The Canadian Society of Biochemistry, Molecular & Cellular Biology | La Société Canadienne de Biochimie, et de Biologie Moléculaire & Cellulaire

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From

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The Canadian Society of Biochemistry, Molecular and Cellular Biology (CSBMCB) is one of Canada's oldest and most vibrant scientific societies, having recently celebrated its 50th anniversary. With over 1400 members, we have representation at all universities in Canada, as well as government-funded institutions and private industry. Most of our senior members hold peer-reviewed grants from either the Canadian Institutes of Health Research (CIHR) or the National Sciences and Engineering Research Council (NSERC). As part of our service to the community, we also serve many functions within these granting agencies, from membership in review panels to administrative roles. As a society, we hope to promote the fields of biochemistry, molecular biology and cell biology, which have been at the core of all major new discoveries in human health and nutrition, drug development and agriculture.

There is no question that the funding from the federal government through the Tri-Council agencies, Genome Canada, the Canadian Foundation for Innovation and the Canada Research Chairs program has engendered an air of optimism and energy at universities and institutes across this country and has allowed us to recruit people of the highest caliber both as faculty and students. We have been able to go toe-to-toe with the biggest research-intensive universities in the world and compete effectively for the best talent. We are proud of our achievements as we see our productivity and profile on an upward trend. The Study on Canadian Science & Technology (SCS&T) has, perhaps understandably, missed this because it has had to rely on available

Laura S. Frost Ph.D., Vice-President, CSBMCB
CW405 Biological Sciences Bldg., Dept of Biological Sciences, University of Alberta
Edmonton AB T6G 2E9 tele: (780) 492-0672 E.mail: laura.frost@ualberta.ca

data such as that on page 26 that reflects the situation in 2003. The data on page 29 is more recent and reflects the decades of achievement by Canadian scientists who have educated the students who gave us the ranking as number two country in the OECD for higher education. We have also achieved ranks of 5 and 6 for the quality and number of publications per capita in the OECD. Clearly, Canada should be proud of its scientific achievements at its universities and research institutes and has a bright future ahead.

While the CFI and CRC programs especially, have allowed us to attract the best and the brightest, it is CIHR and NSERC that provide the research funding that keeps them in Canada and provides the operating funds for their students, postdoctoral fellows and technicians. Of the funds awarded in research grants, the majority is used to pay for salaries and trainee stipends, with the remainder providing for the costs of research, which often benefit Canadian companies. Current funding levels for NSERC and CIHR do not take into account the increase in the number of outstanding researchers with excellent grants nor do they take into account the increasing expense of doing life sciences research as the cost of reagents, facilities, regulatory requirements, and salary stipends increase yearly. It is very discouraging when young researchers with impeccable credentials, whom we have gone to great expense to recruit, cannot get their first grant or equally importantly their first renewal at about the time they come up for promotion. It is discouraging for mid-career professors who have many award-winning students and postdoctoral fellows in their labs and highly trained technicians running sophisticated equipment to fail to get their grants renewed. They are then required to dismantle a successful operation that took years to build.

Scientific discovery seems to progress at a glacially slow pace, particularly in the eyes of an observer looking for immediate return, but time and again it has been proven that from basic science research, important new discoveries are made. By extension, the more research activity that occurs, the greater the possibility of these discoveries occurring. Do not lose faith in our federal granting agencies now, when we are on the cusp of greatness.

Funding from industry and NGOs is project-oriented and is often inappropriate for training students because of restrictions on publication and disclosure of data even in informal academic settings (student discussion groups). It is also focused on a sure thing which precludes research in new areas that are curiosity-driven. Industrial funding is also capricious and often fails to meet a commitment to students to allow them to finish their programs. The Tri-Council funding programs are the backbone for the training of students and generation of new ideas. We welcome greater involvement of industry in research but not at the expense of academic freedom and the ability to allow our students to explore their world unfettered with their imaginations unleashed.

The SCS&T document emphasizes three failings of federally funded research with only brief acknowledgments of the many successes in the life sciences. It states that federally funded research should be more accountable (p. 45), better regulated (p. 94), and have more involvement with industry. We agree that as recipients of federal research dollars, funded by Canadian taxpayers, we must be accountable. However, we have a superb track record in training highly qualified personnel and producing highly cited

publications, which is the primary duty of university professors. These are deliverables that can easily be quantified and are judged through the peer review system and the demand for excellence before research proposals are funded. Similarly, our institutions have exacting standards for reporting expenditures as mandated by Tri-Council and we are required to document our activities in accordance with the many regulations, policies and guidelines set forth by regulatory bodies in this country. We hope that being more accountable and more regulated does not involve a crippling increase in the amount of paperwork. The newsmagazine "The Economist" recently singled out Canada has having one of the highest amounts of red tape and bureaucracy that helps stifle productivity and lowers its GDP.

The third failing is technology transfer. By and large, professors and researchers would welcome more industrial and private sector involvement. There has been a "grand canyon" between the bench and the marketplace for decades that we are only beginning to address. Often seen as panhandlers looking for handouts, most researchers find it incredibly hard to get industry on side and usually retreat from the effort needed after being rebuffed or ignored. However, there has been a striking change for the better in the last few years as far as translational research is concerned. In every university in the country, there are now well-established protocols for translating exciting new discoveries into the private sector, with the aim of establishing start-up companies. There have been hundreds of examples that have arisen directly from research funded by granting agencies. It is also important to note that when funding is obtained from federal agencies such as CIHR, NSERC, Genome Canada or CIAR, which represent a high level of achievement by researchers, it lends credibility to Canada's researchers and often leads to increased research activity funded by private industry, or international programs. In short, the seed funding provided by the federal granting agencies serve as a tremendously valuable investment by the government, which is amplified in many ways to benefit a large segment of the population. We welcome the SCS&T plans for more industry commitment and involvement as well as efforts to increase trainees' and professors' knowledge about business, intellectual property and commercialization as outlined in the plan for the NCE in Commercialization and Research. However, the Tri-Council agencies still provide a key service in supporting the many individuals who will benefit from this training.

Basic, fundamental research forms the solid base of the research and innovation enterprise pyramid that at its peak is a better quality of life. Erosion of the base leads to an unstable structure that could collapse. The demands put upon basic researchers to manage trainees and staff in their research laboratories, teaching commitments to the university, and administrative activities, means that they are kept very busy. This is not a complaint, because as a community we are passionate about the work we do. In times when obtaining grant funding becomes a greater burden, and writing grants therefore takes up more time, there is an increasing probability that research programs will be disrupted and staff will have to be let go. Researchers do not expect that they should have as much money available to them as they dream of, but when exciting work cannot proceed due to lack of staff, it does seem unfair. Stable, predictable increases in the funding levels to the federal granting agencies have been requested repeatedly by

successive directors, and would represent a relatively small investment by the government. This will have a huge impact on the entire research enterprise in our country. For the reasons stated above, increased numbers of funded grants from CIHR and NSERC will result in ever expanding research programs attracting funds from diverse sources. It will mean that new discoveries can be made in Canada that might otherwise happen elsewhere, and our community can take advantage of these discoveries to lead to new investments and new jobs. We urge the government to focus on reinforcing the role that the federal granting agencies already serve as the primary source of research funding in Canada.

Recommendations:
There is much to admire in the SCS&T document. The reorganization of the leadership of the granting councils, the emphasis on excellence and productivity, the involvement of industry and the desire to promote multidisciplinary, inter-institutional and international collaboration is first rate. However, the CSBMCB is dismayed at the short shrift given basic research in the life sciences, a major player on the world stage, and recommends the following:

1. By all means fund research areas that have been identified as important to Canadians but make sure that funds for basic research and training of highly qualified personnel are sufficient that this country does not experience another brain drain.
2. By all means aim for high levels of accountability and efficient and effective regulation but make sure it does not hamstring our researchers. Develop mechanisms to judge the effectiveness of these monitoring programs.
3. Develop a meaningful postdoctoral program both in industry and in basic research. The biggest impediment for young people thinking about obtaining a graduate degree in science is uncertainty about their futures. Being a well-paid graduate student with no future is a bleak prospect indeed. Postdoctoral students are the workhorses of research labs. For some reason, they are neglected and undervalued in our system.
4. The formation of the Science, Technology and Innovation Council, chaired by Dr. Howard Alper, is inspired. However, there needs to be a way for scientists to speak to government about their concerns. We hope that a body or individual such as the Council of Canadian Academies or a re-instated National Science Advisor with a better defined mandate will take on this role.

We look forward to working with the government to ensure that life science research in this country continues its tradition of excellence.

On behalf of the Executive and members of the CSBMCB,

Laura Frost
Professor and Chair, Biological Sciences
University of Alberta
Vice-President, CSBMCB

Vince Duronio
Professor, Department of Medicine
Director, Expt'l Medicine Graduate Program
UBC
Treasurer, CSBMCB