a four-day intensive training event that immerses trainees from Carleton University, the University of Calgary, and the University of Ottawa in world-class radiobiology infrastructure at Chalk River. The bootcamp directly fulfils mandatory NSERC CREATE project deliverables while providing an unparalleled interdisciplinary research experience.

University of Ottawa	University of Calgary	Canadian Nuclear Laboratories	TRIUMF	Carleton University	Health Canada
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Funded by NSERC CREATE



PROGRAMME OVERVIEW

The **BRIGHT-Canada Annual Bootcamp** is a 4-day intensive training event bringing together trainees from Carleton University, the University of Calgary, and the University of Ottawa at the Canadian Nuclear Laboratories (CNL) in Chalk River, Ontario. The programme directly fulfils mandatory project deliverables — hands-on training (TS3), soft-skills workshops (PS2), seminars (PS1), and the Annual Retreat (TS4) — while providing an unparalleled interdisciplinary research experience spanning radiation physics, molecular radiobiology, environmental science, and space biology.

1	Knowledge Mobilization & Future Readiness Mon Jun 15 · Roger Guindon Hall · uOttawa
2	Radiation Physics & Facility Immersion Tue Jun 16 · CNL Auditorium B703/B700
3	Molecular Radiobiology & Internal Exposure Wed Jun 17 · CNL — B513 & Auditorium
4	Space Biology, Organoids & Frontier Radiobiology Thu Jun 18 · CNL — BRF, ESL & Auditorium

VENUES

DAY 1 · Mon June 15 Roger Guindon Hall (RGN) University of Ottawa Room 2003 · 451 Smyth Rd, Ottawa, ON On-site registration · WiFi provided	DAYS 2–4 · June 16–18 Canadian Nuclear Laboratories (CNL) Chalk River Campus 286 Plant Rd, Chalk River, ON On-site registration · Parking available · WiFi provided
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DELIVERABLE ALIGNMENT

TS3	Advanced practical hands-on training (2–3 weeks) — MANDATORY	8 dedicated hands-on sessions leveraging CNL facilities and PI expertise
PS2	Attend ≥2 workshops (communication, professionalism, ethics, regulatory affairs, EDI) — MANDATORY	5 workshops covering EDI, Regulatory Affairs, IP/Innovation, Data Ethics, and Science Communication
PS1	Attend ≥50% of offered seminars	Seminars on CNL Vision, Regulatory Policy, and Science Diplomacy integrated throughout
TS4	Annual retreat — MANDATORY	The bootcamp serves as the Annual Retreat, providing the mandatory forum for networking and showcasing collective training

1

Knowledge Mobilization & Future Readiness

Communication, Professional Skills & Intellectual Property

Mon June 15, 2026

Roger Guindon Hall · uOttawa

Day 1 establishes the intellectual and collegial foundation for the bootcamp. Hosted at the University of Ottawa's Roger Guindon Hall, trainees from all three partner universities gather to present their research in rapid-fire lab showcase talks, participate in a practical IP and technology-transfer workshop led by CNL's commercialisation office, and attend three expert seminars covering science communication, radiation physics, and regulatory health science. The day closes with informal networking.

09:20–09:30 Registration & Welcoming Remarks*Prof. Jean-François Couture (uOttawa) — Bootcamp Lead*

■ RGN, Room 2003

Opening

09:30–12:00 Research Showcase: Ice Breaker & Lab Presentations*All Trainees & PIs — 10-minute student project talks and PI lab overviews to foster networking and interdisciplinary collaboration.*

■ RGN, Room 2003

TS4

12:00–13:00 Lunch & Networking

■ RGN

13:00–14:00 Workshop: IP & Technology Transfer*B. Keiser (CNL Commercialization Office) — IP strategy, patents, licensing frameworks, and spin-out pathways for research innovations.*

■ RGN, Room 2003

PS2

Workshop

14:00–15:00 Seminar: Communicating Science to Specialist and Public Audiences*Prof. Aaron Goodarzi (UCalgary) — Effective strategies for conveying complex radiobiology research to both expert and lay audiences.*

■ RGN, Room 2003

PS1

Seminar

15:00–15:15 Coffee Break

■ RGN, Atrium

15:15–16:15 Seminar: Radiation Physics — Energy Deposition Across Length Scales*Prof. Rowan Thomson (Carleton University) — From nanometre DNA tracks to whole-organ dosimetry: a unified view of radiation energy deposition.*

■ RGN, Room 2003

PS1

Seminar

16:15–17:15 Seminar: Adverse Outcome Pathways — From Concepts to Applications in Radiation & Health Research*Dr. Vinita Chauhan (Health Canada) — Introduction to the AOP framework and its application in regulatory decision-making for radiation health.*

■ RGN, Room 2003

PS1

Seminar

18:00–19:30 Night at Dooly's — Networking Social

An informal evening of networking, pool, light refreshments and food.

■ *Dooly's, Ottawa*

Social

TS4 Annual Retreat	PS2 Workshop ×1	PS1 Seminars ×3
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2

Radiation Physics & Facility Immersion

Mastering the Irradiation Environment at CNL

Tue June 16, 2026

CNL Auditorium B703/B700

The first full day at CNL opens with mandatory site safety orientation before plunging participants into the irradiation environment. The morning features a combined lecture on neutron radiobiology and a guided tour of the ZED-2 research reactor. After lunch, all groups attend a technical session on dose rate calculation and beam mapping, then split into two rotating groups — one undertaking hands-on work with the XRad320 X-ray irradiator while the other tours the Gamma Beam Facility and High-Power Neutron Generator. The evening social at The Hexagon restaurant in Deep River provides a relaxed setting for continued exchange.

09:00–09:30 Registration & Welcoming Remarks*Dr. M.-C. Grégoire (CNL) — Opening remarks and programme overview.*

■ B513, R134

Opening**09:30–10:00 Site Safety Orientation***J. Mitton (CNL Safety Staff) — Mandatory safety briefing required for all participants before accessing CNL research facilities.*

■ B513, R134

Safety**10:00–10:30 CNL Introduction: Vision, Mandate & Research Infrastructure***Dr. M.-C. Grégoire (CNL) — Overview of CNL's strategic research mandate, facilities, and national contributions to nuclear science.*

■ B513, R134

PS1**Seminar****10:30–12:30 Neutron Radiobiology & ZED-2 Research Reactor Tour***Dr. Laura Paterson & Dr. Luke Yaraskavitch (CNL) — Lecture on neutron radiobiology followed by a guided tour of the ZED-2 reactor facility.*

■ ZED-2 Reactor

TS3**Lecture****12:30–13:30 Lunch & Networking**

■ B513, R134

13:30–14:00 All Groups: Dose Rate Calculation & Beam Mapping*Dr. M. Vazquez (CNL) — Introductory technical session covering theory and worked examples for irradiation experiment calibration.*

■ B513, R134

Seminar**14:00–15:30 Group 1: XRad320 X-ray Irradiator Deep Dive (B513) | Group 2: Radiation Facilities Tour — GBF & HPNG***Dr. M. Vazquez & J. Surette (CNL) — Hands-on irradiator calibration and setup vs. guided tour of gamma and neutron beam facilities.*

■ Gp 1: B513 (X-Irradiator) | Gp 2: BRDF

TS3**Demo**

15:30–17:00 Group 2: XRad320 X-ray Irradiator Deep Dive (B513) Group 1: Radiation Facilities Tour — GBF & HPNG Dr. M. Vazquez & J. Surette (CNL) — Groups rotate to complete both the hands-on irradiator session and the facilities tour. ■ Gp 2: B513 (X-Irradiator) Gp 1: BRDF TS3Demo	18:00–20:00 Evening Social — The Hexagon, Deep River Informal dinner and networking at The Hexagon restaurant. ■ The Hexagon, Deep River Social
TS3 Hands-on ×3 PS1 Seminar ×1	

3

Molecular Radiobiology & Internal Exposure

DNA Damage, Autoradiography & Population Dosimetry

Wed June 17, 2026

CNL — B513 & Auditorium

Day 3 focuses on the molecular and cellular consequences of radiation exposure. The morning opens with alpha particle irradiator theory and demonstration, integrated with population-based radon dosimetry modelling. A career panel with CNL scientists follows. The afternoon moves through personal dosimetry verification, internal dosimetry modelling, autoradiography protocols, and concludes with a genomics practicum on radiation-induced DNA damage. The evening networking dinner at The Butcher's Wife in Pembroke provides a memorable close to the day.

09:00–09:30 Daily Briefing*Dr. M. Vazquez (CNL)*

■ B513, R134

Opening

09:30–11:00 Studying Alpha Particle Radiation in Populations and a Radiation Biology Lab*Prof. Aaron Goodarzi (UCalgary) — Theory and hands-on demonstrations using ^{241}Am alpha particle sources, integrated with population-based radon exposure modelling among Canadians.*

■ B513, R134

TS3

Demo

11:00–12:00 Career Panel: Working in National Laboratories*Dr. M.-C. Grégoire (CNL) — Panel discussion on career pathways, professional development, and the culture of national research laboratories.*

■ B513, R134

PS2

12:00–13:00 Lunch & Networking

■ B513, R134

13:00–14:00 Personal Dosimetry & Shielding Verification*Dr. M. Seydaliev (CNL) — Practical verification of personal dosimetry devices and shielding effectiveness under controlled irradiation conditions.*

■ B513 / H

TS3

Demo

14:00–15:30 Internal Dosimetry Modelling*Dr. J. Lesniewski (CNL) — Biokinetic modelling for internally deposited radionuclides: compartmental models, ICRP frameworks, and regulatory applications.*

■ B513, R134

TS3

Demo

15:30–17:00 Autoradiography Techniques (B513)*Dr. Laura Bannister (CNL) — Hands-on demonstration of autoradiography protocols for biological samples, including exposure optimisation and image analysis.*

■ B513

TS3

Demo

17:00–18:00 Genomic Approaches to DNA Damage Biology (B513)*Prof. Aaron Goodarzi (UCalgary) & Dr. Yi Wang (CNL) — Next-generation sequencing workflows and bioinformatics pipelines for characterising radiation-induced DNA damage signatures.*

■ B513

TS3

Demo

19:00–22:00 Networking Dinner — The Butcher's Wife, Pembroke

Celebratory group dinner at one of the region's celebrated restaurants.

■ *The Butcher's Wife, Pembroke*

Social

TS3 Hands-on ×5

PS2 Career Panel ×1

4

Environmental Radiobiology, Advanced Cellular Models

Organoids, Protein Dynamics & Space Radiation

Thu June 18, 2026

CNL — BRF, ESL & Auditorium

The final day pushes to the frontiers of radiobiology. The morning features low-dose radiation effects on three-dimensional organoid models at the Biological Research Facility, followed by a session on protein translation dynamics under radiation stress. The afternoon moves to the Environmental Science Laboratory for aquatic radionuclide mapping and toxicology, then to a two-hour lecture on the challenges of deep space missions, including galactic cosmic ray physics and biological risks. The day closes with a live microgravity simulation demonstration and a formal closing ceremony.

09:00–09:30 Daily Briefing*Dr. M. Vazquez (CNL)*

■ B513, R134

Opening**09:30–11:00 Applied Concepts in Low-Dose Radiation (LDR) Effects on Organoids***Dr. M. Vazquez & Dr. S. Puukila (CNL) — Live demonstration of organoid irradiation protocols at the Biological Research Facility (BRF); LDR dose-response relationships and 3D culture systems.*

■ B513 & BRF

TS3**Demo****11:00–12:00 Applied Concepts in Protein Translation Dynamics***Dr. M. Roffe (uOttawa) & Dr. Yi Wang (CNL) — Experimental approaches to studying ribosomal activity and protein synthesis regulation under radiation-induced cellular stress.*

■ B513

TS3**Demo****12:00–13:00 Lunch & Networking**

■ B513, R134

13:00–14:00 Environmental Radiobiology: Aquatic Radionuclide Mapping & Toxicology (ESL)*Dr. M. Stuart & Dr. S. Jarron (CNL) — Field demonstration of environmental sampling, radionuclide tracking in aquatic systems, and ecotoxicological risk assessment.*

■ B350 (ESL)

TS3**Demo****14:00–16:00 Challenges for Deep Space Missions: Space Radiation Environment and Ground-Based Analogs***Dr. M. Vazquez (CNL) & Dr. Cornelia Hoehr (TRIUMF, remote) — Galactic cosmic ray physics, particle LET spectra in deep space, shielding limitations, and biological risks of long-duration human spaceflight.*

■ B513, R134

TS3**Lecture****16:00–17:00 Space Radiobiology & Microgravity — Simulation Demo***Dr. M. Vazquez & Dr. S. Puukila (CNL) — Live demonstration of CNL's Space Biology Simulation Unit: combined particle irradiation and simulated microgravity for ground-based analogue experiments.*

■ B513, R134

TS3**Demo**

17:00–18:00 Closing Ceremony & Group Remarks

Prof. J.-F. Couture (uOttawa) & Dr. M.-C. Grégoire (CNL) — Reflections, trainee recognition, and the path ahead for BRIGHT-Canada.

■ B513, R134

Closing

TS3 Hands-on ×5

Lecture Space Radiobiology

PRINCIPAL INVESTIGATORS & FACULTY

The bootcamp draws on a distinguished cohort of researchers and practitioners spanning radiation physics, molecular radiobiology, space biology, environmental science, and regulatory affairs.

JF C Prof. Jean-François Couture University of Ottawa · Bootcamp Lead

A structural biologist and biochemist at uOttawa's Department of Biochemistry, Microbiology, and Immunology, Prof. Couture leads the BRIGHT-Canada NSERC CREATE training network. His laboratory investigates the structural basis of chromatin remodelling and DNA damage recognition, bridging molecular radiobiology with translational research training.

A G Prof. Aaron Goodarzi University of Calgary · Radiobiology & Radon

Canada Research Chair in Radiobiology and Genomic Stability at UCalgary, Prof. Goodarzi is one of Canada's foremost experts on DNA double-strand break repair and population-level radon exposure risk. He leads multiple sessions across Days 1 and 3, connecting laboratory radiobiology with public health science.

R T Prof. Rowan Thomson Carleton University · Medical Physics

Director of Carleton's Laboratory for Radiotherapy Physics (CLRP), Prof. Thomson specialises in Monte Carlo modelling of radiation transport and clinical dosimetry. His expertise bridges fundamental physics and clinical application, informing the Day 1 seminar on energy deposition across length scales.

MC G Dr. Marie-Claude Grégoire Canadian Nuclear Laboratories · Radiobiology Lead

Radiobiology Program Lead at CNL, Dr. Grégoire coordinates research at the intersection of nuclear medicine, targeted radionuclide therapy, and radiation biology. She serves as CNL co-host and primary institutional liaison for the bootcamp, and moderates the Day 3 career panel.

ME V Dr. Marcelo E. Vazquez Canadian Nuclear Laboratories · Radiation Physics & Space Biology

Dr. Vazquez leads CNL's Space Radiobiology research programme and is the principal architect of the bootcamp's hands-on irradiation curriculum. His expertise spans particle radiation physics, LET spectra characterisation, and CNL's unique Space Biology Simulation Unit. He delivers sessions across all four days.

M R Dr. M. Roffe University of Ottawa · Protein Translation Dynamics

Dr. Roffe's laboratory at uOttawa investigates the regulation of mRNA translation and cap-dependent protein synthesis under cellular stress, including radiation exposure. He leads the Day 4 session on protein translation dynamics and ribosomal activity under radiation-induced stress.

V C Dr. Vinita Chauhan Health Canada · Radiation Protection & Regulatory Science

A senior researcher at Health Canada's Consumer and Clinical Radiation Protection Bureau, Dr. Chauhan specialises in adverse outcome pathway (AOP) development for radiation health research. Her work directly informs regulatory frameworks for radiation protection; she delivers the AOP seminar on Day 1.

B K Bronwyn Keiser Canadian Nuclear Laboratories · Commercialization Office

Bronwyn Kaiser is the Manager of IP Operations at Canadian Nuclear Laboratories (CNL). Bronwyn brings extensive experience in intellectual property management, technology transfer, R&D; commercialization, and innovation strategy. Her work at CNL is central to protecting and advancing scientific innovations in the nuclear science and technology sector.

C H Dr. Cornelia Hoehr TRIUMF / uOttawa · Space Radiobiology

An accelerator physicist and space radiobiology researcher at TRIUMF, Dr. Hoehr studies the biological effects of high-energy particle beams relevant to deep space missions. She co-leads the Day 4 session on galactic cosmic rays and space mission challenges, participating remotely.

S P Dr. Stephanie Puukila Canadian Nuclear Laboratories · Organoids & Low-Dose Radiation

Dr. Puukila specialises in three-dimensional cell culture and organoid systems for studying low-dose radiation effects at CNL's Biological Research Facility. She leads the organoid irradiation demonstration on Day 4 and co-leads the microgravity simulation session.

Y W Dr. Yi Wang Canadian Nuclear Laboratories · Transcriptomics & Genomics

Dr. Wang's research focuses on transcriptomic profiling and bioinformatic analysis of radiation-induced gene expression changes. She provides practicum support across Days 3 and 4, guiding trainees through sequencing workflows and computational tools.

L B Dr. Laura Bannister Canadian Nuclear Laboratories · Autoradiography

A specialist in radiobiological imaging and autoradiography at CNL, Dr. Bannister leads the hands-on autoradiography session on Day 3, introducing trainees to classical and contemporary protocols for visualising radiolabelled biological samples at cellular resolution.

CNL SUPPORT FACULTY & COLLABORATORS

Dr. Qi Qi
Genomics & Autoradiography

Dr. Laura Paterson
Reactor Operations (TBC)

Dr. Luke Yaraskavitch
Reactor Operations (TBC)

Dr. M. Seydaliev
Dosimetry

Dr. J. Lesniewski
Internal Dosimetry

Dr. Joel Surette
Radiation Facilities

Dr. Bronwyn Kaiser
CNL Commercialization

Dr. Marilyn Stuart
Environmental Science

Dr. Sam Jarron
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CNL SUPPORT FACULTY & COLLABORATORS

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Dr. M. Seydaliev Dosimetry	Dr. J. Lesniewski Internal Dosimetry	Dr. Joel Surette Radiation Facilities
Dr. Bronwyn Kaiser CNL Commercialization	Dr. Marilyn Stuart Environmental Science	Dr. Sam Jarron Environmental Science
Dr. J. Olfert Environmental Science	Dr. E. Vera Chan CNL Research Staff	J. Mitton CNL Safety Officer

PROGRAMME INDEX AT A GLANCE

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12:00–13:00	Lunch & Networking ■ RGN	
13:00–14:00	Workshop: IP & Technology Transfer — B. Keiser ■ RGN, Room 2003	PS2
14:00–15:00	Communicating Science — A. Goodarzi (UCalgary) ■ RGN, Room 2003	PS1
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18:00–20:00	Social: The Hexagon, Deep River ■ The Hexagon, Deep River	Social
DAY 3 — Wed June 17		CNL — B513 & Auditorium
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09:30–11:00	Alpha Particle Irradiators: Theory, Demo & Radon Dosimetry — A. Goodarzi ■ B513, R134	TS3
11:00–12:00	Career Panel: Working in National Laboratories — M.-C. Grégoire ■ B513, R134	PS2
12:00–13:00	Lunch & Networking ■ B513, R134	
13:00–14:00	Personal Dosimetry & Shielding Verification — M. Seydaliev ■ B513 / H	TS3
14:00–15:30	Internal Dosimetry Modelling — J. Lesniewski ■ B513, R134	TS3
15:30–17:00	Autoradiography Techniques — L. Bannister ■ B513	TS3
17:00–18:00	Genomic Approaches to DNA Damage Biology — A. Goodarzi, Y. Wang ■ B513	TS3
19:00–22:00	Dinner: The Butcher's Wife, Pembroke ■ The Butcher's Wife, Pembroke	Social
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12:00–13:00	Lunch & Networking ■ B513, R134	
13:00–14:00	Environmental Radiobiology: Aquatic Radionuclide Mapping — M. Stuart, S. Jarron ■ B350 (ESL)	TS3
14:00–16:00	Challenges for Deep Space Missions: Space Radiation — M. Vazquez, C. Hoeher (remote) ■ B513, R134	TS3
16:00–17:00	Space Radiobiology & Microgravity Simulation — M. Vazquez, S. Puukila ■ B513, R134	TS3
17:00–18:00	Closing Ceremony — J.-F. Couture & M.-C. Grégoire ■ B513, R134	Closing

TS3 Hands-on training · PS2 Soft-skills workshop · PS1 Seminar · TS4 Annual retreat · Day 1 uOttawa · Days 2–4 CNL Chalk River
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