



Centre on AGING

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Researchers Collaborate to Fight Antibiotic-Resistant Superbugs

In the 1970s, *Pseudomonas aeruginosa*, previously found mainly in soil where it developed as possibly the most attack-resistant organism on the planet, was found in some hospitals. Today it is thought to reside in everyone, is a superbug resistant to antibiotics, and for the time being only troubles easily-infected hospital patients.

For years this has been a favorite subject for **Medical Microbiology's George Zhanel, PhD**, and since 2006, he has been collaborating with **Chemistry's and Centre on Aging Research Affiliate, Frank Schweizer, PhD**, in hopes of finding novel drug therapies to curtail its – and other superbugs' – zest. They outline one of their research projects in a paper recently published in the *Journal of Medicinal Chemistry*.

According to *Sean Moore, Research Communication Officer, Office of the Vice-President Research, University of Manitoba*, “**to breezily understand what they do, think of Batman**. Essentially, he is just a do-gooder reliant on his tool belt; the more tools he has the better he fares in a fight. Antibiotics are the same. But Hollywood has upgraded Batman's tools since the days of Adam West. Chemistry, however, has not been as successful at doing this

until, thankfully, now”.

Schweizer explains that only three new classes of antibacterial drugs have been developed in the last 50 years. This does not give many avenues to explore. He notes that, to come up with a novel agent, he and Zhanel are going back to what's known, to some old drugs, and tweak some of them to see if their effectiveness can be restored. Aminoglycosides, a class of sugar-based antibiotic that has been around since 1944, are being investigated. Once these were the most rapid killers of bacteria in the world, however, resistance to them has developed in Canada and every other country, and, because they are so toxic, they can put people into kidney failure.

Schweizer and Zhanel have developed a program to circumvent these problems. Schweizer reengineers the drug's chemistry, and Zhanel sees if they can kill the nastiest superbugs Canadian Intensive Care Units send him without harming human red blood cells.

Zhanel explains that they are still far from bringing drugs to patients, but his in vitro tests of Schweizer's drugs have shown reengineered



Frank Schweizer and George Zhanel

aminoglycosides as a promising weapon. Altering their design is difficult. Hydroxyls are responsible for the drug's characteristic chemical reactions, any alterations bring big changes. Previously it took about 15-synthesizing steps to isolate and change a hydroxyl, which is too lengthy and costly for drug companies to undertake. Schweizer has patented a way to do it in just two to four steps.

Dr. Schweizer was the 2005/2006 recipient of a Centre on Aging Research Fellowship.

For further information about this research contact Dr. Zhanel at: ggzhanel@pcs.mb.ca or Dr. Schweizer at: Schweize@ms.umanitoba.ca.

Centre on Aging Renewed for Another Five Years

The University of Manitoba requires that all research centres and groups be reviewed every five years. The Centre on Aging was required to submit a **Five-Year Review of Activities 2002-2007** and a **Strategic Plan** for the next five to the Senate Committee on University Research (SCUR).

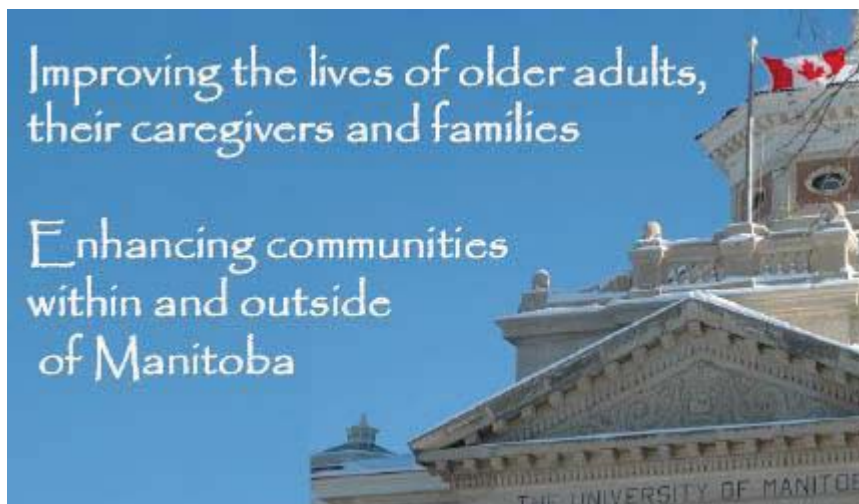
The importance of the Centre to the University and the community-at-large was clearly evident in the **86 letters of support** from Deans/Department Heads, faculty members, graduates students, and government departments and community organizations.

The Centre submitted its report to SCUR in December 2007. At its September 3, 2008 meeting the University of Manitoba's Senate approved the report of SCUR regarding the **continuation** of the Centre on Aging for a five-year term. The Centre has been congratulated on its successful review and mandate for a further five years.

A series of consultations were held and in September 2007 the Strategic Planning Committee agreed upon the Centre on Aging's new vision, mission, and values statements, along with goals and objectives for 2007 - 2012.

Vision:

To be a recognized leader in research in aging, to improve the lives of older adults, their caregivers and families, and to enhance communities within and outside of Manitoba.



Mission:

The Centre on Aging conducts, stimulates, and promotes research on aging, provides an interdisciplinary focus for the research activities in aging at the universities in Manitoba, and supports the teaching of students in aging. The Centre serves as the focal point for the integration and dissemination of research on aging in Manitoba.

Values:

Rigorous Standards of Excellence in Research; Interdisciplinary Focus; Community Partnerships; Dissemination of Knowledge; Education; and, Innovation.

Goals:

Rigorous Research; Effective Community Partnerships and Knowledge Dissemination; and High-Quality Education in Aging.

Visit the Centre on Aging's web site for information on our affiliates, research initiatives and events.

www.umanitoba.ca/centres/aging

Successful Aging Definitions

Using 11 years of survey data, researchers with the Manitoba Follow-up Study (B. Loewen, R. Tate [Centre on Aging Research Affiliate], & D. Bayomi) have developed a comprehensible and expandable coding system capable of capturing and defining successful aging. In the past, the phrase 'successful aging' had no universally agreed-upon definition. Attention recently has focussed on asking older persons for their definitions. In 1996 content analysis initially identified 20 main themes emerging from self-definitions. In 2006 the coding system was reorganized and expanded to include evolving themes from all eight surveys (10,000 definitions). Researchers identified 9 main themes, 28 sub-themes and 86 sub-theme items. Health, Health Behaviours/Activity, Productivity, Acceptance/Coping/Adaptation, Spirituality, Social Networks, Independence, Life Experience, Having life.

www.mfus.ca

How Age-Friendly are Communities in Manitoba?

The following information has been excerpted from *How Age-Friendly are Communities in Manitoba? Summary of a Survey of Manitoba Municipalities*. The full report, *AGE-FRIENDLY COMMUNITIES IN MANITOBA Report on Survey Findings*, by Verena Menec, Claire Button and Audrey Blandford, is available on the Centre's web site: www.umanitoba.ca/centres/aging

In 2008 the Centre on Aging at the University of Manitoba conducted a survey to determine where communities stood in terms of age-friendliness from the perspective of the local (municipal) government. The survey addressed aspects of unfriendliness including housing, transportation, activity programs and others. Respondents were asked whether programs or services were available in the community and, if so, what role the municipal government plays in administering and funding them.

Manitoba has 198 municipalities: 118 rural municipalities, 20 villages, 51 towns, and nine cities. Surveys were sent to the Mayor or Reeve of each of these municipalities. Completed surveys were received from 129 communities: 72 rural municipalities, 16 villages, 34 towns, and 7 cities. The overall completion rate was 65%. Communities were also divided by the proportion of seniors living there based on Canada Census data. This allowed us to determine if the programs or services available depend on whether, proportionally, there few or many seniors in a community.

The **most age-friendly aspects** present in the majority of communities include:

- over 80% have support services for seniors (e.g., snow removal, lawn care, etc.);
- some form of public transportation (64%), transportation to and from medical appointments in their community and to other communities (68%), and transportation for individuals with disabilities, such as Handivan (70%);
- a variety of recreation programs including local parks or walking/biking trails (71%), and recreation programs specifically for seniors (82%).
- volunteer opportunities (72%) and official recognition for their contributions (56%).

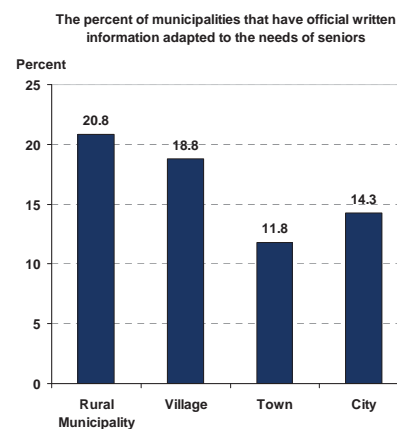
Areas where communities generally are **not as age-friendly** include:

- a minority of communities reported that official, written information (24% of communities), and public telephone answering systems (less than 8%) have been adapted to the needs of seniors, and relatively few communities (12%) indicated that seniors' advocacy services are available;
- less than one-third of communities provide education and information for seniors about financial fraud, and only 40% have programs or services for socially isolated seniors (e.g., friendly visiting, telephone check-ups). Only a small proportion of communities indicated that elder abuse/neglect identification or prevention programs are available;
- the lack of policies/guidelines that benefit seniors was evident in all municipalities, regardless of

municipality type or proportion of seniors, with a minority of communities indicating that: seniors serve in an advisory role (19%), community consultations (33%) and planning processes specifically include seniors (40%).

Results confirm that the percentage of seniors in the community does make a difference. As the percentage of seniors increases, age-friendly features increase as well. In addition, responses from the four types of municipalities: rural municipalities, villages, towns, and cities, showed differences for most of the questions. Overall, given their population base and geographic dispersion, rural municipalities had fewer age-friendly features than villages, towns, and cities.

The instrument from *The Maturing of America — Getting Communities on Track for an Aging Population* project was adapted for use in this project.



Did you know...

- In 2006 in Manitoba, there were 134 women aged 65 and over for every 100 men in this age group. The predominance of women was even more noticeable in the older age groups. In the 75 to 84 age group, there were 143 women for every 100 men while in the 85 and over age group, there were 219 women for every 100 men. By 2031 it is projected that there will be 118 women for every 100 men aged 65 and over, 123 women to every 100 men aged 75 to 84 and 166 women for every 100 men aged 85 and over. (*Manitoba Seniors Census Update* <http://umanitoba.ca/centres/aging/media/Census Update - 2008.pdf>)



- Automobile crashes are the highest cause of accidental deaths among adults aged 65 to 74. To help deal with this problem researchers conducted a training program for drivers 65 and over which involved both in-class and on-road evaluations. Participants' knowledge quiz scores improved from 61% of correct answers before the in-class component to 81% afterwards. On-road driving skills also showed improvement. (Bedard, M., Porter, M. M. [Centre Research Affiliate], Marshall, S., Isherwood, I., Riendeau, J., Weaver, B., Tuokko, H., Molnar, F., & Miller-Polgar, J. (2008). The combination of two training approaches to improve older adults' driving safety. *Traffic Injury Prevention*, 9, 70-76).



- Therapeutic Touch (TT) decreases agitated behaviours in cognitively impaired older people. Results from a study conducted to determine the benefits of TT in a long term care setting showed that during the period of TT intervention, there was a significant decrease in the number of physically aggressive behaviours (hitting, grabbing), physical nonaggression (pacing, repetitious movements, general; restlessness), and verbal agitation (cursing, constant requests for attention, repetitive sentences, strange noises, negativism). (Hawranik, P. [Centre Research Affiliate], Johnston, P. & Deatrich, J. (2008). Therapeutic Touch and Agitation in individuals with Alzheimer's Disease. *Western Journal of Nursing Research*, 30(4), 417-434.)
- Undiagnosed or under-treated insomnia in older adults can increase the risk for falls, motor vehicle accidents, depression and shorter survival, cardiovascular disease, stroke, cancer, and suicide. Among these individuals health care utilization is also increased. Nurse practitioners could play a leading role in identifying and managing geriatric insomnia. (Krishnan, P., & Hawranik, P. [Centre on Aging Research Affiliate]. (2008). Diagnosis and management of geriatric insomnia: A guide for nurse practitioners. *Journal of the American Academy of Nurse Practitioners*, 20, 590-599.)
- In 2007 in Canada the number of caregivers aged 45 and older increased to 2.7 million. Seventy-five percent of those caregivers were between 45 and 64 years of age. One in four of those providing care to seniors were themselves seniors. More than half of caregivers were also employed. In addition, one in five caregivers provided care to seniors living in care facilities. (Cranswick, K. [Centre Research Affiliate], and Dosman, D. (2008). *Eldercare: What we know today*. Statistics Canada, Catalogue no. 11-008-X.)



- Various personal, interpersonal, and professional barriers might prevent those in need of mental health services from receiving them. Corey Mackenzie (Centre on Aging Research Affiliate) explored age and gender differences in attitudes towards seeking professional psychological help and whether attitudes negatively influence intentions to seek help among older adults and men whose mental health needs are under served. The influence of attitudes has proven to be complex. Men were less open than women with respect to acknowledging mental health problems and the possibility of seeking professional help. Older adults, especially those who were single reported being significantly more willing and able to seek professional help than younger adults

Centre on Aging Graduate Students' Research

Lucelia Luna de Melo, has completed her MSc degree in Kinesiology and Recreation Studies and is currently a PhD student on the Community University Research Alliance Age-Friendly Communities project. In her thesis research Ms. de Melo investigated the association between personal and environmental factors and walking behaviour among community-dwelling older adults. The sample consisted of 60 people aged 65 years and over (range 65 to 92 years old). Perceived environment was assessed using the Neighbourhood Environment Walkability Scale. Walking was assessed using pedometers for three consecutive days. Higher income and better physical function, particularly 'chair rising' as a functional measure of lower body strength were the main factors associated with walking. After controlling for personal factors, no associations were found between walking and the perceived environment. (Advisor: Elizabeth Ready, Centre on Aging Research Affiliate)



Melissa Sitter, an MSc student in Human Nutritional Sciences, presented a paper at the 2007 Dietitians of Canada National Conference examining food service satisfaction among older adults with and without cognitive impairment in a long-term care facility. High satisfaction, as indicated by equal to or greater than 75% of participants responding that they are satisfied "most of the time", was found for the temperature of the food (hot and cold) and ease of chewing. Low satisfaction, less than 75% of people responding most of the time, was noted for the appearance, smell, and taste of the food, as well as for overall satisfaction. Ms. Sitter was the recipient of the Centre on Aging's Betty Havens Memorial Graduate Fellowship. (Advisor: Christina Lengyel, Centre on Aging Research Affiliate)

Jason Schapansky, an MSc student in Pharmacology and Therapeutics has been assessing the role of calcium in Alzheimer's disease. Previous research in Gordon Glazner's lab has shown that the neurotrophin (a protein in the body that encourages the survival and growth of nerve cells) neuregulin (a family of four structurally related proteins which have diverse functions in the development of the nervous system) was able to alter intracellular calcium.



This research has significant clinical implications as the pathology of neurodegenerative conditions such as Alzheimer disease can be partially characterized by calcium dyshomeostasis, a condition in which neuregulin may play a significant role. Mr. Schapansky was the recipient of the Centre on Aging's Jack MacDonell Scholarship for Research in Aging. (Advisor: Gordon Glazner)



Do older adults generally indicate accepting a serious health problem? How does acceptance relate to people's health and well-being and a sense of control over health? These are two of the questions that **Nancy Newall**, a PhD student in Psychology addressed in a poster she presented at the Canadian Association on Gerontology's annual meetings in London. Accepting a problem does not imply giving up. Ms. Newall explored the idea that acceptance does relate to perceived control, which in turn, relates to better health and well-being. Participants were from the 2003 Successful Aging in Manitoba study who indicated having a serious health concern, such as life threatening, restricted activity, or pain. When asked "I have tried to see my health condition as something that I can live with, 51% agreed and 30% strongly agreed. Accepting a health problem was found to be associated with better health, greater positive affect, greater self-rated activity and a greater sense of control over general health. (Advisor: Judith Chipperfield, Centre on Aging Research Affiliate)

Canadian Association On Gerontology Winnipeg 2009

Centre on Aging *research database*

what?

The database would contain your name, mailing address, phone number, age and gender, and will be maintained by staff at the Centre on Aging. Information will only be shared with Centre on Aging researchers whose projects have been approved by a research ethics board at the University of Manitoba.

who?

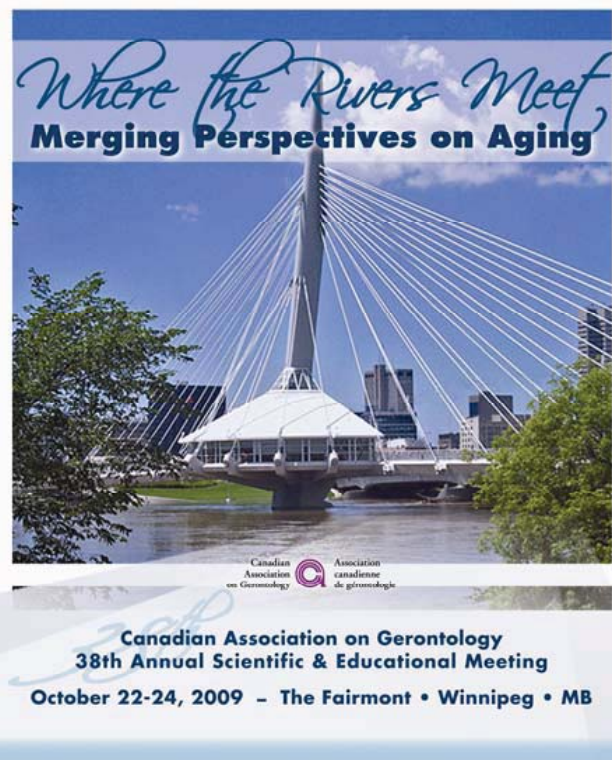
Anyone that is interested in participating in aging-related research studies.

why?

The Centre on Aging is creating an electronic database of individuals willing to participate in future research.

how?

Please call the Centre on Aging at **474-8754** if you would like to find out more about becoming a research study participant.



The Sky's the Limit / Horizons illimités

The Canadian Health Libraries Association / Association des bibliothèques de la santé du Canada facilitates and enables credible knowledge transfer in health sciences through leading edge technologies and partnerships. The CHLA/ABSC invites you to submit papers or posters for its 2009 annual conference, to be held in Winnipeg, Manitoba, May 30-June 3. Papers and posters may describe innovative programs/practices or new research findings and should relate to the overall conference theme - "The Sky's the Limit / Horizons illimités."

Abstracts are due December 15, 2008. Information is available at: <http://www.chla-absc.ca/2009/>

CENTRE ON AGING

The Centre on Aging, established on July 1, 1982, is a university-wide research Centre with a mandate to conduct, encourage, integrate, and disseminate research on all aspects of aging.

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