



Committee for Oversight of Research Units

Annual Reporting for Faculty Supported Research Centres and Networks

All Centres (provisional Centres; McGill Centres), Research groups and Networks that receive funding from the Faculty of Medicine and Health Sciences (FMHS) are required to provide an annual report to the Committee for Oversight of Research Units ([CORU](#))

The reporting period is May 1, 2022 – April 30, 2023.

Please submit your report to the Research Office, Faculty of Medicine and Health Sciences (riac.med@mcgill.ca) before the following deadline:

May 15, 2023

Continued support from the Faculty is contingent on:

1. the receipt of the reporting documents on time,
2. the evaluation of reported activities by the Faculty's Committee for Oversight of Research Units (CORU),
3. the availability of Faculty funds.

Your strong engagement in the Faculty's mission for continued research excellence and financial stewardship is truly appreciated.

Annual Report of Activities and Outcomes

Name of the Unit: **McGill University Centre for Structural Biology (CSB),**

which also operates as FRQS-funded Centre de Recherche en Biologie Structurale (CRBS)

Name of Unit leader & email address:

Director: Prof. Martin Schmeing

martin.schmeing@mcgill.ca

Phone: 514-398-2331

Coordinator: Annick Guyot, PhD

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514-398-2293

Associate Director: **Prof. Natalie Zeytuni**

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Associate Director: **Prof. Chris Thibodeaux**

christopher.thibodeaux@mcgill.ca

Phone: 514-398-3637

If the Unit is a **Senate-approved** McGill Research Centre, indicate date of approval:

May 14th, 2014 (for CSB)

Mission statement of the Unit (~2 sentences):

The mission of the CSB and CRBS is to exploit the power of structural biology and biophysics to produce the next wave of scientific breakthroughs in (i) determining the molecular basis of disease and treatments, and (ii) leveraging biophysical, chemical and synthetic biology for health. At the same time, we will train a new generation of structural biologists and biophysicists with outstanding expertise in using cross-disciplinary approaches for biomedical research to make structural biology and its many strengths accessible to the broader biomedical research and health community.

Total number of Unit members: 46 members

Number of members affiliated with McGill's FMHS: 22 members

Unit's website:

Please note the website needs to feature:

- all sources of funding support (including the FMHS logo),
- the list of Members and their institutional affiliation with appropriate links,
- the activities supported by the Unit,
- all previous Annual Reports.

Website address (URL): <https://www.crbsmcgill.ca>

Please respect the page limits, where indicated. (minimum font size of 11 pts, use lay language)

1. Explain the significance of the Unit's mission at McGill and beyond (1/2 page max.)

Understanding the molecules that underlie all life function, and how they are altered in disease states, is of fundamental importance to health care. Equally, understanding the molecular mechanisms of therapeutics and leveraging new nanotechnologies will be key for the development of next-generation treatments. Practically all medicines are molecules (be they small molecules or biologics) and thus must be understood and developed with molecular level information. Structural biology and biophysics are the suite of multidisciplinary tools that provide precise molecular level information on the form and activity of the molecules of life. Clear examples of the importance of structural biology and biophysics for health include the massive structural biology and structure-function relationship initiatives developed in-house by biotechs and big pharma, the literally millions of lives saved by treatments which structural biology played a key role in developing, the eight Nobel prizes in the last two decades awarded for the use and/or development of structural biology and biophysics techniques, the key role structural biology is assuming in the development of gene editing techniques, and the role structural biology played in understanding and fighting the recent COVID-19 pandemic. Moreover, the influence of structural biology in the health sector is accelerating as researchers using electron microscopy and/or X-ray crystallography are increasingly successful at obtaining structures of more complex, therapeutically relevant targets and medically relevant cellular machines. Furthermore, the multi-disciplinary interrogation of these complexes with both structure determination and complementary biophysical techniques provides an unprecedented level of understanding of the systems and enhanced ability to inhibit or manipulate them to improve medical treatment outcomes. Modern structural biology and biophysics are making a broader impact in health than ever before, because structural information can now be leveraged for target discovery, new modes of action, and lead-to-therapeutic development for small molecules, biologics and gene editing. We are very appreciative of the Faculties guaranteed ongoing contribution of \$50,000 per year during the FRQS funding period.

2. Alignment with the [Faculty's Strategic Research Plan](#) (1/2 page max.)

Research: The SRP's overarching goal is for McGill to maintain or achieve a high level of excellence in selected areas. CRBS main research activities align perfectly with three of the four major groupings of the SRP: 1. Infection, Immunity & Inflammation; 2. Cancer and 3; Neuroscience. All CRBS researchers' major initiatives fit into one of these 3 groupings. **Training:** The SRP's overarching goal is... training the next generation of health researchers in a highly competitive and inter-disciplinary research environment. CRBS is training a new generation of structural biologists and biophysicists with outstanding expertise in using cross-disciplinary approaches for biomedical research to make structural biology and its many strengths accessible to the broader biomedical research and health community. The CRBS has a student stipend program that support the recruitment and retention of high-quality students at McGill, as well as a travel stipend program for students to travel to workshops, courses, conferences and months-long on-site collaborations, as well as a student-run seminar series and many student-oriented outreach activities (bench to bedside, bench to business, bootcamps), all which are important for development and training of our young scientists **Infrastructure:** The current SRP updates build on solid foundations, consolidate successful strategic research initiatives, and re-emphasize the vital importance of current, sustainable core infrastructure and platforms in the realization of the research mission. The CRBS manages or contributes to the management of the key McGill biophysical infrastructure platforms including our biophysics core, FEMR, SPR & Mass Spec and QANUC NMR. These platforms have contributed to the success of many FMHS faculty members. **EDI:** The SRP emphasizes the major importance of equity, diversity and inclusion throughout all aspects of research. We have established an EDI standing committee whose major responsibility will be to ensure that the CRBS is incorporating best EDI practices into its governance and daily operations. The committee will ensure that all CRBS members have multiple avenues to voice opinions and concerns related to EDI, and the committee will be responsible for tracking progress towards EDI milestones and reporting on the

effectiveness of measures to the FRQS and CRBS community. The Standing EDI committee and CRBS leadership will make a more concerted effort to keep issues related to EDI at the forefront of decision making by the CRBS. This will be achieved in a variety of ways such as announcing specific EDI-themed activities during CRBS events, sending regular emails to the CRBS community, providing EDI-related information on the CRBS website, and incorporating EDI considerations into our award competitions.

3. Highlight the top-5 accomplishments of the Unit over the past 12 months (1/2 page max., use bullets).

1) Funding success in CIHR (and other) granting competitions: The CRBS includes some of the most successful and best funding researchers at McGill. This is illustrated by the most recent CIHR Project competition, of our 46 total members, 10 won grants this round! Two (at least) were ranked top in their panels (Trempe - top in BMA, Pelletier - top in BMB). CRBS-led grants represented $9/38 = \sim 25\%$ of the total grants won at McGill this round.

2) The return of the in-person CRBS Annual Symposium: The CRBS Symposium is the premier dissemination event in biophysics and structural biology in the Quebec/Eastern Ontario region. After two virtual symposia, the 2023 CRBS Symposium was held again in person at the McGill New Residences. It featured fantastic talks from CRBS trainees and world-renown, international scientist. Hundreds of attendees, from CRBS, Quebec and elsewhere participated in this flagship events.

3) The return of the travel awards, and the expansion to support collaborations: Our Trainee Travel Awards supported exciting student presentations at the most important field conferences, including Gordon Conferences, CSHL Meetings, EMBO workshops, and RSC meetings. A new "Collaborating Scholar Award" allowed our trainees to embed in top academic and industrial environments for longer periods. The 2022 awards were: Olivia Kovecses worked in London with MiNA Therapeutics to develop small activating RNA for treating acute myeloid leukemia; Natalia Frota joined Donald Hilvert's laboratory at ETH Zurich to use selection to bioengineering of new-to-nature antibiotics; and Ashkan Shahsavan won support for on-site collaboration at Loren Runnels' lab at Rutgers U. on tumour suppressor magnesium transport proteins.

4) TREMP LIN training grant awarded: The CRBS joined with the other McGill FRQS Centres (RI-MUHC, the Douglas, the LDI) to with this FRQS training grant this year. We have been awarded \$800,000 for 2022-2026 for the 4 McGill centers (\$97,000 for CRBS) to address the career and professional development needs of graduate students and postdocs at our FRQS-funded McGill-affiliated centres. Together the consortium brings together over 1700 research trainees, affiliated with the McGill University RUISSS.

5) EDI: In addition to the implementation of the EDI standing committee described above, other important EDI activities include: A. Student award competitions now include an opportunity for CRBS applicants to self-describe obstacles the they have experienced which could influence their competitiveness if not considered. B. For all intramural funding opportunities, winning PIs must *complete at least one EDI-themed training module offered by McGill's Office of Organizational Development. Failure participate in EDI training during funded period will result in ineligibility for future funding.* C. The CRBS works with other, McGill organizations that have the expressed goal to counter historical imbalances in science. We have helped fund, advertise, promote, or held joint events with several of these excellent initiatives, including Win 4 Science, the Out Loud Symposium, the Scientista Underrepresented Genders in STEM Symposium, and the Canadian Organization for Undergraduate Health Research.

4. Major joint publications over the past 12 months (including shared software, data repositories; with links). Please only feature the article co-authored by at least two PI members of the Unit:

1. A cryptic third active site in cyanophycin synthetase creates primers for polymerization.

Sharon I, Pinus S, Grogg M, **Moitessier N**, Hilvert D, **Schmeing TM**.

Nat Commun. 2022 Jul 7;13(1):3923. doi: 10.1038/s41467-022-31542-7.

PMID: 35798723

2. SARS-CoV-2 impairs interferon production via NSP2-induced repression of mRNA translation.

Xu Z, Choi JH, Dai DL, Luo J, Ladak RJ, Li Q, Wang Y, Zhang C, Wiebe S, Liu ACH, Ran X, Yang J, Naeli P, Garzia A, Zhou L, Mahmood N, Deng Q, Elaish M, Lin R, Mahal LK, Hobman TC, **Pelletier J**, Alain T, Vidal SM, Duchaine T, Mazhab-Jafari MT, Mao X, Jafarnejad SM, **Sonenberg N**.

Proc Natl Acad Sci U S A. 2022 Aug 9;119(32):e2204539119. doi: 10.1073/pnas.2204539119. Epub 2022 Jul 25.

PMID: 35878012

3. Structures of the mannose-6-phosphate pathway enzyme, GlcNAc-1-phosphotransferase.

Gorelik A, Illes K, **Bui KH, Nagar B**.

Proc Natl Acad Sci U S A. 2022 Aug 16;119(33):e2203518119. doi: 10.1073/pnas.2203518119. Epub 2022 Aug 8.

PMID: 35939698

4. Purification, crystallization and crystallographic analysis of the PorX response regulator associated with the type IX secretion system.

Saran A, Weerasinghe N, **Thibodeaux CJ, Zeytuni N**.

Acta Crystallogr F Struct Biol Commun. 2022 Oct 1;78(Pt 10):354-362. doi: 10.1107/S2053230X22008500. Epub 2022 Sep 26.

PMID: 36189719

5. Modulating the selectivity of inhibitors for prolyl oligopeptidase inhibitors and fibroblast activation protein- α for different indications.

Plescica J, Hédou D, Pousse ME, Labarre A, Dufresne C, **Mittermaier A, Moitessier N**.

Eur J Med Chem. 2022 Oct 5;240:114543. doi: 10.1016/j.ejmech.2022.114543. Epub 2022 Jun 17.

PMID: 35797897

6. Evolution of naturally arising SARS-CoV-2 defective interfering particles.

Girgis S, Xu Z, Oikonomopoulos S, Fedorova AD, Tchesnokov EP, Gordon CJ, **Schmeing TM, Götte M, Sonenberg N**, Baranov PV, Ragoussis J, Hobman TC, **Pelletier J**.

Commun Biol. 2022 Oct 27;5(1):1140. doi: 10.1038/s42003-022-04058-5.

PMID: 36302891

7. Tau differentially regulates the transport of early endosomes and lysosomes.

Balabanian L, Lessard DV, Swaminathan K, Yaninska P, Sébastien M, Wang S, Stevens PW, **Wiseman PW**, Berger CL, **Hendricks AG**.

Mol Biol Cell. 2022 Nov 1;33(13):ar128. doi: 10.1091/mbc.E22-01-0018. Epub 2022 Sep 21.

PMID: 36129768

8. Structural Polymorphism of Guanine Quadruplex-Containing Regions in Human Promoters.

Hennecker C, Yamout L, Zhang C, Zhao C, Hiraki D, **Moitessier N, Mittermaier A**.

Int J Mol Sci. 2022 Dec 16;23(24):16020. doi: 10.3390/ijms232416020.

PMID: 36555662

9. i-Motif folding intermediates with zero-nucleotide loops are trapped by 2'-fluoroarabincytidine via F \cdots H and O \cdots H hydrogen bonds.

El-Khoury R, Macaluso V, Hennecker C, **Mittermaier AK**, Orozco M, González C, Garavís M, **Damha MJ**.

Commun Chem. 2023 Feb 16;6(1):31. doi: 10.1038/s42004-023-00831-7.

PMID: 36797370

10. Therapeutic targeting of eukaryotic initiation factor (eIF) 4E.

Pelletier J, Sonenberg N.

Biochem Soc Trans. 2023 Feb 27;51(1):113-124. doi: 10.1042/BST20220285.

PMID: 36661272

- 11.** Targeting DEAD-box RNA helicases: The emergence of molecular staples.
Naineni SK, Robert F, **Nagar B, Pelletier J.**
Wiley Interdiscip Rev RNA. 2023 Mar;14(2):e1738. doi: 10.1002/wrna.1738. Epub 2022 May 17.
PMID: 35581936
- 12.** Exploring the Targeting Spectrum of Rocaglates Among eIF4A Homologs.
Naineni SK, Cencic R, Robert F, Brown L, Haque M, Scott-Talib J, Senechal P, **Schmeing TM, Porco J Jr, Pelletier J.**
RNA. 2023 Mar 7:rna.079318.122. doi: 10.1261/rna.079318.122. Online ahead of print.
PMID: 36882295
- 13.** Putative Protein Interactome of the Rhomboid Protease RHBDL4.
Hsiao JM, Penalva YCM, Wu HY, Xiao B, Jansen G, Dejgaard K, **Young JC, Munter LM.**
Biochemistry. 2023 Mar 21;62(6):1209-1218. doi: 10.1021/acs.biochem.2c00680. Epub 2023 Mar 1.
PMID: 36857408
- 14.** Cryo-EM structure of the *Agrobacterium tumefaciens* T-pilus reveals the importance of positive charges in the lumen.
Amro J, Black C, Jemouai Z, Rooney N, Daneault C, **Zeytuni N, Ruiz M, Bui KH, Baron C.**
Structure. 2023 Apr 6;31(4):375-384.e4. doi: 10.1016/j.str.2022.11.007. Epub 2022 Dec 12.
PMID: 36513067
- 15.** Small Molecule-Templated DNA Hydrogel with Record Stiffness Integrates and Releases DNA Nanostructures and Gene Silencing Nucleic Acids.
Lachance-Brais C, Rammal M, Asohan J, Katolik A, Luo X, Saliba D, Jonderian A, **Damha MJ, Harrington MJ, Sleiman HF.**
Adv Sci (Weinh). 2023 Apr;10(12):e2205713. doi: 10.1002/advs.202205713. Epub 2023 Feb 8.
PMID: 36752390
- 16.** Structural Mechanisms of Mitochondrial Quality Control Mediated by PINK1 and Parkin.
Trempe JF, Gehring K.
J Mol Biol. 2023 Apr 12:168090. doi: 10.1016/j.jmb.2023.168090. Online ahead of print.
PMID: 37054910
- 17.** Molecular Mechanisms of Neurodegeneration in Parkinson's Disease.
Trempe JF, Gehring K.
J Mol Biol. 2023 Apr 28:168131. doi: 10.1016/j.jmb.2023.168131. Online ahead of print.
PMID: 37120011

5. **Major joint research projects funded over the past 12 months** (involving at least two PI members of the Unit:

Extramural Grants:

- CIHR Project Grant.** PIs: **Maureen McKeague; Nathan Luedtke;** Francois Mercier
Small activating RNAs targeting transcription factors as a therapeutic approach for acute myeloid leukemia.
\$726,751
- CIHR Project Grant.** PI: **Bastien Castagner,** co-applicant **Jean-François Trempe**
Small-Molecule Inducers of Toxin B Cleavage as a Therapeutic Approach Against *Clostridioides difficile* Infection,
\$688,501

-CIHR Project Grant; PI: Adam Hendricks, Collaborator: Gary Brouhard

Huntingtin as a master regulator of intracellular transport.

\$925,650

-CIHR Project grant. PI: Jean-François Trempe, Nicolas Moitessier, Collaborator : Joaquin Ortega, Edward Fon

Structural studies and development of chemical probes for PINK1, a mitochondrial ubiquitin kinase implicated in Parkinson's disease.

\$967,725

-CIHR Project grant. PI: Youla Tsantrizos Co-investigators: Jean-François Trempe and Michael Sebag
Molecular Tools that Block Maturation of the Nuclear Lamin A, Leading to Decrease in Proliferation and Metastasis of Pancreatic Ductal Adenocarcinoma and Colorectal Cancer.

\$1,071,000

-CIHR Project grant. PIs: Jerry Pelletier Collaborator: Martin Schmeing

Eukaryotic Initiation Factor 4F - A Strategic Driver of the Cellular Information Network.

\$970,211

-MI4 Seed Fund Grant; PIs Karine Auclair and Dao Nguyen, co-applicants Don Sheppard and Lyle White;

\$150,000

-FRQS Tremplin. PIs: Martin Schmeing, Natalie Zeytuni, all CRBS PIs; application as a Centre in collaboration with MUHC-RI, Lady Davis and Douglas Hospital research centre

Tremplin program for trainees of McGill research centres funded by FRQS 11/2022 – 03/2026

\$800,000

- FRQNT teams grant. PIs: Chris Thibodeaux , Joaquin Ortega and Natalie Zeytuni.

Caractérisation Mécanistique et Structurelle du Complexe Biosynthétique de la Nisine

\$240,000

-NSERC CREATE. PI: Jayachandran Kizhakkedathu (BC) + 10 co-applicants including Bastien Castagner & Gerhard Multhaupt

Charging into the Future (CITF): Training in Polyelectrolyte Biosystems for Tomorrow's Health Challenges

\$1.65M

-NFRF-Exploration. PI: Mehran Dastmalchi and Co-Applicant Chris Thibodeaux, Jacquie Bede

Plant-derived biosynergists to enhance pesticide efficacy

\$250,000

Intramural funding provided in past 12 months

Blue sky funding competition: held in January 2023: 15 applications received, 6 funded (3 CRBS/CRBS and 3 CRBS partner) for a total of \$240,000 (\$180,000 from CRBS, \$60,000 from partner: GCI, MI4 and BIC at UdeM).

Infrastructure competition: held in December 2022. 6 applications received, 4 awarded for a total of \$156,000.

RTI competition: held in October 2022. 1 application received, 1 funded for a total of \$15,000. Involves 3 CRBS members (G Cosa; A Mittermaier, Y Tsantrizos). NSERC RTI Supplement. Bio-Tek NEO2 microplate reader

6. Major outreach activities (e.g., seminar series, general public events):

4th CRBS Annual Symposium held on Monday, November 7, 2022 at the McGill New Residence Hall with ~200 attendees, 3 internationally renowned speakers, local speakers, trainees presentation and poster session. This event has been awarded Silver Sustainable Event certification by the McGill Sustainable Events program run by the McGill Office of Sustainability.

CRBS Seminar Series: flagship event hosted by the CRBS student council that features trainee research. ~30 minutes presentations from trainees in CRBS labs. Open to CRBS community and adjacent departments. Held in hybrid mode 2/month from Sept-April, with 2 trainees presenting at each session. Talks are judged by faculty members and cash prizes are presented to the best presenters at the annual symposium. ~50 attendees per session.

CRBS co-hosted Raphael Townshend seminar with new McGill RNA Centre, April 3 2023.

Bench to Business event: 1 event held in hybrid mode.

October 7 2022: Start-up company event.

CEGEP Outreach

-Lecture by JF Trempe on structural biology and molecular graphics to a group of science students at CEGEP Rosemont - March 21st 2023.

-Lecture by JF Trempe on structural biology and molecular graphics to a group of science students at Marianopolis College - April 4th 2023

Media – Engaged traditional press, including

-Radio interview with JF Trempe on the Radio-Canada radio show “Les Années Lumières” (August 7th 2022), “200 millions de structures de protéines prédites par l'IA”

<https://ici.radio-canada.ca/ohdio/premiere/emissions/les-annees-lumiere/episodes/646072/rattrapage-du-dimanche-7-aout-2022>

-Youtube: J Pelletier: <https://www.youtube.com/watch?v=Mn46TOYvayE>

-Magazine: M. Schmeing , Quebec Science. Issue 14-03-2023

-Collaborations with other units: “Meet your colleagues” event with IRCM Dec 8 2022.

-New Media Communications:

<https://www.crbsmcgill.ca>

[Centre for Structural Biology Research \(CRBS\) Core Facilities | School of Biomedical Sciences - McGill University](#)

[Academic platforms – Services and Advice - Montréal Invivo \(montreal-invivo.com\)](#)

CRBS McGill (@CRBSMcGill) / Twitter

Centre de Recherche en Biologie Structurale: Overview | LinkedIn

https://www.facebook.com/csbscmcgill/?ref=py_c&__xts__

@crbs_students • Photos et vidéos Instagram

-CRBS collaboration with McGill wide Green Lab Initiative: Monthly, hybrid seminars, attendance ~ 20 student/professors. Melissa Valente-Paterno, SAD Green Lab Team CEO and Chair and Project Manager for the McGill Green Lab Expansion Initiative Team, is research assistant in CRBS member Huy Bui lab.

-CRBS collaboration with Melville institution. Bi-monthly seminars, hybrid, attendance 10-30 student/professors

-Representation of CRBS and student council at human genetics conference (April 24th 2023)

-Science POP competition: student talk competition for lay audience (April 14th 2023,) 2 McGill students will be attending the provincial competition on May 27-28 at IRCM.

-MIAM (McGill institute of advanced materials) + CRBS networking event (September 16th)

-Undergraduate coffee with graduate students (October 27th 2022)

-Networking event with GCSS, BGSS, GAPS for students to understand about interdepartmental research ("Spooktober pub crawl") October 27th 2022, 60 students)

7. Major training activities (e.g., summer schools, co-supervision of trainees, practical workshops):

-Summer bootcamps:

2 events held via Zoom

June 17 2022: PyMol and Alphafold Workshop in French

August 19 2022: Chimera bootcamp

August 3, 10, 17, 24 2022: ITC bootcamps held in person

-CRBS Studentship award competition 2022-2023:

Held in the Spring, awards for the period Sept. 1, 2022 – Aug. 31, 2023. 22 applications received, 15 awards given, \$10,000 each, for 1 year (7 M.Sc. students including 1 co-supervised, 7 Ph.D. students including 1 co-supervised). The second annual Maximilian Eivaskhani In Memoriam Graduate Scholarship was awarded to Andrew Bayne, PhD candidate in the McGill Department of Pharmacology and Therapeutics, for the 2022-2023 academic year.

-DFW 2022: 2 awarded through GPS

-TREMPLIN program (FRQS training grant for FRQS research centres):

We submitted the full application in June 2022 and have been awarded \$800,000 for 2022-2026 for the 4 McGill centers (\$99,750 for CRBS for 4 years). This new program is to address the career and professional development (CPD) needs of graduate students at our FRQS-funded McGill-affiliated centres (the Research Institute of the MUHC, the Douglas Research Centre, the Lady Davis Institute for Medical and the Centre de recherche en biologie structurale). Together the consortium brings together over 1700 research trainees, affiliated with the McGill University RUISSS, over more than five sites in the city of Montréal.

-CRBS Travel award competition 2022-2023: held in the Spring, awards for the period April 1 2022 – March 31 2023.

Three categories of awards: Professional Development Awards (up to \$500 for trainees to attend remote conferences or workshops); Travel Awards (up to \$1000 for trainees to present research in person at a conference, or to attend a workshop in person); Collaborating Scholar Award (up to \$2000 for travel/lodging expenses to work on-site in the lab of a collaborator). 20 applications received, 20 awarded since we were not able to run this competition during the COVID-19 pandemic.

-CRBS Methods Seminar Series:

Series hosted by the student council that introduces the CRBS audience to the wide variety of techniques and methods employed by different research groups at the CRBS. The goal is to make these techniques more accessible to CRBS trainees. Also to foster scientific collaboration within the CRBS by highlighting the infrastructure and the expertise available at the center. Held 1/semester with a 60-minute presentation by a trainee or staff member with expertise in a particular technique, covering basic theory and application of the technique and also showing how the technique has been employed at the CRBS in the past to answer important research questions. (X-ray crystallography, Alexei Gorelik Dec 2 2023, Practical MS and SPR workflow, Mark Hancock March 17 2023, in person).

-CRBS Professional Workshops:

The CRBS Student Council has organized a professional workshop, given by Dr. Chris Corkery, the Technology Transfer Manager at McGill University. Topics for this workshop was *How to give effective effective research talks to live audiences*. This professional workshop is designed to help trainees improve skills outside of the lab. April 21 2023, in person.

-How to talk to media workshop:

The McGill Media Relations Team (Katherine Gombay and colleagues) and the CRBS hosted a 'How to talk to the media and the general public' workshop for CRBSers (students, postdocs or profs) who wanted to refine their communication skills. This short workshop (2 hours) on January 19, 2023 was an excellent opportunity to gain insight into how media work and to start developing the skills to collaborate with reporters effectively. It was a small group interactive workshop, and each participant had to prepare two small paragraphs of 50 and 100 words about their research and why it matters beforehand, as well as an accessible analogy to describe some aspect of your research. These were worked through as part of the fun and exciting session. Excellent feedback was received from both attendees and the McGill Media Relations Team

-Microfluidic Diffusional Sizing Seminar

The CRBS hosted in collaboration with Fluidic Analytics, and interesting interactive workshop on the latest generation Microfluidic Diffusional Sizing technology was held on Feb 17, 2023

-Co-supervision of trainees:

CRBS encourages co-training of students for them to best leverage multidisciplinary training. Current co-supervised trainees are:

Garvit Bhatt: JF Trempe / B Nagar
Luca Lazzari: JF Trempe / MV Ugalde
Cameron Hastie: P Wiseman / A. Ehrlicher
Alexia Piercey: K Auclair / C. Thibodeaux
Daniel Buss: M McKee / N Reznikov
Muriel Sebastien: A Hendricks / G Brouhard
Sofia Cruz Tetlalmatzi: A Hendricks / G Brouhard
Quy Son Bui: H Sleiman / M McKeague
Patricia Islas Garcia: H Sleiman / G Cosa
Syeda Kiran Shahzadi: A Shrier / G Lukacs

8. If applicable, **list new members** who joined the Unit in the past 12 months (indicate: Name, title, full/associate member, affiliation):

-Bastien Castagner, Associate Professor, Full member, FMHS, Pharmacology and Therapeutics
-Matthew Harrington, Associate Professor, Full member, Faculty of Sciences, Department of Chemistry
-Arnold Hayer, Assistant Professor, Full member, Faculty of Sciences, Department of Biology
-Nicolas Moitessier, Professor, Full member, Faculty of Sciences, Department of Chemistry

9. If applicable, **list members who have left the Unit** in the past 12 months (indicate: Name, title, full/associate member, affiliation):

N/A

10. Explain why continued support from the FMHS is crucial to Unit (½ page max):

-The FMHS support allowed us to leverage funding from FRQS (\$500K per year initially, now raised to \$640K per year and projected by FRQS to rise to \$700K, renewable) which leads to numerous CRBS activities but FMHS funding is still crucial for all CRBS activities.

-The letters of support and funding from McGill, with FMHS the biggest supporting body, were mentioned specifically in the review process and were clearly vital for securing this funding. FMHS generously pledged to continue to fund at the \$50K level for the duration of the awarded FRQS Centre Grant.

-Specific initiatives that rely on FMHS funding include the Annual CRBS Symposium, intensive bootcamp training programs for students, community outreach and networking events, and essential equipment upgrades and maintenance.

-CRBS and its members will continue to win additional grants and apply for program funding and the FMHS funding is required to support additional activities that make us competitive when applying for other sources of funding.

-CRBS holds competitive opportunities for fellowships, seed funding and infrastructure. We are always unbiased and equal-opportunity for all our members, but as our mandate is structural biology and biophysics for health, FMHS members have been recipients of the majority of this funding.

-We have a full time Research Center officer, Kim Munro, who manages CRBS equipment and facilitates biophysical experiments for CRBS members, FMHS scientist and McGill colleagues. We require full funding from FRQS and FMHS to support this. It is very difficult to otherwise fund support staff.

-Please note that there are exceptionally funds remaining in our Faculty of Medicine Fund at the end of 2022/23 which we rolled over to 2023/24. These roll-over funds will be spent in 2023/24 for compensatory activities fundamental to the CRBS.

-The full funding of \$50K as pledged by FMHS at the time of FRQS grant application is required to continue our operations and research facilitation. Many costs have increased because of inflation over the last several years, and all funds are required to continue the CRBS successes, as outlined in detailed the field above ("10. Budget justification and details")

-The full funding of \$50K as pledged by FMHS at the time of FRQS grant application also an important sign of support as we renew the main FRQS funding in 2023-24.

11. Provide suggestions about how the Faculty could do better to support the Unit and research efforts in general (**no page limit but please be specific and unleash your creativity!**)

The CRBS is very grateful for the support of the FMHS.

Any simplification of administration procedures is always welcome. It would be very helpful for us to be able to submit our master budget with all line items instead of the summary budget requested here.

This Word document template is a not convenient to use. The boxes keep changing widths, or not letting us paste into them, etc. Please change to instruction document and allow us to use free-form Word document.

One of our main goals is to strengthen ties with the medical community. Support to coordinate efforts with other units/groups (both for students and PIs) within the Faculty would be welcome.

We are excited for the Infinity booking platform to be implemented in June 2023 for CSB. It has been a massive effort for both FMHS staff and on our part, but we believe it will be worthwhile. Thank you for allowing us to participate in that.

Please, please change the date that this report must be submitted, so that it does not coincide with the Minerva shutdown at financial year end. It is very difficult to properly gather financial information.