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The purpose of this report is to provide an overview of research funding offered by the <u>Heart and Stroke</u> <u>Foundation of Canada</u> (Heart & Stroke), with a focus on the Grant-in-Aid (GIA) program. The primary audience is any faculty members seeking funding to support research that falls under the mandate of Heart & Stroke. **This report is for University of Alberta use only.**

Heart and Stroke Foundation of Canada

The Heart & Stroke is Canada's leading not-for-profit organization dedicated to reducing the impact of heart disease, stroke and related conditions. One of the ways they do this is to offer a number of research <u>funding opportunities</u>, including (recent UofA awards listed below each category; detailed Grants-in-Aid summary provided later in the report):

- Grants-in-Aid Provides operating funds to support research in the areas of heart disease and/or stroke.
- **Personnel Awards** Salary support to individuals who have clearly demonstrated excellence during their doctoral and post-doctoral training in cardiovascular or cerebrovascular research.
- **New Investigator Awards** Salary awards to support new investigators who have demonstrated excellence in their doctoral and postdoctoral training and wish to establish their own independent research career.
 - 2024/25 **Ezeugwu, Victor** (Faculty of Rehabilitation Medicine) *Moving towards precision poststroke rehabilitation guided by behavioural markers.*
- **Personnel Awards for Women's Heart & Brain Health** Supports young scholars invested in women's heart and brain health early in their training stage (doctoral) and during their transition (postdoctoral) to becoming independent researchers.
 - 2024/25 Rachid, Jad-Julian (Faculty of Medicine & Dentistry), PhD student under the supervision of Dr.
 Stephane Bourque.
- **Personnel Awards for Indigenous Scholars** Promotes strategic growth in heart and brain health science with Indigenous communities by supporting Indigenous students to pursue their post graduate studies.
 - 2023/24 Hagen, Ethan (Faculty of Medicine & Dentistry), PhD student under the supervision of Drs.
 Yanbo Zhang and Trevor Hamilton
- **Personnel Awards for Black Scholars** Promotes strategic growth in heart and brain health science within Black communities by supporting Black students to pursue their post graduate studies.
 - 2024/25 Ezeugwa, Joy (Faculty of Rehabilitation Medicine), PhD student under the supervision of Dr.
 Victor Ezeugwu.
 - 2023/24 Ibanga, Jeremies (Faculty of Medicine & Dentistry), MSc student under the supervision of Dr.
 Simonetta Sipione.
 - 2023/24 Khodabocus, Ibrahim (Faculty of Medicine & Dentistry), PhD student under the supervision of Dr. Stephane Bourque.
- Heart-Brain IMPACT Awards Enables breakthroughs in research aimed at generating new knowledge and accelerating its translation into action for people living with conditions that impact the heart and brain, such as heart disease, stroke and vascular cognitive impairment (VCI).
- Stroke Clinical Research Catalyst Grant program Increases capacity for clinical stroke research within Canada, with an aim to reduce the burden of stroke, prevent recurrence, and improve patient outcomes through clinical research that will improve our understanding of stroke and advance stroke care.

- **Chairs and Professorships** Designated endowments or partnerships providing salary and infrastructure support to enable a leading researcher to develop a specific heart disease and stroke research focus at a Canadian university.
 - Kaul, Padma (Faculty of Medicine & Dentistry), Heart & Stroke Chair in Cardiovascular Research.
- **Research Networks of Excellence in Women's Heart and or Brain Health** Supports the development of two (2) new research networks in Canada, dedicated to women's heart and/or brain health for the 2024/2025 competition year.
- **Congenital Heart Disease Team Grants** Aims to bring together multi-institutional, interdisciplinary health research teams with multiple collaborators to create and mobilize knowledge that will improve the health and wellness of individuals living with congenital heart disease (CHD), their families and caregivers.
 - 2024/25 Mackie, Andrew (PI; Pediatrics, Faculty of Medicine & Dentistry); Kaul, Padma (co-PI; Medicine, Faculty of Medicine & Dentistry) *Optimizing care transitions across the lifespan in congenital heart disease.*

Heart & Stroke Grant-in-Aid (GIA) Program

"The Grant-in-Aid (GIA) program provides operating funds to support important, pertinent, novel research in the areas of heart disease and stroke. GIA funding promotes research discovery, exploration and innovation across all health research themes. Knowledge gained from scientific findings contributes to the cardiovascular and cerebrovascular health of Canadians through prevention, treatment and recovery."

Typically, the GIA program guidelines and application form are released at the end of June, and the submission deadline is at the end of August. Detailed information and guidelines for the 2025/26 competition (August 2024 submission) are available <u>here</u>. **NEW**: In general, the funding for a GIA is limited to \$100,000 per year for a maximum of 4 years (\$400,000 total funding; grants were formerly limited to three years). GIAs provide support in all four pillars of health research:

- Basic biomedical
- Clinical
- Health services/systems
- Social, cultural, environmental and population health.

National Success Rates and Competition Results

The GIA competitions for the years 2021-2022, 2022-2023, 2023-2024, and 2024-2025 resulted in 226 grants (Table 1) being awarded to 20 universities and their associated institutes. Table 1 shows the number of grants and success rate for 2022/23, 2023/24 and 2024/25; only bridge grants were awarded in 2021/22 due to the pandemic. Table 2 shows the number of GIAs funded per university. This includes the affiliated research institutes and hospitals for each university. Data for the number of applications per university is not available.

Competition Year	# of Applicants	Awards Funded	% Funded	Value of Awards
2021/22	N/A	26	N/A	N/A
2022/23	180	64	36	\$16,073,369
2023/24	175	66	38	\$17,218,975
2024/25	187	70	37	\$18,476,064

Table 1: Total GIAs applied for, # funded and their value.

Table 2:	Total	GIA	awards	by	university	1.
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	Grants-In-Aid Awards			
University (includes affiliated institutes)	2021/22	2022/23	2023/24	2024/25
University of Alberta	5	7	6	7
University of British Columbia	2	4	4	5
University of Calgary	-	9	3	6
Dalhousie University	-	3	-	-
University of Guelph	2	1	2	-
Université Laval	-	-	2	-
University of Manitoba	-	1	4	1
McGill University	-	3	3	3
McMaster University	1	2	10	6
Université de Montréal	3	6	5	7
University of Ottawa	2	2	5	6
Université du Québec	1	-	-	-
Queen's University	-	1	1	1
University of Saskatchewan	-	1	-	-
Université de Sherbrooke	-	-	-	2
Simon Fraser University	-	-	2	1
University of Toronto	5	11	14	18
University of Victoria	-	1	-	-
University of Western Ontario	4	6	5	6
York University	-	1	-	1
Total	26	64	66	70

University of Alberta Success Rates

As shown in Table 2, the number of GIAs awarded to the UofA is approximately what could be expected based on other comparable universities in Canada. Table 3 shows the number of GIAs applied for by UofA investigators, the percentage funded and total value. The percentage funded may be lower than the percentage approved for funding, as some applicants may decline the Heart & Stroke funding in favor of CIHR. If you are contemplating applying to both CIHR and Heart & Stroke, check the <u>advice</u> shared by U of A faculty members who are often funded by both agencies. The UofA typically submits ~15 GIA applications each year, with a relatively high success rate (54% in 2022/23; 40% in 2023/24; 47% in 2024/25). For the 2025/26 competition, 18 applications were submitted. Successful applicants will be notified by Heart & Stroke in the spring/summer 2025. The competition results will likely be publicly announced in October 2025.

Competition Year	# of Applicants	Awards Funded	% Funded	Value of Awards (Average)
2021/22	17	5	29	\$1,206,443 (\$241,289)
2022/23	13	7	54	\$1,877,729 (\$268,247)
2023/24	15	6	40	\$1,740,493 (\$290,082)
2024/25	15	7*	47	\$1,935,705 (\$276,529)
2025/26	18	TBA	TBA	TBA

Table 3: Total GIAs applied for by the UofA, # and % funded and their total value.

*For the 2024/25 competition, 9 applications (60%) from UofA were approved for funding. However, 2 of these declined the Heart & Stroke funding in favor of CIHR. Data is currently not available for how many Heart & Stroke grants were declined in previous years.

University of Alberta Results by Faculty and Departments

Table 4 shows the distribution for the last 4 years of the UofA-funded principal investigators (PI) and co-principal investigators (Co-PI if stated in the grant award) by faculty and department. A number of UofA faculties and departments received awards with the majority of PIs from the Faculty of Medicine & Dentistry (15/18; 83%). The grants funded at the UofA for the last five competitions are listed in Appendix I. Only the principal investigator (PI) and co-principal investigator(s) (Co-PIs) are listed. The specific amount for each grant is not provided on the Heart & Stroke website, but is approximately \$270,000 per grant over three years. The maximum amount and duration has been increased to \$400,000 over four years for the 2025/26 competition, so we expect to see a higher average amount (close to \$400,000) for the 2025/26 results.

Faculty	Department	2021/22	2022/23	2023/24	2024/25	Total
Medicine & Dentistry		4	6	5	6	21
	Biochemistry	-	-	1	-	1
	Medical Genetics	1	-	-	1	2
	Medicine	-	3	1	2	6
	Pediatrics	3	2	-	1	6
	Physiology	-	1	2	1	4
	Psychiatry	-	-	-	1	1
	Radiology & Diagnostic Imaging	-	-	1	-	1
Agricultural, Life and Environmental Sciences		-	-	1	1	2
	Agricultural, Food & Nutritional Sciences	-	-	1	1	2
Kinesiology, Sport, and Recreation		1	-	-	-	1
Pharmacy and Pharmaceutical Sciences		-	1	-	-	1
Total		5	7	6	7	25

Table 4. GIAs by UofA Faculty and Departments.

Assisting University of Alberta Researchers to Apply – Strategies to Increase Application Success

Strategy 1: Increase the number of applications from the UofA

Two main approaches can be used in order to potentially increase the number of U of A's GIA submissions. First, individuals who are doing research clearly relevant to Heart & Stroke's mission should be made aware of this funding opportunity and encouraged to apply if interested. This relevance is usually readily apparent.

Second, investigators who are not sure if their project would be considered relevant are encouraged to look into this further. Heart & Stroke supports a broad range of research into the etiology, prevention and treatment of heart disease, stroke and related conditions. They endeavour to fund projects in all four themes of health research as defined by CIHR: basic biomedical; clinical; health services/systems; and social, cultural, environmental and population health. The specific relevance of a proposed project to the mandate of the Foundation may not always be clear and thus they do a pre-relevancy check to ensure the alignment of proposed research with their mission. An application may not be accepted for funding consideration if it is felt to not be directly relevant to their mission. This check is done by determining if the project is relevant to one of the review panels for their Scientific Review Committee, which is the group that will review the applications for potential funding. These review panels may change on an annual basis, but a detailed description for the 2025/26 competition (August 2024 submission) can be accessed in the <u>Grant-in-Aid Programs</u> <u>Guidelines</u>. If potential applicants are not sure if their project will be considered relevant to Heart & Stroke, it is strongly recommended that they review the mandate of these panels and the types of applications they will be reviewing. The titles of the panels are (see the <u>Guidelines</u> for detailed information for the 2025/26 competition):

- I. Clinical cardiovascular and cerebrovascular research
- II. Integrative studies: Genetic manipulations/imaging/bioengineering
- III. Basic science stroke/neurophysiology/neuroregulation
- IV. Cellular biochemistry, pharmacology, and electrophysiology
- V. Molecular basis of cardiac and vascular function
- VI. Thrombosis/lipid and lipoproteins/fundamental nutrition research
- VII. Behavioural research/health psychology/rehabilitation/population health
 - A. Health services and public health
 - B. Health behaviour; health psychology.

If someone is still not sure if their project would be considered eligible for funding, please contact Feiyue Akishyn for further discussion and guidance (<u>feiyue.akishyn@ualberta.ca</u>). Another useful resource to consider is the full range of research projects that has been funded across Canada by Heart & Stroke in recent years. This information is available on their website:

2021/22 Grant-In-Aid Awardees

2022/23 Grant-In-Aid Awardees

2023/24 Grant-In-Aid Awardees

2024/25 Grant-In-Aid Awardees

Strategy 2: Increase the success rate for UofA submissions

The UofA applications are faring well relative to the national numbers as illustrated above; the success rate for UofA applications is typically somewhat higher than the national success rate. However, there is always room for improvement at all stages of the grant development process from concept development to editing of the final draft. Other potential opportunities to increase success in the GIA competition include having an internal review process involving individuals who have been members of the Heart & Stroke's Scientific Review Committee, having a bank of successful applications, and organizing information sessions to assist researchers with application development, etc. Work on these is currently underway and updates will be provided when available. Feiyue Akishyn is available to review the draft of your application and can direct you to others on campus who can assist with the completion of various sections, should this be required. Please contact Feiyue (feiyue.akishyn@ualberta.ca) if you have any questions regarding a potential application.

A bank of successful applications is not yet available. If you wish to see what a successful application looks like it is recommended that you contact one of the current UofA grantees listed in Appendix I and ask if they are willing to share their application with you. The results for the 2025/26 competition (August 2024 submission) will likely be publicly announced in October 2025. If you do not feel comfortable approaching someone to request their application, please contact Feiyue (feiyue.akishyn@ualberta.ca) and she will try to obtain an application for you.

Strategy 3: Communicating GIA competition information

One of the major challenges in applying for a Heart & Stroke GIA is that the program guidelines are not released until late June with a submission deadline in late August. For example, for the 2025/26 competition, the guidelines were released on June 27, 2024 with an August 29 deadline (August 22, 2024 UofA deadline). Previous applicants to the Foundation are accustomed to these timelines and thus may start work on their submission in advance of the release of the program guidelines for that year's competition. However, first-time applicants may not be aware of this funding opportunity until the guidelines are posted. This gives them only 7 weeks to work on their proposal, and this may conflict with vacation time, a CIHR project grant submission(s) (also in early September), etc.

Thus, the Research Partner Network has taken a proactive role in ensuring that information regarding the Heart & Stroke GIA opportunity is distributed well before June and across the university. This will be done in collaboration with the colleges, faculties, research institutes and other groups. This competition report will be part of this communication strategy. The Heart & Stroke GIA program guidelines typically do not change much on an annual basis, so there is little risk in people starting to work on their application prior to the release of the guidelines for the competition they will be applying to. Strategy 4 speaks to the support that is being provided to applicants so that they do not have to wait for the new application forms and guidelines in late June 2025.

Strategy 4: Facilitating application submission

Applications are submitted to the Heart & Stroke via an electronic grant management system known as <u>CIRCUlink</u>. As with many such online submission programs, there can be challenges in working with CIRCUlink. In this regard, applicants are encouraged to contact one of the UofA <u>Research Administration Specialists</u> if they need help with this portal. They can be contacted via an email sent to <u>rsoinfo@ualberta.ca</u>.

As per strategy 3, the application guidelines are typically not released until a couple of months before the submission deadline, which can make proposal writing a challenge. This, combined with the complexity of the CIRCUlink program, may serve as a disincentive for people to apply for a GIA and for new applicants unfamiliar with the submission process in particular. To help address this, we have developed a document that applicants can use to start working on their application well before the availability of the guidelines and application form for the next competition (2026/27; August

2025 submission deadline). This document provides information on the major components of the application, including what is required for each section, word and page limits, formatting requirements, etc. This document is based on what was required in the previous year's competition and it is important to recognize that Heart & Stroke may change their requirements for the next competition. However, there are usually relatively few changes from one year to the next. This document can be <u>downloaded here</u>.

Strategy 5: Enhancing heart disease and stroke research at the UofA

Research in heart disease, stroke and related conditions has long been recognized as an area of strength at the UofA in all three colleges (and in particular in the College of Health Sciences and the College of Natural and Applied Sciences). The <u>Cardiovascular Research Institute</u> and the <u>Cardiovascular Research Centre</u> play important roles in supporting this research at the university, along with other research institutes (e.g., Alberta Diabetes Institute, Neuroscience and Mental Health Research Institute and the Women and Children's Research Institute). Additional work could likely be done by these groups, along with others at the university, college, faculty and department levels to further enhance and develop such research. This will help to generate research ideas and new collaborations, which will result in applications not only to Heart & Stroke, but other organizations as well (and CIHR in particular).

Appendix I: GIAs funded at the UofA from the 2020/21 to 2024/25 competitions

Note: additional submissions may have been successful, but declined in favour of a grant, usually from CIHR, that overlapped conceptually with the Heart & Stroke application.

2024/25

- Jickling, Glen (PI; Medicine, Faculty of Medicine & Dentistry) *Enhanced recanalization in ischemic stroke*. Award amount: \$289,698.
- Kassiri, Zamaneh (PI; Physiology, Faculty of Medicine & Dentistry) *Role of Disintegrin and Metalloproteinase-17 in the contribution of smooth muscle cells to atherosclerosis.* Award amount: \$266,500.
- Oudit, Gavin (PI; Medicine, Faculty of Medicine & Dentistry) *Pre-Clinical Model of COVID and Long COVID: Effects of Sex, Aging and Comorbidities*. Award amount: \$292,400.
- Proctor, Spencer (PI; Agricultural, Food & Nutritional Science, Faculty of Agricultural, Life & Environmental Sciences) *Efficacy of novel serum-free media clones of chP3R99 mAb against atherogenesis*. Award amount: \$270,900.
- Winship, Ian (PI; Psychiatry, Faculty of Medicine & Dentistry) *Targeting progesterone signaling in leukocytes to improve outcome after stroke.* Award amount: \$290,061.
- Yokota, Toshifumi (PI; Medical Genetics, Faculty of Medicine & Dentistry) *Enhancing Cardiac Delivery of Antisense* Oligonucleotides in Duchenne Muscular Dystrophy Using DG9 Peptide. Award amount: \$264,000.
- Zhang, Dawei (PI; Pediatrics, Faculty of Medicine & Dentistry) *Deciphering the role and underlying mechanisms of smooth muscle cell MT1- MMP/MMP14 in the progression of atherosclerosis.* Award amount: \$262,146.

2023/24

- Beaulieu, Christian (PI; Radiology & Diagnostic Imaging, Faculty of Medicine & Dentistry) Advanced diffusion MRI of brain injury after stroke. Award amount: \$279,390.
- Dyck, Jason (PI; Pediatrics, Faculty of Medicine & Dentistry) *Mitochondrial spare respiratory capacity and heart failure*. Award amount: \$296,250.
- Ussher, John (PI; Faculty of Pharmacy & Pharmaceutical Sciences) *Optimizing cardiac energetics in Barth syndrome*. Award amount: \$276,000
- Vine, Donna (PI; Agricultural, Food & Nutrition Science, Faculty of Agricultural, Life & Environmental Sciences); Becher, Harald (Co-PI; Medicine, Faculty of Medicine & Dentistry) *Prevention of early cardiovascular disease in high-risk women with a common reproductive-hormone disorder*. Award amount: \$296,375.
- West, Lori (PI; Pediatrics, Faculty of Medicine & Dentistry) *Tolerating a new heart: towards a clinically relevant transplant protocol for children through optimizing immune tolerance in neonatal mice*. Award amount: \$298,478.
- Young, Howard (PI; Biochemistry, Faculty of Medicine & Dentistry) *The dual roles of SERCA inhibition and activation in dilated cardiomyopathy*. Award amount: \$294,000.

2022/23

- Bello, Aminu (PI; Medicine, Faculty of Medicine & Dentistry) *Cardiac Care and Outcomes in Patients with Advanced Kidney Disease*. Award amount: \$161,734.
- Kassiri, Zamaneh (PI; Physiology, Faculty of Medicine & Dentistry) *Disintegrin and Metalloproteinase-17, a key* regulator of Fibrosis and Inflammation in Adverse Myocardial Remodeling. Award amount: \$297,645.

- Michelakis, Evangelos (PI; Medicine, Faculty of Medicine & Dentistry) *A central role of cardiac fibroblasts in right ventricular failure in Pulmonary Hypertension: the foundation of a therapeutic and biomarker discovery program.* Award amount: \$279,450.
- Oudit, Gavin (PI; Medicine, Faculty of Medicine & Dentistry) *Utility of cardiac magnetic resonance imaging and plasma biomarkers in patients with muscular dystrophy: A prospective cohort study*. Award amount: \$270,000.
- Schmölzer, Georg (PI; Pediatrics, Faculty of Medicine & Dentistry) *Examining vasopressors during neonatal resuscitation*. Award amount: \$270,900.
- Seubert, John (PI; Faculty of Pharmacy & Pharmaceutical Sciences) *Protecting the aged heart from ischemia*reperfusion injury by limiting mitochondrial damage and regulating the innate immune response with novel epoxy lipids. Award amount: \$298,000.
- Zhang, Dawei (PI; Pediatrics, Faculty of Medicine & Dentistry) *Understanding the role of prosaposin in lipid metabolism and the progression of atherosclerosis*. Award amount: \$300,000.

2021/22

- Hornberger, Lisa (PI; Pediatrics, Faculty of Medicine & Dentistry); Davenport, Margie (Co-PI; Faculty of Kinesiology, Sport, and Recreation) *Vascular Dysfunction in Maternal Heart Disease & Its Contribution to Adverse Pregnancy Outcome*. Award amount: \$287,008.
- Khoury, Michael (PI; Pediatrics, Faculty of Medicine & Dentistry) *High Intensity Interval Training in Youth with Congenital Heart Disease: A Randomized Controlled Trial of a Novel Telemedicine Video Game-Linked Exercise*. Award amount: \$299,435.
- Lopaschuk, Gary (PI; Pediatrics, Faculty of Medicine & Dentistry) *Branched chain amino acid contribution to cardiac insulin resistance in heart failure*. Award amount: \$294,000.
- Steinback, Craig (PI; Faculty of Kinesiology, Sport, and Recreation); Cooke, Christy-Lynn (Co-PI; Obstetrics & Gynaecology, Faculty of Medicine & Dentistry) *Influence of advanced maternal age on cardiovascular structure, function and control.* Award amount: \$60,000.
- Yokota, Toshifumi (PI; Medical Genetics, Faculty of Medicine & Dentistry) *Use of a T cell-derived peptide for delivery of antisense oligos to treat cardiomyopathy in muscular dystrophy*. Award amount: \$266,000.

2020/21 (GIA Bridge grants due to reduced funding availability)

Heart & Stroke was only able to offer one-year bridge grants (~\$100,000 per grant) in 2020/21 as a result of the impact of COVID on its fundraising. In 2020-2021 UofA received 8 bridge grants out of 59 grants (14%) awarded on a national basis. These were:

- Bourque, Stephane (PI; Anesthesiology & Pain Medicine, Faculty of Medicine & Dentistry) *Mechanisms of programming of cardiovascular dysfunction by perinatal iron deficiency*. Award amount: \$50,000.
- Hornberger, Lisa (PI; Pediatrics, Faculty of Medicine & Dentistry) *Vascular Dysfunction in Maternal Heart Disease* & *Its Contribution to Adverse Pregnancy Outcome*. Award amount: \$60,000.
- Khoury, Michael (PI; Pediatrics, Faculty of Medicine & Dentistry) *High Intensity Interval Training in Youth with Congenital Heart Disease: A Randomized Controlled Trial of a Novel Telemedicine Video Game-Linked Exercise Platform.* Award amount: \$60,000.
- Lopaschuk, Gary (PI; Pediatrics, Faculty of Medicine & Dentistry) *Branched chain amino acid contribution to cardiac insulin resistance in heart failure*. Award amount: \$60,000.
- Murray, Allan (PI; Medicine, Faculty of Medicine & Dentistry) *The apelin/apelin receptor axis and transplant vasculopathy*. Award amount: \$60,000.

- Schmolzer, Georg (PI; Pediatrics, Faculty of Medicine & Dentistry); Cheung, Po-Yin (Co-PI; Pediatrics, Faculty of Medicine & Dentistry) Vasopressors during neonatal resuscitation of asphyxiated newborns. Award amount: \$60,000.
- Sutendra, Gopinath (PI; Medicine, Faculty of Medicine & Dentistry) *Tumor Secreted Inosine/Hypoxanthine are Novel Biomarkers that can Predict Chemotherapy-Induced Cardiotoxicity*. Award amount: \$50,000.
- Yokota, Toshifumi (PI; Medical Genetics, Faculty of Medicine & Dentistry) *Use of a T cell-derived peptide for delivery of antisense oligos to treat cardiomyopathy in muscular dystrophy*. Award amount: \$50,000.