



Canadian Academy of Health Sciences
Académie canadienne des sciences de la santé

Executive Summary
**ACADEMIC
RECOGNITION
OF TEAM
SCIENCE:**

HOW TO OPTIMIZE
THE CANADIAN
ACADEMIC SYSTEM



THE CANADIAN ACADEMY OF HEALTH SCIENCES

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THE CANADIAN ACADEMY OF HEALTH SCIENCES

The Canadian Academy of Health Sciences (CAHS) recognizes Canadians of great achievement in the academic health sciences. Founded in 2004, CAHS now has over 600 Fellows and appoints new Fellows on an annual basis. The organization is managed by a voluntary Board of Directors and a Board Executive. The Academy brings together Canada's top-ranked health and biomedical scientists and scholars from all disciplines across our nation's universities and its healthcare and research institutes to make a positive impact on the urgent health concerns of Canadians. These Fellows evaluate Canada's most complex health challenges and recommend strategic, actionable solutions. Since 2006, CAHS has successfully engaged

the sponsorship of a wide variety of public and private organizations representing patients and families, professionals, health system leaders, policy-makers, and service and private industry providers. It has co-invested in rigorous, independent assessments that address key health issues with outcomes that have shaped its strategic policy and initiatives. CAHS mobilizes the best scientific minds to provide independent and timely assessments that inform policy and practice addressing critical health challenges affecting Canadians. CAHS helps put change into action for a healthier Canada.



THE EXPERT PANEL ON ACADEMIC RECOGNITION OF TEAM SCIENCE IN CANADA

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Stephen Bornstein, Professor of Community Health and Humanities and Professor of Political Science, Memorial University; Director, Newfoundland and Labrador Centre for Applied Health Research (St. John's, NL)

Sarah Bowen, Former Associate Professor, School of Public Health, University of Alberta; Adjunct Professor, School of Epidemiology and Public Health, University of Ottawa

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Peter Walker, FCAHS, Professor of Medicine, Faculty of Medicine and former Dean of Medicine, University of Ottawa (Ottawa, ON)



MESSAGE FROM THE CHAIR

The Expert Panel is pleased to submit its final report. Though the importance of its subject may not yet be fully appreciated, this report addresses matters that are crucial if Canada is to realize the benefits of team science. The true measure of its value will depend on the follow-up to our recommendations.

The Panel is indebted to many people at Canada's universities and funding agencies who provided us with information critical to our work. We are indebted as well to our peer reviewers and to our editor. We must single out the Council of Canadian Academies for

special mention. Without the leadership of Eric Meslin, President and CEO, and his excellent team (Tijs Creutzberg, Rebecca Chapman, Andrea Hopkins, Joanne Linnay, and Samantha Rae Ayoub), this report would not have been possible. We thank them from and with our hearts.

Peter MacKinnon, O.C.
**Chair, Expert Panel on Academic
Recognition of Team Science in Canada**



MESSAGE FROM THE CAHS PRESIDENT

On behalf of the Canadian Academy of Health Sciences (CAHS), I am pleased to present this report on the **Academic Recognition of Team Science**. The assessment was initially proposed by the Canadian Cancer Research Alliance, which also served as one of the sponsors. The other sponsors include Alberta Innovates – Health Solutions, the Canadian Institutes for Health Research, Fonds de recherche du Québec – Santé, the Michael Smith Foundation for Health Research, and the Nova Scotia Health Research Foundation. One of the expert panel members, Dr. Holly J. Falk-Krzesinski, was sponsored by her employer, Elsevier, which has provided her services to similar panels in the United States and the United Kingdom. To all of you, we wish to express our gratitude both for the funding as well as for your patience. We are also grateful to the Council of Canadian Academies, which assisted with research and project management.

CAHS wishes to extend our thanks to the Chair of the Expert Panel, Peter MacKinnon, former President of the University of Saskatchewan and Interim President of Athabasca University, and to panel members Drs. Stephen Bornstein, Sarah Bowen, Holly J. Falk-Krzesinski, Sara Israels, Joanne Keselman, Roderick R. McInnes, Carol L. Richards, D. Lorne Tyrrell, and Peter Walker.

Appreciation is due also to Dr. Dale Dauphinee, McGill University, who served as Peer Review Monitor, and to the members of the CAHS Standing Committee on Assessments, especially Dr. Tom Feasby. They provided guidance and assistance in all aspects of this report from the initial proposal through to fundraising and report completion. Dr. John Cairns (Past-President) also provided advice and leadership for this project.

Every CAHS assessment requires the financial sponsorship of visionary organizations. This assessment was supported by several organizations that generously contributed anywhere from \$5,000 to \$50,000. CAHS is profoundly grateful to each of these sponsoring organizations. They are acknowledged above and in the introductory pages of this report. The CAHS leadership brings this report to the attention of the Canadian academic community, granting agencies, and major scientific award committees to ensure that contemporary scientific endeavours requiring participation from a variety of experts will recognize the work of all members of such teams and encourage team science approaches.

Sincerely,

Carol P. Herbert, MD, CCFP, FCFP, FCAHS
President, Canadian Academy of Health Sciences



REPORT REVIEW

This report was reviewed in draft form by the individuals listed below — a group of reviewers selected by the Canadian Academy of Health Sciences (CAHS) for their diverse perspectives and areas of expertise. The reviewers assessed the objectivity and quality of the report. Their submissions — which will remain confidential — were considered in full by the Panel, and many of their suggestions were incorporated into the report. They were not asked to endorse the conclusions, nor did they see the final draft of the report before its release. Responsibility for the final content of this report rests entirely with the Expert Panel on Academic Recognition of Team Science in Canada.

CAHS wishes to thank the following individuals for their review of this report:

Alison M.J. Buchan, FCAHS, Professor, Department of Physiology, Faculty of Medicine, University of Toronto (Toronto, ON)

Rama C. Nair, Professor, Epidemiology, Public Health and Preventative Medicine and Vice Dean, Professional Affairs, University of Ottawa (Ottawa, ON)

Anne Ridley, Professor of Cell Biology, King's College London (London, United Kingdom)

Barbara G. Vickrey, Professor and Chair, Department of Neurology, Icahn School of Medicine at Mount Sinai (New York, NY)

Lori J. West, FCAHS, Professor of Pediatrics, Surgery and Immunology and Director, Alberta Transplant Institute (Edmonton, AB)

On behalf of CAHS, the report review procedure was monitored by **W. Dale Dauphinee, FCAHS**, Senior Scholar, Foundation for Advancement of International Medical Education, and Adjunct Professor, McGill University. The role of the report review monitor is to ensure that the Panel gives full and fair consideration to the submissions of the report reviewers. The Board of CAHS authorizes public release of a report only after the report review monitor confirms that CAHS's report review requirements have been satisfied. CAHS thanks Dr. Dauphinee for his diligent contribution as report review monitor.



EXECUTIVE SUMMARY

Research questions and methodologies have become more complex in recent decades. As a result, successful health science research relies more and more on collaboration among experts across disciplines, institutions, or countries, all working together in research teams. While team science yields many benefits for scientific discovery, it is not without risk for individual team members. Concerns about appropriate recognition for personal contributions and — by extension — career advancement can discourage strong researchers from collaborating in team science projects. As summarized in Chapter 2, the problem lies in how to fairly evaluate the research records of applicants (for advancement, promotion, tenure, or funding) who have devoted much of their activities to team science. This can particularly affect specialists (e.g., biostatisticians, communicators, bioethicists) whose work is often critical to the success of projects led by others. Overall, academic institutions, funding agencies, and research award programs in Canada have been slow to adapt assessment/evaluation processes to recognize the contributions of individual investigators to team science.

The factors that hamper the fair evaluation of individual work performed in a team are numerous. They can exist in institutional structures, in the structure of review committees, and within the actual assessment/evaluation process itself as set forth by universities and funders. This report therefore examines these factors through three lenses: culture and behaviour, review committees, and assessment/evaluation (Figure 1). Promising practices (Chapter 3) and recommendations (Chapter 4) are also presented through these lenses.

CHARGE TO THE PANEL

The Canadian Academy of Health Sciences (CAHS) convened an expert panel (the Panel) to examine how institutions in Canada's research system evaluate and recognize the contributions of individuals for work done within research teams, and to identify promising practices to improve such evaluation and recognition. The Panel comprised 10 experts from Canada and the United States with backgrounds in health research,



FIGURE 1 THREE LENSES FOR EXAMINING CHALLENGES RELATED TO RECOGNITION AND REWARD OF INDIVIDUAL MERIT IN TEAM SCIENCE

collaborative research, university administration, and funding agency operations. Specifically, CAHS tasked the Panel to prepare a report that would provide:

- *an inventory of best academic recognition practices that recognize the role of an individual in a team of investigators either in Canada or in other countries;*
- *recommendations that can assist academic promotion, tenure, and merit committees to develop their own guidelines to evaluate the role of individuals within a larger research team;*
- *discussion of the role of promotion and tenure processes in serving the goals of fostering the health of Canadians and health system innovation; and*
- *discussion about possible means that national research award selection committees might use in determining recognition of individuals and teams of individuals for consideration.*

APPROACH

Since this report's definition of *team science* encompasses single-discipline, multiple-discipline, cross-disciplinary, and cross-sectoral teams (Section 1.3.1), the Panel reviewed evidence related to participatory (action) research, engaged scholarship, integrated knowledge translation, and Mode 2 research. To supplement a limited evidence base on university and funding agency recognition practices, the Panel administered a survey to Canadian universities and funding agencies (Section 1.3.3). The Panel also drew from the experiences of its members as research administrators, researchers, and reviewers. See Chapter 1 for more information about the Panel's methodology and survey.

Few of the promising practices identified in this report have been formally assessed for effectiveness, and several are simply examples of what could be done. The Panel acknowledges that there remain significant gaps in available evidence. These practices do, however, demonstrate a need for organizations to reassess criteria for advancement, promotion, tenure, or funding, and to experiment with new practices that

involve not just universities and funders but also researchers. Chapter 3 discusses promising practices related to culture and behaviour, review committees, and assessment/evaluation.

RECOMMENDATIONS

The Panel is hopeful that its recommendations will be considered and put into practice by universities, research institutions, and funding agencies. As recommendations are tested in real-world settings, it is important that organizations conduct rigorous and appropriate evaluation of any changes made, given the limited evidence base for promising practices. Such evaluation is necessary in relation to both the *implementation* and *impacts* of any process modifications. Leadership must also be prepared to identify and promote strategies for sharing the results of these changes throughout the academic and research funding systems for the encouragement and benefit of all.

Below are the Panel's 12 practical recommendations, directed at universities, funders, and researchers. These are expanded on in Chapter 4.

Recommendations to Adapt Culture and Behaviour to Team Science

1. Promote a broader concept of scholarship and a more inclusive understanding of the complexity of team science.
2. Acknowledge the critical contributions of "skills specialists" to team science and establish career paths for specialists to facilitate their advancement.
3. Recognize team research by providing the support required for the additional infrastructure essential to team-building and the development of successful collaboration.
4. Expand the funding timeframe for large interdisciplinary teams and for teams that must build collaborations with other sectors.

5. Allow the funding for team grants to be allocated to multiple institutions.
6. Mentor young researchers on team science opportunities.

Recommendations to Help Review Committees Measure Team Science Contributions

7. Ensure that advancement, promotion, and tenure (APT) and funding criteria include explicit recognition of contributions to team science and collaborative activities.
8. Compose review committees that can knowledgeably and fairly assess team science contributions.
9. Train reviewers in the evaluation of individual contributions to research teams.

Recommendations to Improve the Assessment/Evaluation of Team Science Contributions

10. Ensure that the evaluation of team science reflects current knowledge about metrics for faculty evaluation.
11. Adapt application forms and templates to reflect the diversity of research contributions to team science projects.
12. Use databases that aggregate researcher publication output for more accurate attribution.

Towards Implementation

Only strong leadership among Canadian universities, funding agencies, and researchers — and at the highest levels — will allow Canada full participation in the global team science environment. The Panel recommends that Universities Canada's Standing Advisory Committee on Research, the National Vice-Presidents Academic Council (NATVAC), and our Tri-Agency and other funding organizations redraft their policies and/or criteria to better recognize team science contributions. The Panel also recommends that the Tri-Agency Presidents and the executive of NATVAC convene a cross-sectoral leadership forum to carve a pathway to implementing the above recommendations at all levels. The Panel further encourages major health science bodies in Canada, such as CAHS and CIHR, to highlight this report's recommendations and promising practices at upcoming conferences or annual general meetings. This will generate the leadership and momentum needed for Canada to adapt to a more international, interdisciplinary, and complex research ecosystem.



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