Response to Faculty of Medicine Internal Review

UBC James Hogg Research Centre (JHRC), Conducted on November 10, 2011

Provided by the JHRC Director, Associate Director, and Principal Investigators

[Initial Review Report Received by JHRC February 9th, JHRC Response Regarding "Errors in Fact" Sent Back to Faculty of Medicine February 20th, Revised Internal Review Report Received by JHRC March 30th, JHRC Response to Review Sent to Faculty of Medicine July 10, 2012]

General Comments

We appreciate the efforts of the Faculty of Medicine and the members of the Review Committee to appraise the progress, leadership, and directions of the JHRC, and to make suggestions regarding how to improve the JHRC going forward. This Review was based on the five year period of 2005/06-2010/11, and thus does not capture the latter half of 2011. The Review also reflects a look back at the Recommendations of the Review Committee in 2005 regarding the previous five year interval.

The JHRC is appreciative of the generous commentary regarding the various indicators of excellence in the Centre. Such statements as "There is strong evidence that the JHRC is excelling in research and scholarly activities" [page 3], and that its mission aligns with the strategic plans of the UBC, Faculty of Medicine, the Hospital, and the Health Authorities, are reassuring. The recognition of major Chairs, major awards, magnitude of grant dollars attracted, peer-reviewed publication productivity, and related metrics of competitiveness is also appreciated. The quality of the training programs at JHRC were strongly voiced by graduate students and post-doctoral fellows during the Review, and the collegiality among trainees across the Centre was noted. It is appreciated the "the current Director of the JHRC has made major contributions to its growth" [page 4]. The Director views the accomplishments of the JHRC, the outgrowth of the NCE CECR Centre of Excellence for Prevention of Organ Failure (PROOF Centre), and the development of the over-arching, community-wide enabling umbrella, IHLH, a product of the *esprit de corps* of all members of the JHRC in working with like-minded people in the UBC and related communities. The evidence of progress is directly related to the herculean efforts of JHRC staff and faculty, and the Faculty office of Dr. Mackie during a year-long self-study that lead to documentation provided to the Review Committee. We also appreciate that the "administrative personnel are highly professional and perform their duties as required" in the JHRC [page 5].

There are a number of points of divergent perspective or fact that remain in the Review document as it stands in final form; thus, in the interests of assuring that most of these discrepancies are addressed for future knowledge, we have included corrections for a few of these in this Response to Review.

Response to 2011 Review

In terms of the Centre's actions in response to the 2005 review, several steps were taken:

1. **Director Recruitment and Infrastructure Support:** *Upon recruitment of Dr. McManus as Director, JHRC, formally beginning September 2006, the infrastructure support for research activities in the JHRC was further secured.* While by necessity this funding must be renewed each year, it has not been renegotiated on an annual basis, rather it has been assured perennially as best one can in consideration of Hospital operating budgets and other major programmatic priorities. In fact, the infrastructure commitment in writing was initially until December 31, 2010. During this period of time, the commitment of the Senior Leadership Team

of Providence Health Care, and especially of the President & CEO and the Vice-President Research & Academic Affairs has not wavered. There is a commitment in writing of support through until 2014, which will need to be reaffirmed upon a new Director being recruited this summer.

2. **Perception of Administrative Conflict of Interest:** *Ms Janet Wilson-McManus voluntarily resigned from her position as JHRC Operations Leader in October 2005*, nearly a year before Dr. McManus assumed the directorial role. More commentary about perceived conflicts of interest will be addressed later in this Response.

3. **Expand the Research Vision of JHRC:** *Although the precise meaning of this recommendation is unclear, it is true that the JHRC has been on a steady evolutionary and adaptive path as a unit.* The Centre has changed dramatically is size, shape, and capability over the past 35 years. As the Centre fully embraced an integrated cardio-pulmonary theme (heart, vascular, lung, critical care primarily), including basic and translational researchers from many medical and scientific disciplines, the necessary reach into complementary fields of expertise including biostatistics, informatics, ontologies, virology, biophysics, and others has accelerated. The JHRC has long ascribed to a vision of understanding the contributions of environment, behavior and genes to the early and late responses to injury and insult. Thus, ischemic, oxidative, infectious, senescent, and inflammatory insults and the immune, inflammatory, remodeling, reparative and healing phases of adaptation in hearts, lungs and blood vessels has consistently been our focus. New people, new tools, new approaches, new relationships and new perspectives are essential to keep this focus vibrant. The linkage to clinical disciplines, clinics and communities of patients and care providers has always been deemed essential, but was accelerated with the inauguration of the broader umbrella, Providence Heart + Lung Institute (PHLI), in June 2007, a framework in which the JHRC is a major research engine at the St. Paul's site. This PHLI framework would become a major piece of the model of heart and lung sciences seamlessness that was broaden even further in the summer of 2010 (through cooperative integration with the UBC Centre for Lung Health), to form the Institute for Heart + Lung Health (IHLH) as an enabling, inclusive vehicle for fostering innovation, discovery, learning, and mentoring in the heart and lung sciences. This fully embracing organization is a product of the natural collaborative progression of several related enterprises in heart and lung sciences in Vancouver, and now offers us a chance for greater visibility and impact as a community. More will be said about the IHLH in response to the current Review, but it is worth noting that all of these developments reflect a desire to create a sustainable, agile environment for science and translation in regards to heart and lung health and disease, partly fostered by the 2005 Review. While brand-new facilities did not develop through the "Legacy Project", the twice CFI-funded infrastructure for the JHRC, fully implemented by 2003-04, did provide excellent facilities for basic and translational research in cardio-pulmonary sciences that has extended in most instances through to the current time. Renewal is essential now, and a major CFI application was selected to go forward to Ottawa this spring from the JHRC.

4. **Enhance Nurturing Environment for Young Faculty in the JHRC:** *Since the completion of renovations related to the CFI infrastructure awards, and augmented by Leadership Opportunity Funds to several investigators, there has a steady development of the Cores of the JHRC, through until the 2005 Review, and further since that time.* While the square footage in the Centre for wet and dry laboratory space is constrained, the philosophy and practice of implementing Core

facilities in essence compensates for any single investigator and his/her team having less bench space. Thus, as the Cores – Imaging, IT, Tissue Culture, GEM-Genetically Engineered Models, Technology Development, Cell Analysis, Molecular Phenotyping, and Biobank – became more experienced and highly cost-recovered through both internal and external users, the ability to provide excellent technological resources has been largely maintained. A current CFI application, approved by UBC and in submission to Ottawa in the Spring, will address lingering needs for new and replacement infrastructure always critically in demand. Allowing for major constraints in space in St. Paul's Hospital the five new investigators recruited from 2005-2010 have been able to establish robust and productive research programs by creative adaptation of space through combined efforts of the JHRC PI's, JHRC leadership and operations teams, and Hospital leadership and planning. Other investigators are be added incipiently, despite space constraints, by working in a highly collaborative fashion with the Hospital Planning Department. In our current physical structure, we have been able to overcome barriers to mentoring that might impair progress towards independence as investigators.

5. **Raise Science at JHRC to the Next Level:** *The recruitment of Pascal Bernatchez, Denise Daley, Gordon Francis, Patricia Camp, and John Boyd, in cooperation with their UBC departments and divisions, has strengthened both wet and dry laboratory science, across the spectrum of cardio-pulmonary science from molecule to population.* Two of these new recruits hold MD degrees, while three hold PhD degrees. Several major funding awards from Genome Canada, the Networks of Centres of Excellence, the National Institutes of Health, all three Canadian granting councils, and elsewhere have positioned the Centre well for further fundamental research that links better to the clinic and community. A reflection of the impact of these developments is captured in the number of high-quality peer-reviewed publications, patents, licenses, spin-outs, trainee honours, faculty recognitions, and general stature within the local and international community. Not seen within the specific portfolio of JHRC people or programs are the related important skills and resources of the not-for-profit NCE CECR PROOF Centre which has been able to second faculty of high stature and recruit others who bring additional quality to our cross-disciplinary environment of inquiry at JHRC. We have aspirations to recruit other top-notch investigators as outlined below.

Response to 2011 Review

In terms of Recommendations made by the 2011 Review Committee regarding next steps of JHRC:

1. **Recruitment of Director:** *We agree that the highest priority is the recruitment of an able Director, derived through normal recruitment processes either internally or externally.....A prolonged period of interim leadership should be avoided….It is important that the administrative responsibilities of the next Director be restricted to the JHRC.*

   We also agree that limiting the duration of an Interim Director is important for many reasons including continuity of momentum, impact, and defined vision. Such continuity is more likely if a strong internal candidate is identified. In terms of the limits of administrative responsibilities of the next Director, a few comments might be germane. The vision, energy and insight of the current Director led, collaboratively, to the development of a major Genome Canada-funded genomics program, that in turn led to the competitive creation of the PROOF Centre of

Excellence (the internationally regarded translational "arm" of the JHRC), and contributed significantly to the inauguration and successful development of the Providence HLI, and the subsequent establishment of the IHLH. While this magnitude of expansion was not envisioned at any time along the path of the last decade, it has borne fruit in terms of people, programs and infrastructure, and in terms of major international *relational capital* in both developed and developing societies. While the enormity of responsibilities that have evolved for the Director are recognized as too great at this time and were a primary reason for the Director stepping down from the directorial role of JHRC, these roles have not prevented steady growth and performance of the JHRC, and have not compromised the academic and scholarly performance of the Director himself.

An additional point of emphasis deserves mention – the relationship among the JHRC, PROOF Centre, Providence HLI, and the subsequent IHLH were communicated in many, many forums within and outside of JHRC, for broad audiences, in print material, on websites, and in casual discussions. The utter complexity of what we have been doing has been hard for people to completely capture, considering the pace of evolution and the administrative facets that most faculty, staff and students do not live or see every day in their good works. The communications lines and the processes for operations within the JHRC and outward to its essential partners and collaborators have been defined and refined through various discussions and retreats.

The workability of the current Executive Committee, the Management Team, and the Core Teams in the JHRC has been tried and true. There are no arbitrary decisions made in the Centre, and virtually all decisions involve more than one layer of administration and management. The essential and delicate matters of financial and human resource oversight are first discussed and deliberated on by a "Finance Committee", then any recommendations or discussions are brought to the Executive, and whenever pertinent, to individual cores or sub-units in the JHRC. Many innovations regarding space, equipment, major applications, and initiatives are grassroots in nature. The idea of an External Advisory on scientific matters is a great one. We appreciate the recommendation. It is an approach that is akin to that necessitated f*or the NCE CECR's* wherein a free-standing Board of Directors, and, in the case of PROOF Centre, a Translation Advisory Committee also provide guidance from a local, national and international perspective, across all sectors and disciplines

2. **Resolve Perception of Conflict of Interest and/or Commitment:** *We are happy to continue working with the Faculty of Medicine in any way possible to resolve this perception according to and exceeding th**e** requirements of UBC or other relevant policies.*

*It is worth highlighting a few facts as we address this important issue. The current Director and the now COO, PROOF Centre of Excellence, have worked together professionally for 29 years. In 11 yea**r**s on the faculty at the University of Nebraska M**e**dical Centre, no issues regarding perceived or actual conflict of interest ever were noted. When the Director and Ms. McManus were recruited to UBC in 1993, the then Dean Martin Hollenberg put in place all of the necessary reporting-relationship safeguards to ensure that conflict of interest was not possible. Similarly, after the former review of the JHRC [2005], the UBC Faculty of Medicine *did review* the perceived conflict of interest between Dr. McManus and the Operations Leader at that time, Ms. McManus, and deemed that *there was, in fact, no conflict of interest.* It is quite apparent,

however, that this absence of conflict of interest was not communicated sufficiently to the Centre members or to the Review Committee. Given the complexity of how the research enterprise in and around the JHRC, the PROOF Centre of Excellence, and the IHLH have evolved, it is easy to understand how some people would perceive conflict of interest. After this Review, a clear statement arising from the JHRC, the Faculty, and Providence Health Care, regarding the absence of conflict of interest in regards to the current JHRC Director and the COO of the PROOF Centre should be communicated.

Since the perceived conflict of interest matter is a "hot button", several key clarifications should be made. The PROOF Centre of Excellence is sited within the same geographical location as the JHRC, but it is an entirely free-standing, separate not-for-profit organization under the Society Act of British Columbia, with an independent Board of Directors. The COO of PROOF Centre (Ms Wilson-McManus) has NO administrative relationship with the JHRC, and does not, in fact, even work for UBC. She is under a paymaster agreement such that UBC provides her paychecks, but she is neither a UBC nor a Providence Health Care employee. As the COO of the PROOF Centre, Ms. Wilson-McManus reports to the PROOF Centre Board Chair, Dr. George Schreiner (Cardero, Inc.), and to Dr. Don Brooks, Board Executive member. Every year, conflict of interest is reviewed at the PROOF Centre Board of Directors meeting. The Board has always approved of the working relationship of Dr. McManus and Ms. Wilson-McManus and was part of the committee that interviewed her and several other candidates when the position of COO was posted. All negotiations for space and administrative charges were done at the inauguration of the PROOF Centre in 2008 in discussions held between the JHRC Executive and Ms. Wilson-McManus, in explicit absence of Dr. McManus. The PROOF Centre ensures it pays for all services that it requires from the JHRC.

With respect to Ms. Cate McManus working in the JHRC, she was hired on as a part time student to fill gaps in the most basic and menial of jobs – filing, scanning paperwork, freezer reorganization, etc. She is partly hired by the PROOF Centre; However, she reports neither to Ms. Wilson-McManus nor to Dr. McManus.

We must also comment on the perceived conflict of interest between the Associate Director, JHRC, Dr. Darryl Knight and his wife, Ms. Martha Casey-Knight. Ms. Martha Casey-Knight has worked as an assistant in the Genome Canada-funded *Biomarkers in Transplantation* initiative since 2004 when she arrived in Vancouver. She reported to Ms. Wilson-McManus in her role as Project Manager of that large, multi-disciplinary team; Ms Wilson-McManus, in turn, reported to Dr. Robert McMaster in her role as Project Manager. When the PROOF Centre was funded in 2008, the *Biomarkers in Transplantation* team was officially "adopted" through Board approval by the PROOF Centre to ensure continuity in the on-going projects. Ms. Martha Casey-Knight, as the PROOF Centre Administration and Events Manager, continues to report to Ms. Wilson-McManus in her role as COO, PROOF Centre. Thus, Ms Casey-Knight has no role in the JHRC other than volunteering to help when the administrative staff needs it. On the other hand, Dr. Knight *has never* been involved in either the *Biomarkers in Transplantation* initiative or the PROOF Centre of Excellence.

Another point of clarification is necessary regarding conflict of interest and risks or benefits for JHRC or PROOF Centre. There are obvious efficiencies fiscally, scientifically, educationally, and in terms of space by the co-localization of the two Centres. In many ways, the PROOF Centre is an

outgrowth of the JHRC environment, yet because of NCE stipulations, it must have its own administrative, fiscal, mission- and vision-based agenda. This translational agenda, part of the BC Personalized Medicine Initiative, is a major benefit to the JHRC in extending its translational reach. Many millions of dollars from primary and secondary PROOF Centre investments have benefited the JHRC and Providence Health Care, and indeed UBC, directly through the PROOF Centre being situated at St. Paul's Hospital.

One way to clear up these perceptions is for the Faculty of Medicine to review all perceived conflict of interest (not just at JHRC) and to then communicate the findings broadly to the members of our community. We would also ask that a balanced, non-pejorative session on conflict of interest is held recurrently for the JHRC and other research enterprises at Providence Health Care and elsewhere such that such issues can be minimized in the future.

To close this piece of the Response to Review, *a final comment is needed on morale and the relationship between JHRC and the PROOF Centre and those personnel who have been named as being in perceived conflict of interest.* The impression that there is a major and inextricable link between JHRC morale and perceptions of conflicts of interest remains unproven but definitely bears scrutiny and address in a formal but constructive setting.

3. Future Recruitment: *There is truth that we are all progressing through life, some of us closer to the end than others.* We appreciate the complements passed on regarding aging "giants" in our midst. At JHRC, we have had numerous discussions regarding the shaping of the future in terms of "new blood" in science. Indeed, we have a much longer list of potentially relevant recruits that was not passed to the Review Committee for fear it would incite panic or hysteria. However, the four priority recruits identified in the context of this Review – cardio-pulmonary pathologist, immunologist, virologist, and biophysics/imager – are not as far afield as suggested by the Review Committee in terms of the JHRC's direction or vision. The Centre, as noted, is renowned for phenotyping (from molecule to whole organism, including through the use of high resolution imaging tools acquired before, at the time of, and after the major CFI awards), and then in linking those observations to environment, behaviour and genetic influences. As noted earlier, we are focused on inflammatory and infectious insults. The JHRC was built on expertise in pathology and pathogenesis. Thus, it is not surprising that we would have a short wish-list of recruits as laid out in our Self-Study Report.

A facet of the Review that relates to future recruitment decisions must be addressed. Numerous comments were made in the Review Report regarding the eminence of lung research and the shortfalls of the cardiovascular research program, such as on Page 3…. "by the metrics provided, they do not rank highly at a national level". The binder prepared by Self-Study, and metrics actually provided by the Faculty of Medicine (Dr. Mackie's office) show clearly on pages 3-5 in the section marked Part B of the JHRC Self-Study Report provided to the Faculty of Medicine and thus to the Reviewers, that the performance of cardiovascular researchers is, in aggregate substantially above the Canadian or USA performance at comparable centres (chosen by the Faculty of Medicine). The contour of the cardiovascular and pulmonary research performance graphics in terms of citations/year on pages 4 and 6 of Part B, respectively, show a similar contour and relationship to their respective Canadian and USA peer groups. In addition, the absolute number of citations per year is very similar for pulmonary and cardiovascular research in the JHRC over the 5 year period (once again, pages 4 and 6 of Part B). The *Elsevier Scopus*

assessment done for COPD by the Faculty of Medicine was initiated as an *exemplary* program under our Centre umbrella. COPD was chosen because of the highly-ranked *ScienceWatch* appraisal published a year earlier. Assessment of the cardiovascular research impact was not done by the Faculty of Medicine at this time due to cost considerations.

Further regarding Page 3, "the cardiovascular research program is less established…." There are numerous excellent, internationally recognized cardiovascular researchers in the JHRC including Drs. Francis, Granville, Bernatchez, Luo, Yang, Allard, Frohlich, and McManus. Investigators Drs. Walley and Boyd are also focused on cardiac function and mechanisms of immunity in heart and circulation. Also, other JHRC have specific activities related to systemic inflammation in lung disease as relates to vascular ailments, and these include Drs. Sin, van Eeden, and Walker, among others. The number of publications, the citation totals for 5 years *and* the H-index of cardiovascular researchers listed on page 3 of Part B in the JHRC Self-Study Report provided to the Faculty of Medicine and thus to the Reviewers, is at least similarly, quantitatively numerous and prominent, respectively, as the pulmonary sciences. The cumulative intake of competitive grants and awards, and the productivity of these cardiovascular-focused or engaged investigators in terms of peer-reviewed papers, patents, and other products, including stellar graduating PhD scientists who won excellent post-graduate training positions in North America, Asia, and Europe, is impressive and sustained, just as it is for pulmonary. The direct investments and resources gained through successful applications to Genome Canada, Genome BC, and the NCE Secretariat that have greatly benefitted the JHRC are large (numbers available if asked) and a are a direct result of the cardiovascular research presence nationally and internationally. Thus, the statements that imply a limited cardiovascular research program in the JHRC are not corroborated by any data that is available in the binder provided to reviewers or evident on our website and other documents. Many papers reflect cross-over activities in informatics, critical care, signaling mechanisms, and tools that supersede a focus on heart or lung.

It is worth noting that the Pulmonary Research Laboratory was founded in 1977, and that the principal leader of the cardiovascular research program was not recruited until 1993. Given the data noted in the prior two paragraphs, found in the Self-Study Report, the point about how less well-established the cardiovascular research performance of the JHRC does not seem to be justified, and it does not draw the Centre further together.

Most importantly, the JHRC prides itself in having reached a state of scientific integration between heart, vascular and pulmonary scientists, learning from each other through examination of common causes, common mechanisms, shared outcomes and interplay, and fostering shared models and tools for prediction, diagnosis, management and treatment. This philosophical framework is reflected in the evolution of the Institute for Heart + Lung Health, and also pervades the PROOF Centre of Excellence.

Further, cardiological, cardiac surgical and cardiac nursing, and respiratory clinical involvement in the research of the JHRC, and the PROOF Centre, with a real translational focus, is broad and deep. The latter relates directly to the JHRC, and is an important reflection of the value that the PROOF Centre has brought in linking the JHRC to the clinics. Recruitment of a good role model in research within the cardiology ranks will benefit everyone, but only if the remuneration model is altered.

As noted by the Reviewers, the competitive renewal of the PROOF Centre could have "a negative impact on the sustainability of the JHRC", while on the other hand, done right, a successful renewal could have a very beneficial amplifying effect on the JHRC, its people and programs, and linkages to the clinics. Since the Reviewers raised a potentially negative issue with the process of PROOF Centre renewal, it must be addressed. It is stated on Page 5 of the Review that the PROOF Center "renewal process itself will necessarily divert the Executive's attention away from the JHRC." The JHRC Executive has *nothing to do* administratively with the PROOF Centre of Excellence. The PROOF Centre will only engage the JHRC Executive to explore involving the JHRC Core Facilities in the renewal application *for the benefit of the JHRC.* All other activities related to federal PROOF Centre renewal are completely independent of the JHRC leadership. Ironically, the Review Committee also indicated that if the PROOF Centre was not renewed it would have a major negative impact on JHRC.

4. Knowledge Translation and Fund Raising: *We whole-heartedly agree that maximizing the transfer of knowledge beyond awareness into action is crucial wherever possible.* Indeed, in the process of a Self-Study for the Providence Health Care Research Institute this past fall, several possible "use-cases" in terms of medical, social and economic impact and return on investment were explored by external consultants. Of the use-cases selected for further emphasis and focus, a number arose from the JHRC. We shall pursue these and others. As well, several years ago, in the early 2000's we had the idea of creating a position for a "Chief Translation Officer" to engage Centre investigators and their teams to discuss potential applications, stages of development of knowledge, etc., in a "pull" strategy, unlike the usual "push" strategy that largely characterizes the research community, hoping for more "wins" earlier. We could not afford the position even though conceptually it was the right thing to do, and somewhat ahead of its time.

On a note of hope, in addition to the cultivation of patient-related gifts and engagements in the JHRC, we are already heavily in partnership with the St. Paul's Hospital Foundation, St. Paul's Hospital, UBC, numerous charities, and other fund-raisers. We have not been at liberty to speak of any early successes in the realm of estates, but these are coming.

Again, the PROOF Centre and JHRC are perfect partners in pushing the fund-raising agenda for heart and lung science, yet given the current perceptions it will take work to gain greater synergy than already achieved.

5. Financial Stability and Growth: *The relationship between the JHRC, Providence Health Care, and St. Paul's Hospital and its Foundation is mission critical for the JHRC research and training programs.* With the transitions in leadership within the JHRC and at the level of the Vice-President Research & Academic Affairs within the Hospital environment, we must be even more vigilant about continuing infrastructure support, coincident values and directions, and in the pursuit of resources and other opportunities. The matter of alternative payment strategies for young and upcoming health professional scientists is beyond the precise mandate of the JHRC, but certainly through shared goals and desires as an academic health sciences centre and in strong affiliation with UBC and other academic organizations, we must galvanize intent and action to make sure we keep moving forward and upward. Also, if synergy is better recognized and amplified between JHRC and the PROOF Centre then the sky is the limit.

6. Education and Training: *Education, mentoring and training have long been a source of pride and intense focus at the JHRC.* In essence, there is a suite of formal opportunities that reach from high school to undergraduate, to undergraduate health professional, to cooperative education students, to graduate students, post-doctoral trainees, and visiting scientists. Each of these programmatic elements has had years of developmental work including aspects of career mentoring and guidance in formal and informal settings. Also, many of our graduate students are under the umbrella of either Experimental Medicine or Experimental Pathology, two of the largest graduate training programs in the Faculty of Medicine, and with policies and procedures related to the Faculty of Graduate Studies that ensure career counseling and advice.

One of our more recent programs, a now-twice successful CIHR STIHR Program, called IMPACT = Integrated Mentoring in Pulmonary and Cardiovascular Training, is focused on basic and clinical post-doctoral trainees. On Page 3 and 4 of the Review, statements related to the IMPACT Program bear a response. The statements made are that "The IMPACT program…..provides excellent opportunities in terms of seminars and workshops. JHRC trainees who are not part of IMPACT are unfortunately excluded from these opportunities….." The training environment at the JHRC is one in which virtually all opportunities are widely available to ALL trainees who wish to harvest them. The specific mentoring opportunities in the JHRC IMPACT program are a special feature of the program that are under consideration for broader implementation, but there are only a limited number of monthly workshops or seminars that non-IMPACT people are "excluded" from in the JHRC. The overall menu of educational opportunities in the total menu for all trainees at JHRC far outstrips the few that have grown up in IMPACT at present. Finally, for certain, a post-doctoral fellow cannot expect a faculty position once they have concluded this phase of development. The JHRC spends a considerable amount of time and effort to assess next steps for these advanced trainees, and we are only interested in their ultimate career satisfaction and fulfillment, whether here or necessarily elsewhere. In this regard and somewhat contrary to what was reported, we actively encourage trainees to undertake further training away from the Centre.

7. Research Space: *There is no doubt that research space, both wet and dry, with accompanying offices, lavatories, lunchrooms, etc., is one of our enemies against future success and sustained high performance.* Atmospherically, the JHRC has worked hard for years to optimize use of space, re-examine use of space, and garner even small amounts of additional space. The Hospital has been strongly supportive to the limits of the broader space issue that plagues St. Paul's Hospital as an organization. The upcoming CFI submission will hopefully provide for new technologies, but not necessarily more space. There will need to be a major investment in St. Paul's Hospital for even partial renewal of the site to be undertaken and completed in a seamless and timely fashion in order to benefit patient care, clinical and scientific education, and all forms of research.

8. Incorporate an External Scientific/Strategic Advisory Board: *This is an excellent suggestion which we will pursue, engaging leaders in our own community as well as elsewhere.* A regular mix of external experience, wisdom, progressivism, and scientific sensibility will help JHRC a lot.