

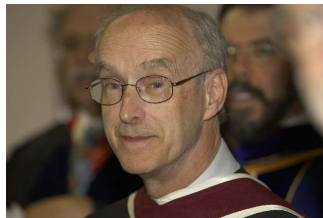
# Sciences Division

# Newsletter

Issue No.2; Winter 2008

## Faculty News

**Dr. W. van Dijk** retired after 25 years of service to Redeemer University College. Thank you Dr. van Dijk for being a trusted professor, mentor, colleague and friend. Over the years, Dr. van Dijk has served as professor of physics and mathematics. He has also served ably in administrative roles, Chair of the department, Chair of the division and even spent some time as Vice-President (Academic). Throughout his years at Redeemer he maintained a research program in subatomic physics funded by NSERC (Natural Sciences and Engineering Research Council of Canada), with continued collaborations with colleagues at McMaster as well as with students. Two of his research collaborators are Redeemer alumni: **Dr. K. Kiers x'89** and **Dr. K. Spyksma '01**. Dr. van Dijk will continue to be seen and involved in the department, teaching a course or two each year. In the fall 2007 he was in Japan collaborating with a colleague at Kyoto Sangyo University.



**Dr. Henry Brouwer** once again taught an environmental chemistry course at the Au Sable Institute during the summer of 2007. He has been a faculty member at the Au Sable Institute since 1994.

**Dr. Gary Chiang** and **Prof. Jennifer Chiang** attended the 7th quadrennial ICCPB (International Congress of Comparative Physiology and Biochemistry) in Salvadore, Bahi'a, Brazil, Aug 12-16, 2007. In fact, Dr. Gary Chiang chaired a symposium at the conference on "The Biology of Blood-Sucking Conenoses, Vectors of Chagas Disease." He also gave a lecture on "The Importance of Insect Biology to Human Health and the Advancement of Science".

**Professor Jennifer Chiang** has once again been busy with the science education program. For the 2006/2007 academic year she ran 23 separate events for local schools, serving almost 400 school children. Redeemer student volunteers included **Laura Benjamins**, **Andrew Hibma**, **Justin Free**, **Nancy Geertsma** and **Leanne Kersbergen**.

**Dr. Derek Schuurman** published an article: "Forming a Christian View of Computer Technology" in the Journal of the Association of Christians in the Mathematical Sciences, Dec. 2007 [<http://www.acmsonline.org/Schuurman.htm>].

**Dr. Jitse van der Meer** is on sabbatical for the 2007/2008 academic year. He is pursuing a project "Interpreting Nature and Scripture: History of a Dialogue."

## Alumni Returning to Teach at Redeemer

**Dr. Dan Reilly '96** BSc, MD, FRCSC, MHSc (Bioethics) and Elizabeth Avery, team-taught the course HIS 341: History of Science. Dr. Reilly majored in biology at Redeemer and obtained a degree in medicine from Queen's University. He is an obstetrician and gynecologist practicing in Fergus, ON as well as Assistant Clinical Professor in the Department of Obstetrics and Gynecology at McMaster University. Elizabeth Avery '97 graduated from Redeemer with a degree in history.

**Hobbe Smit '04** graduated from Redeemer with a BSc (computer science and mathematics) and obtained an MMath with the Spatial Database Group at the University of Waterloo. He currently works for Campus For Christ: Campus Internet Ministry but he is also teaching a computer science course (CSC

221: Data Structures and Algorithms) at Redeemer. Hobbe also volunteers his time maintaining a website and database for the Ontario Christian Cleaners.

**Dr. Kyle Spyksma '01** has begun a tenure-track position at Redeemer as Assistant Professor of mathematics and physics. Dr. Spyksma obtained a PhD at McGill University in the Department of Atmospheric and Oceanic Sciences. Dr. Spyksma is well-known to the Sciences Division, since he graduated from Redeemer with a BSc in mathematics and computer science as well as a minor concentration in physics. In the photograph, Dr. Spyksma demonstrates static electricity with his daughter.



## Other New Faculty

**Dr. Stephanie Burgoyne** has joined the mathematics department as a part-time mathematics instructor. She has a BA (Hon) and a BEd from the University of New Brunswick as well as an MA and PhD in mathematics from the University of Western Ontario.

**Ms. Jody Bruulsema**, BSc, (Waterloo), MSc (medical physics, McMaster) is a new part-time laboratory instructor in physics.

**Ms. Elizabeth Pietrantonio**, BSc (Waterloo), PEng, MBA (Richard Ivey School of Business), joined the mathematics department as a part-time instructor for the fall 2007.

**Dr. James J Rusthoven**, MD, HHSc, FRCPC, FACP, is a medical oncologist at Hamilton Regional Cancer Centre. He is teaching both PHL 342: Philosophy of Science and INT 393: Senior Seminar: Biomedical Ethics in the winter semester 2008. He recently presented a faculty colloquium, "Compassionate Use or Abuse? Ethics of Treating Severely Ill Patients with Investigational Drugs," November 13, 2007, Redeemer University College.

## Alumni News

**Randy Elzinga '01**, who majored in mathematics at Redeemer, obtained his PhD at Queen's University, Oct. 25, 2007. In his thesis "The Minimum Witt Index of a Graph" he acknowledges his mathematics courses at Redeemer "opened my eyes to the beauty of mathematics and provided the foundation for success in graduate studies." Randy is currently teaching at Queen's University.

**Alan Meijer '94**, who majored in biology at Redeemer, has since obtained an MSc in crop science from North Carolina State University. He is currently an Extension Associate: Tillage and Soil Management at the Vernon G. James Research and Extension Center of NCSU.

**Felix Lam '06**, is pursuing a MSc in biology at the University of Western Ontario. He is studying octopamine receptors in the cabbage looper, *Trichoplusia ni*, and is becoming proficient in molecular biology as he identifies, isolates and sequences gene fragments.



Dr. Randy Elzinga with his mother upon graduation.

**Heidi Renkema '05**, completed a joint MSc degree in land resource science and international development at the University of Guelph. Her thesis "Thallium Accumulation by Durum Wheat and Spring Canola: The Roles of Cation Competition, Uptake Kinetics, and Transpiration" was co-supervised by **Dr. Berkelaar**. She is currently in a one-year internship at ECHO (Educational Concerns for Hunger Organization) in North Fort Myers Florida. ECHO is a Christian organization with a mission to equip and support people doing agricultural development overseas.

**Lisa Scully '01** obtained her PhD from the Department of Biological Sciences at Brock University. She has co-authored several articles with her supervisor based on her microbiology research. Her studies were funded in part by a prestigious NSERC postgraduate doctoral scholarship.

**Aart Smit '07** and **Dr. Schuurman** presented a paper in Montreal, based on summer undergraduate student research sponsored by NSERC and subsequently published "Robust Subspace Position Measurement Using Localized Sub-Windows," Proceedings of the Canadian Conference on Computer and Robot Vision, May 2007, pp. 282-288.

**David J. Speicher '04**, who obtained an honours biology degree from Redeemer, graduated from Griffith University School of Biomedical Sciences with an MSc (honours) in Clinical Microbiology, working in the Qpid (Queensland Paediatric Infectious Diseases) Laboratory. David is currently pursuing a Ph.D. at the School of Dentistry and Oral Health, researching oral cancer in patients with AIDS caused by human herpes virus 8. David intends to compare the prevalence of this virus in Australia, India, and Kenya. If research goes as planned, he will be heading to India in May for 2-3 months of field work and training of their lab staff. On World AIDS Day, David was privileged to spend the day helping at an AIDS camp in India where free medical, dental and eye examinations were given along with free lab work and medical supplies. It was run



with a Christian AIDS organization called ACET (AIDS Care, Education and Training) in conjunction with Operation Blessing India.

**Loretta Vanderspek '07**, was awarded a prestigious NSERC Postgraduate Scholarship worth \$17,300 for graduate studies. She declined the award since she had made a commitment to teach high school for one year. She is teaching mathematics, English and art at Norwich Christian School and plans to continue further studies in September 2008.

**Jakob Van Dorp '06**, is pursuing a Master's degree in urban and regional Planning (MPI) at Queen's University. Jakob obtained a BSc with majors in environmental studies, history and English and has continued his interest in urban issues, particularly related to improving access to food and growing food in cities. His research currently involves looking at how community garden programs are developed and maintained in Toronto.

**Kyle Vander Linden '05**, who graduated with a major in environmental studies as well as a major in history, is currently pursuing a master's degree in environmental planning at the University of Waterloo. As part of his studies, he had the opportunity to do research on a green roof at Waterloo City Hall, focusing on storm water quantity and quality. Since July 2007, Kyle has been working for Roof Greening Systems. In particular, he researches stormwater quantity, thermal insulation properties, soil quality, weight issues and optimizing plant growth in extreme conditions. Kyle notes that Roof Greening Systems is one of the first companies in Canada to pre-grow native vegetation mats to be placed on green roofs.

## Presenting our 2007 Graduates

**Bachelor of Science – Honours:** Kevin Renkema, Laura Schuurman, Sheraya Sims

**Bachelor of Science – Four-Year Major:** Erin Garden-Smith, Loretta Vanderspek, Mark van der Woerd, Debra Vuyk, Matthew West, Eric Windhorst

**Bachelor of Science – Four-Year General:** Cassandre Dauphin, Nancy Geertsma, Jillian Hermansen, Cara Hovius, Leanne Kersbergen, Amanda Koopmans, Jasmine Lightfoot, Alicia Wolting

## Some 2007 Summer Research at Redeemer

**Dr. Edward Berkelaar** continued his research in the area of trace metal accumulation by plants. His work is funded by the Metals in the Human Environment Strategic Network (MITHE-SN; [www.mithe-sn.org](http://www.mithe-sn.org)) which receives its funding from both NSERC and industry. The purpose of MITHE is to conduct research in support of science-based environmental and human health risk assessments for metals in water, soil and food. The network is organized into several research teams and **Dr. Berkelaar** is part of the Soils and Plants team, with a focus on how various elements behave in soil and how readily they move into plants.

Summer Research Students (left to right): Jeremy Burns, Leanne Kersbergen, Matthew West, Amy Koopmans, Laura Brunsting, Timothy Ubbens, Chris Kim [McMaster], Julie Kikkert, James Harskamp and Loretta Vanderspek.



**Jeremy Burns**, pursued summer research co-supervised with **Dr. G. Chiang** with funding from the Canada Summer Jobs program and Dr. M.J. O'Donnell at McMaster University. Jeremy worked both at Redeemer and McMaster, carrying out studies on a visceral muscle in the blood-feeding insect *Rhodnius prolixus*.

**Professor Jennifer Chiang** together with student worker **Laura Brunsting** and volunteer **Vanessa Chiang '05** served as leaders for an amazing week of scientific discovery. Ten young people, ages 9-12 years, attended Redeemer's very first summer science camp. For one week, these young people explored the world of forensic science through hands-on activities in which they were given the task of solving a "crime" of the day. The campers were guided through a variety of techniques such as how to take and lift fingerprints, identify blood types, analyze lipstick through chromatography, identify insects and more. It is hoped that the camp will be offered in the summer of 2008.

**James Harskamp**, now in his third year of an honours biology degree, developed a cadmium microelectrode with help from **Dr. Brouwer** and Dr. O'Donnell at McMaster. With **Dr. Berkelaar**, he used this to determine where along the length of a root plants accumulate cadmium and to what extent the rhizosphere (the region immediately surrounding the root) becomes depleted of cadmium as the plant removes it from its exposure solution.

**Amy Koopmans**, a fourth-year biology major, exposed wheat and canola seedlings to different amounts of thallium and potassium in an effort to determine if potassium and thallium compete with one another for uptake and to see if the two plant species behave similarly or not. Amy worked under the supervision of **Dr. Berkelaar**.

**Leanne Kersbergen '07**, who graduated with a double major in biology and psychology, studied how readily selenium moved from root to shoot tissue of wheat and canola, under the supervision of **Dr. Berkelaar**. She also studied to what degree this process is influenced by transpiration - the evaporation of water from plant leaves.

**Julie Kikkert**, a fifth year honours biology student, oversaw a study of wheat and canola plants grown in soils contaminated with trace amounts of selenium and thallium, in an effort to see how much of these elements were accumulated by various plant tissues over the course of the life cycle of a plant. Over 1000 plant samples (roots, shoots and seeds) were generated in this study, supervised by **Dr. Berkelaar**. The samples will need to be analyzed for trace elements next summer.

**Loretta Vanderspek '07**, who graduated with a major in mathematics, explored "Elementary Symmetric Functions and Inertia," a project in qualitative system analysis, funded by NSERC, and under the supervision of **Dr. Vander Meulen**.

**Timothy Ubbens**, a second year computer science and mathematics major worked for **Dr. Schuurman** on an NSERC-funded project "Computer Vision for Mobile Robots."

**Matthew West '07**, who graduated with a major in mathematics as well as a major in computer science and physics, worked on NSERC-funded physics research "Time Evolution of Quantum Systems" under the supervision of **Dr. van Dijk**.