

# Knowledge Translation in Infection and Immunity

## Results of a Survey

### August 2008

## I. Background

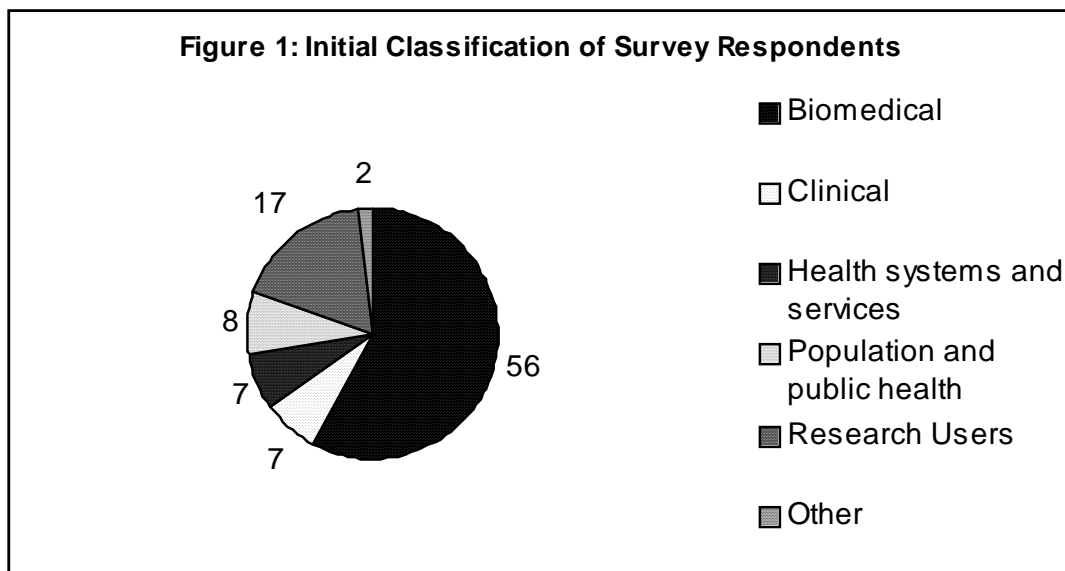
The Canadian Institutes of Health Research's Institute of Infection and Immunity (III, or the Institute) conducted a survey in the summer of 2008 to seek input about knowledge translation (KT) from its stakeholders. The results of the survey will be used at a KT planning workshop in September 2008. The survey was circulated by email to researchers and research users with whom III have had contact since its creation in 2001. Questions asked related to:

- 1) Activities and mechanisms to promote the use of research
- 2) Recommendations for the III to stimulate knowledge translation
- 3) Recommendations for health research funding agencies to facilitate the uptake of infection and immunity research

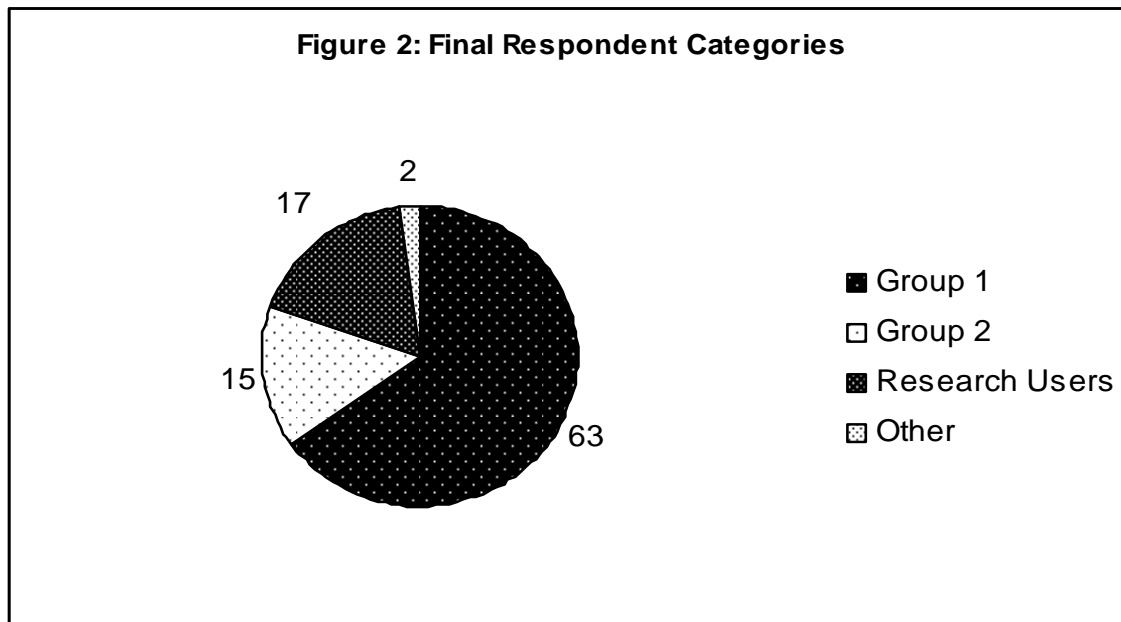
The survey was sent by III to all individuals on its mailing list, which is estimated to be about 3000 people and includes researchers, research users from many settings and others with an interest in the work of the Institute. The survey was initially sent on July 24 and a reminder sent on August 11<sup>th</sup>. Surveys were sent in both French and English. Results were analyzed and this report written by a team of external consultants. A copy of the survey is included in Appendix 1.

## II. Respondents and Methods of Analysis

Out of approximately 3000, a total of 97 completed surveys were returned (response rate of 3.2%). Respondents were asked to identify themselves as either a researcher or a research user. Researchers were then asked to select the CIHR theme they most identified with – biomedical, clinical, health systems and services, or population health). As shown in Figure 1, over half of the respondents identified themselves as biomedical researchers.



Given the low numbers in the other three groups of researchers, and due to the similarity of responses to questions, the researchers were combined into two groups for analysis – **Group 1 included biomedical and clinical researchers** (N= 63) ; and **Group 2 included health systems and services and population health researchers** (N=15) . There were 17 individuals who identified themselves as research users, and 2 individuals who fell into the other category, as shown in Figure 2 below.



Following Group 1 (biomedical and clinical), the next largest category of respondents was research users. Of the 17 individuals in this category, 6 were from Government, 4 were from health, 5 from non-governmental organizations (NGOs), 1 was from industry, and 1 was unable to be classified further.

In the Other category (N=2), 1 person was a research manager / funder, and the other person could not be classified further.

Responses to questions in the survey were examined both by category (Group 1, Group 2, research users, or others) and by question (i.e. across all categories). Content analysis of the responses was done.

It should be noted that many individuals who classified themselves as researchers also completed a question in the survey intended for research users. This is not surprising since most researchers are also research users.

A caveat is in order when reading this report. Input was received from a very small proportion of III stakeholders; and there is no assurance that those on the mailing list (a convenience sampling frame) are in any way representative of the population of researchers. It is assumed

that those who responded had some strong interest in KT and, given that, may not reflect the opinions of the community at large.

### III. Results

#### a. Examples of Knowledge Translation Done by Researchers

Researchers were asked to describe briefly examples of key activities that have promoted uptake of their research. Table 1 below summarizes the responses that were given according to the two category groups.

**Table 1: Examples of Knowledge Translation Activities by Group**

Frequency Mentioned	Group 1: Biomedical and Clinical	Group 2: Health Systems, Services, Population and Public Health
<b>Frequently</b>	<ul style="list-style-type: none"> <li>Scholarly publications</li> <li>Scholarly presentations</li> <li>Commercialization (patenting, interactions with tech transfer offices, licensing agreements, creation of spinoff company; disclosure through industry university liaison, etc)</li> </ul>	<ul style="list-style-type: none"> <li>Collaboration with community through roundtables; community based research; development of partnerships for research</li> <li>Advice and input from community members e.g. Advisory Committees,</li> <li>Meetings with decision makers – government decision makers, community based organizations, community leaders</li> </ul>
<b>Occasionally</b>	<ul style="list-style-type: none"> <li>Presentations to various audiences (community forums, family physicians, board members; continuing education)</li> <li>Interactions with others (participation in biotech events, one on one meetings with key industry or government folks, those affected by disease, pharmaceutical companies, other scientists)</li> <li>Media (through science journalists,</li> <li>Seek input from those affected</li> <li>Collaboration with other researchers</li> </ul>	<ul style="list-style-type: none"> <li>Recommend policies and programs based on research</li> <li>Presentations at conferences for community organizations</li> </ul>
<b>Rarely</b>	<ul style="list-style-type: none"> <li>Dedicated centres that promote KT</li> <li>Web-based release of information, software, etc.</li> <li>Publication for non research audiences</li> <li>Teaching of future health professionals</li> <li>Advocacy efforts</li> </ul>	<ul style="list-style-type: none"> <li>Written products – summaries of research in government publications, editorial commentaries, CIHR cafes</li> <li>Scholarly publications – scientific journals, open access journals.</li> </ul>

One respondent noted that *“no field has the potential for immediate transfer from bench to bedside as infectious disease does”*. Several respondents identified specific research activities such as basic research in breast cancer, HIV/AIDS drug development and resistance, production of various vaccine candidates, etc. that they felt were examples that had promoted uptake of their research.

#### b. Users’ Opinions about Effective KT Mechanisms.

There were two groups of respondents providing input here; first, those who identified themselves as **research users (and only that)**; and second, **many researchers provided input** to this answer as well.

From the perspective of research users (N=17), the most commonly mentioned mechanism was **traditional print or online communication channels**. These included journals, with a particular emphasis on open access journals, which are especially important for uptake of knowledge by individuals in non-academic settings. Others mentioned included updates, notifications (for example, from Health Canada), product reviews, or participation in list-servs.

Following that, and also frequently mentioned was **face-to-face** interactions. Many people commented that in person communications is one of the more effective mechanisms for KT. **Engagement** to communicate findings, influence direction, boost passion, and build relationships is clearly felt important. Some ideas included researchers visiting and engaging with user groups and affected populations or with other indirect stakeholders who seek to reduce the burden of a particular disease, along with more traditional and presentations and workshops. The need to ensure linkages between researchers and research users was noted – either by having them collaborate on a project or by a government agency facilitating networking between these two groups.

Research users commented that **how the knowledge is presented** also influences uptake. For example, if it is from a reliable source, like Health Canada, or it is published in a prestigious journal, there is a greater chance it will be used. Similarly, if it is connected to best practice or specifically tailored to the target audience, the more effective KT is likely to be. It was noted that while there is great value in pre-sifting or synthesizing information, one comment was made that access to full reports / full data sets is important as they can be less open to interpretation. Continued provision of accurate, reliable information to the public was noted to be effective and it was suggested health professionals and physicians be educated about the value of KT and encouraged to disseminate information. The **credibility and impact** of the results is key. And finally, Users are more likely to use knowledge if it is conducted through rigorous research, meets a need (and is presented in a way that demonstrates this), and makes concrete recommendations on how to use and implement the knowledge, including required resources.

Two unique mechanisms were suggested. These included **proactively working with the media**, and **encouraging citizens to advocate to government**.

Twenty-seven individuals who identified themselves as researchers also provided input into this question, which was intended for research users. Effective mechanisms described by this group were similar to those identified by the research user group and repeated many of the mechanisms described earlier in the responses to earlier questions. **How the knowledge is presented** was mentioned, specifically, developing print material and presentation targeted to various stakeholders such as the community, patients, media, policy-makers, opinion-leaders, and other researchers. **Interactions** between researchers and research users were also mentioned, as was knowledge synthesis with stakeholders. Examples cited included interactions with CME, specialty meetings, visiting lectures, clinical researcher meetings with small patient groups, or interactions with industry and investors like formal liaisons or collaborations.

And similarly to “meeting a need” identified by research users, researchers mentioned that the **clinical relevance** of the research impacts KT. They spoke to the importance of tracking

outcomes and the development of clinical practice guidelines for patient management and educational purposes.

One mechanism noted in the “other” category that was unique was to engage the users in the development of the knowledge based product.

### c. Mechanisms that facilitate KT

Although question 3 of the survey asked directly for the important things that facilitate uptake of infection and immunity research, many respondents provided further suggestions in question 4. Both questions were the source of the data summarized below, which is presented by respondent categories.

**Table 2: Mechanisms to facilitate KT by Group**

<b>Mechanism</b>	<b>Group 1 – biomedical and clinical</b>	<b>Group 2 – health systems and services and population and public health</b>	<b>Research Users</b>
<b>Engagement and interactions</b>	<ul style="list-style-type: none"> <li>Greater interaction between clinical scientists and researchers</li> <li>Engaging users through educational activities</li> <li>Interactions with policy-makers</li> <li>More collaborations that include KT researchers across CIHR pillars or themes</li> </ul>	<ul style="list-style-type: none"> <li>Between researchers and research users</li> </ul>	<ul style="list-style-type: none"> <li>Researcher / stakeholder workshops targeted to specific problem areas</li> <li>Investigators working with knowledge users</li> <li>Networking</li> </ul>
<b>Leadership and training</b>	<ul style="list-style-type: none"> <li>Develop strong leadership capacity – proponents and research champions</li> <li>Ensure there are enough people to do KT research, clinical activities, proof of principle activities</li> <li>Provide meaningful training opportunities in clinical programs</li> </ul>	<ul style="list-style-type: none"> <li>Availability of mentors</li> <li>Educate researchers about how to do KT – share findings and examples of successes with other researchers and policy-makers</li> </ul>	<ul style="list-style-type: none"> <li>Leaders and employers to facilitate change</li> <li>Ensure dissemination of information to new trainees and researchers</li> </ul>
<b>Characteristics of the research and the way it is communicated</b>	<ul style="list-style-type: none"> <li>Address practical, translatable problems</li> <li>Research in high priority areas</li> <li>Communicate summary reviews targeted to user populations</li> </ul>	<ul style="list-style-type: none"> <li>Credibility and importance of knowledge gained</li> <li>Community-integrated research</li> <li>Have awareness of user group needs and modes of learning and communicate findings accordingly</li> </ul>	<ul style="list-style-type: none"> <li>Practical research with rigorous methodology published in credible, prestigious journals</li> <li>Research user input into framing and prioritizing research question</li> <li>Easy access to results in digestible format</li> <li>Importance / utility of findings / applicability to practice</li> </ul>

Mechanism	Group 1 – biomedical and clinical	Group 2 – health systems and services and population and public health	Research Users
Characteristics of research (cont.)			<ul style="list-style-type: none"> <li>Communicating results in format preferred by end-users</li> <li>Clarify complex mechanisms underlying disease</li> </ul>
Media	<ul style="list-style-type: none"> <li>Engage users through media</li> </ul>	<ul style="list-style-type: none"> <li>Dedicated staff of science writers to work with media</li> </ul>	<ul style="list-style-type: none"> <li>Many mentioned media publications</li> <li>Systematically respond to negative media items</li> <li>Call in to open-line programs</li> </ul>
Resources		<ul style="list-style-type: none"> <li>Time and personnel to actually do KT</li> </ul>	<ul style="list-style-type: none"> <li>Staff who are lifelong learners</li> <li>Ensure funding is available to conduct KT</li> <li>Dedicated KT personnel for a project, throughout the entire project</li> </ul>
Other			<ul style="list-style-type: none"> <li>Identifying and encouraging citizens to be advocates</li> </ul>

In regards to **characteristics of the research**, several Group 1 respondents noted specific research activities as being key to knowledge translation. These included antibiotic discovery, novel approaches to disease control and drug interaction in infection and immunity diseases. Group 2 made reference to research conducted in partnership with community stakeholders and, in regard to the way results were communicated, the need to tailor modes of learning of those stakeholders.

Not surprisingly, research users made more references to attributes of the receptor community such as the capacity for change of leaders, employers and staffs.

In the 'other' category, one person commented that legislation and policy is an effective mechanism to support KT.

#### **d. Recommendation to III for setting priorities to stimulate knowledge translation**

Of the respondents to question 4, less than half addressed priority-setting directly. Of those that did, responses could be grouped into four themes:

- 1) The **needs of the research users** were mentioned frequently as were strategies, mostly based on collaboration and discussion among researchers and research

users, for setting priorities. One respondent said that “*agendas need to be set according to what Canadians need to know*”.

- 2) Reference was made to **the burden of disease** and, related to this, health risk and clinical priorities.
- 3) **Public health pressures and population-based risks** were seen as important considerations. One example given was the changing public health pressures arising from an aging population.
- 4) The “**translatability**” of the research or its potential for use was noted. Key factors were seen as the practicality of the results as well as the capacity of the receptor community to put the results to use.

Several respondents made comments about specific research priorities. There were references to the importance of **interdisciplinary research** and collaboration across the four pillars at CIHR. Research into **prevention, new diagnostics** and bench-to-bedside **translational research** were mentioned. The importance of fundamental or **basic research** was noted by several respondents in their responses to this and other questions. One respondent spoke of “*a combination of push and pull factors with some reflecting perceived public priorities and some investigator-initiated*”.

A few respondents made recommendations for specific actions for CIHR and the Institute. It was suggested that CIHR or the Institute use various means to publicize the **KT successes** and showcase Canadian talent in this area. One respondent pointed the need to correct a perceived **peer review gap** within CIHR in which little attention is paid to productivity and track record in translated research. A novel recommendation was to provide **incentives to the research end-user** community (including involving them in funding competitions) and educating them on the importance of being up to date.

One individual expressed the opinion that CIHR and the Institute should be involved in the KT arena **only for funding of travel and publication**.

#### **e. Recommendations for health research funding agencies to facilitate use of research**

Two key streams of recommendations emerged – those that related to the funding process, and those that related to knowledge translation processes. Analysis of the responses made by group 1 and 2 researchers and research users showed considerable overlap in the content of recommendations. No clear themes emerged that were specific to a particular group.

Respondents made the following recommendations to health research funding agencies regarding **funding processes**:

- Develop programs to provide seed funding to develop proposals that involve policy makers or community members
- Focus funding on research that has public health relevance
- Award grants in areas of needs as identified by users
- Reward initiatives with KT components

- Require clear KT plan in grant applications and allow funding and adequate time to implement the plan, identify partners and policy and decision-makers and disseminate results.
- Mandate researchers to use online repositories to supplement peer-reviewed journals
- Educate reviewers and panels in KT and KT expectations
- Consider past KT output as a component of grant success
- Expand proof of principle funding
- Facilitate prospective, indefinite quality assurance studies
- Fund more implementation or process studies of what works in practice areas of infection and immunity
- Create a priority program specifically for translational research

In regards to **knowledge translation processes**, respondents made the following recommendations:

- Facilitate interactions between researchers and various users; provide support for linkages and networks and other interactive processes including knowledge brokers
- Work with researchers to develop appropriate KT tools such as briefing notes, fact sheets, etc.
- Develop an annually updated database of infection and immunity researchers that represents the continuum from bench to bedside to population in order to facilitate collaboration
- Foster programs to improve researchers' communications skills
- Foster scientist interactions with Health Canada to move forward regulatory issues
- Increase the profile of KT successes
- Fund media-oriented and clinician-basic science oriented symposia
- Support for dissemination activities including funding, more time to do it, recognition by grant review panels of the value of dissemination and involvement of user communities and policy makers
- Acknowledge the importance of activities that do not have immediate KT outputs including global responsibilities, research excellence, mentoring and training.
- Provide resources to the audience that has a stake in the uptake, including NGOs
- Collaborate with agencies known for KT like CATIE, or with other health research funding agencies
- Work with educational institutions and professional colleges to ensure that such concepts as research utilization and evidence-based practice are integrated at all levels of curricula
- Actually do more KT – including developing workshops and conferences, working with providers and professional networks to identify how to accelerate uptake in defined areas, education stakeholders on the importance of KT
- Pressure government to give tax or financial incentives to encourage participation of private companies

#### **f. Additional observations and reflections**

There may be a role for sharing research evidence related to the effectiveness of various KT strategies and interventions. There were some very strong comments offered that did not appear to reflect actual findings from KT research. For example:

*“There is a large body of research that indicates that efforts to steer research toward translation doesn’t work. It’s too hard to anticipate where the next breakthroughs will happen. Fund researchers through peer-reviewed operating grants based only on excellence and translation will follow”*

*“There is no way to know if CME actually changes practice”*

#### **IV. Summary Reflections**

In summary, there was considerable overlap in the context of responses, both between questions and between groups. One thing is very clear; all groups emphasize the importance of interaction between researchers and research users. Biomedical researchers emphasized the importance of working with researchers from other themes and disciplines as one of the key methods for doing KT. This aspect of KT has not been emphasized in the general discourse of KT as much as influencing those in the health system and policy arenas.

Although the number of responses to the priority setting question was small, the dominant theme was one of research relevance such as considering user needs, burden of disease, public health pressures, etc. This speaks to a conscious planning approach when thinking about setting priorities for KT.

There was no evidence gleaned through this survey that respondents were conversant with KT related activities that CIHR is already engaged in to a greater or lesser extent. This may speak to a communication gap between the organization and its constituents.

It is worth reiterating that the responses were from a very small proportion of the stakeholders of the Institute; and one would expect that those who responded were conversant with the topic of KT; this was reflected in their responses, for the most part.

## Appendix I: Covering email and survey sent to stakeholders

### COVERING EMAIL:

Subject: Input requested for Institute knowledge translation planning

Dear Colleague:

I would like to request your input regarding knowledge translation and how the CIHR Institute of Infection and Immunity can deliver on its mandate by helping to ensure that research in infection and immunity contributes to improved health and positive economic outcomes in Canada.

The Institute is planning strategic directions to facilitate and support knowledge translation in infection and immunity research. As part of this planning process, we are asking members and stakeholders of the infection and immunity research community in Canada to help us by providing input through participating in a short web-based survey at the following website:

*Insert link.*

Thank you for taking a few minutes to provide your input.

Sincerely,  
Bhagirath Singh, FRSC, FCAHS  
Scientific Director  
Institute of Infection and Immunity  
Canadian Institutes of Health Research (CIHR)

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### SURVEY:

Thank you for participating in this survey.

#### Background

As one of the Canadian Institutes of Health Research, the Institute of Infection and Immunity shares with the other institutes the legislated mandate to ensure that research knowledge results in benefit for Canadians through:

- **Addressing emerging health opportunities, threats and challenges and accelerating the discovery of cures and treatments and improvements to healthcare, prevention and wellness strategies. For example:**
  - The sequencing of the SARS viral genome affords new research strategies for diagnostics, treatment and prevention.
  - Discovery of a new signalling pathway critical for allergic sensitization and inflammation provides a new therapeutic target in patients with atopic asthma and other atopic diseases.
  - The Pandemic Preparedness Strategic Research Initiative is supporting focussed research aimed at identifying strategies to prevent or mitigate a pandemic outbreak and methods to control disease spread and to treat individuals who are affected.

- **Promoting the dissemination of knowledge and the application of health research to the health of Canadians. For example:**
  - A survey of vaccine researchers and funding organizations provided input to a report on vaccine research accomplishments in Canada for policy makers, vaccine researchers and end-users of vaccines and immunization programs.
  - The discovery of the importance of hand-washing in the control of *C. difficile* was communicated to provincial and regional infection control groups for inclusion in control guidelines.
  - A practical framework on ethical issues arising from the SARS outbreak, related to quarantine, priority-setting, duty of care and global governance, received extensive media interest and uptake by planners and policy-makers locally, nationally and globally.
  
- **Encouraging innovation, facilitating the commercialization of health research in Canada and promoting economic development through health research in Canada. For example:**
  - The discovery of a series of human papilloma virus type-specific probes is making possible the development of a prototype kit for rapidly distinguishing malignant from benign HPV types in cervical cancer testing.
  - Development of a cattle vaccine that reduces the level of *E. coli* 0157 shedding into the environment could significantly reduce human disease during outbreaks of *E. coli*.
  - Production of antibodies to human proteins that have been altered by infection with protozoan parasites is making possible the production of a tool for mass screening of human blood samples for parasitic infection.

At CIHR, the term “knowledge translation” is used to encompass those activities that facilitate or increase the use of research knowledge or the likelihood that such knowledge is used. Knowledge translation activities contribute to accelerating discovery, to dissemination and application of new knowledge and to facilitating innovation and commercialization.

## Survey

1. What is your association/affiliation with the infection and immunity researcher community in Canada?

Pillar 1 researcher	_____	Research knowledge user:	
Pillar 2 researcher	_____	Government	_____
Pillar 3 researcher	_____	Health system	_____
Pillar 4 researcher	_____	NGO	_____

Other (Please specify) \_\_\_\_\_

2. **Answer if you are a researcher**

In your experience, please describe briefly examples of key activities that have promoted uptake of your research.

**Answer if you are someone who ‘uses research results’**

In your experience, please describe briefly effective mechanisms of helping to ensure that research results are used for positive effect?

3. Based on the description of knowledge translation above, what are the three most important things that *facilitate* infection and immunity research knowledge uptake?
4. How should the Institute prioritize recommendations and set targets for actions to stimulate knowledge translation (e.g. impending public health pressures, body of knowledge not being used, etc.)?
5. What do you recommend health research funding agencies do to facilitate and support uptake of research findings in infection and immunity research?

The Institute will use your answers as a starting point for a workshop of infection and immunity stakeholders. Workshop participants will review recommendations and develop priorities to facilitate and support knowledge translation for the Institute.

**Thank you for taking time to provide important input to the planning process.**