DEPARTMENT OF PEDIATRICS
UNIVERSITY OF SASKATCHEWAN
RESEARCH NEWSLETTER

IN THIS ISSUE...

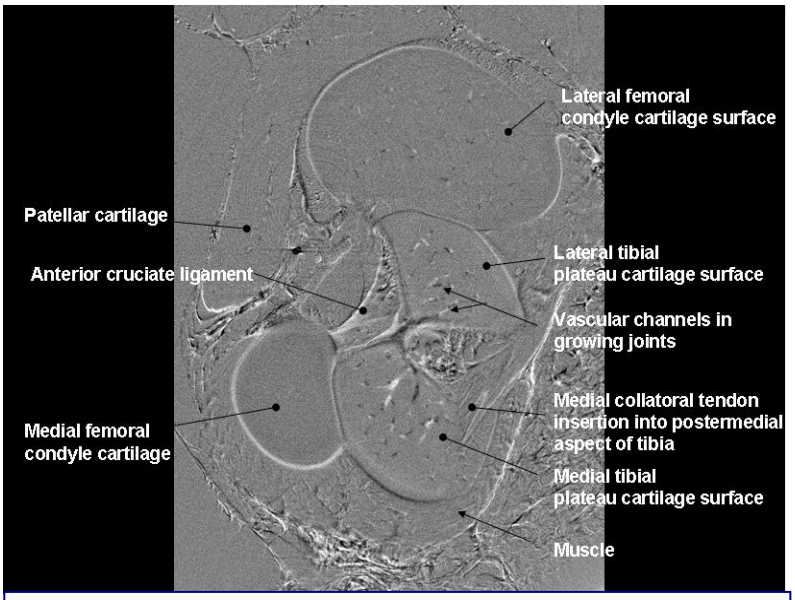


Image of Interest

Researchers in the Department of Pediatrics are collaborating with colleagues at the Canadian Light Source and the Vaccine Infectious Disease Organization to develop novel methods to image growing joints using synchrotron light. See page 7 for details.

OUR PARTNERS

Saskatoon Hub City Optimist Club makes commitment to child health research at the University of Saskatchewan. See page 7 for details.

OPTIMIST INTERNATIONAL

Graduate Trainees Receive Recognition for Research Excellence

Dr. Tracy Wilson-Gerwing, Post-doctoral Fellow, and **Susan Tupper**, Ph.D. candidate, each received top awards for their research poster presentations at the Canadian Arthritis Network Annual Scientific Meeting.
See details page 6.

Watch for news about the 2012 Child Health Trainee Research Day Tentative Date: Thursday April 12, 2012
See page 8 for details

Dr. Susanna Martin, Department of Pediatrics, is seeking subjects for a study relating to childhood obesity. Assistance with recruitment would be appreciated. Details are available in the Pediatric Outpatient Department or from Dr. Martin.

For information about research in the Department of Pediatrics, University of Saskatchewan or to contribute content to the Research Newsletter please contact:
Office of Pediatric Research
Department of Pediatrics
Royal University Hospital
103 Hospital Drive
Saskatoon, Saskatchewan, Canada S7N 0W8.
Phone: 306-966-7608
e-mail: pediatric.research@usask.ca
website: www.medicine.usask.ca/pediatrics/research
Director of Research: Dr. Alan M. Rosenberg
Administrative Coordinator: Shauna Richards RN, BSN

DEADLINE FOR SUBMISSIONS FOR THE NEXT NEWSLETTER IS JANUARY 5, 2011

This issue of the Department of Pediatrics Research Newsletter is sponsored by the Children's Health Research Trust Fund

FACULTY RESEARCH PROJECTS

Members of the Department of Pediatrics, University of Saskatchewan are engaged in a wide array of research activities. An underlying theme of research within the Department is aimed at discovering the very earliest origins of health and disease to achieve more favourable disease outcomes and more effective prevention. Examples of current faculty research projects are listed below.

Dr. Darryl Adamko (Division of Respirology)

- Noninvasive assessment of atopic diseases: Metabolomic profiling of urine using Nuclear Magnetic Resonance (NMR) allergen
- The potential of Montelukast to modulate eosinophilic inflammation in RSV infection
- Improved diagnosis and management of respiratory diseases using metabolomic analysis of urine

Dr. Patricia Blakley (Developmental Pediatrics/Teratology)

- Screening for FASD and literacy in justice, health and educational contexts in Saskatchewan.
- Registry and follow-up of complex pediatric invasive therapies

Dr. Richard Huntsman (Division of Neurology)

- Protein spectroscopy analysis in Cree leukodystrophy

Dr. Ayisha Kurji (Division of General Pediatrics)

- Sedation and anesthetic weaning post-ICU admission
- Lumbar puncture procedures (safety and sedation) on the Pediatric ward
- Pneumococcal vaccination coverage in high risk populations

Dr. Karen Leis (Division of General Pediatrics)

- Vitamin D intake in young children with acute lower respiratory infection

Dr. Edmond Lemire (Division of Medical Genetics)

- Congenital central hypoventilation syndrome
- Spontaneous intracranial hypotension
- Hereditary breast cancer clinical study group

Dr. Susanna Martin (Division of General Pediatrics)

- Pediatric obesity - role of methyglyoxal
- Adolescent to young adult bone and fat mass development in relationship to cardiovascular health
- Vitamin D - knowledge of existing guidelines by practitioners

Dr. Ahmed Mater (Pediatric Emergency Medicine)

- Use of cough and cold medication in children in the era post Canada health advisory

Dr. Athena McConnell (Division of Infectious Diseases)

- S. aureus osteomyelitis at the Royal University Hospital, 1996-2010
- Characteristics of children hospitalized with pandemic Influenza A H1N1 infection in Saskatoon, SK, Canada, 2009-2010 influenza season
- Effects of heptavalent pneumococcal conjugated vaccine (PCV7) on invasive pneumococcal disease (IPD) in northern and central Saskatchewan, 2000-2008
- Influenza vaccination among household contacts of children with cystic fibrosis and healthy children

Dr. Alan Rosenberg (Division of Rheumatology)

- Pediatric rheumatology optimized protocols for experimental research
- Vitamin D status in newborns and associations with pregnancy and newborn outcomes
- High mobility box-1 proteins in pediatric sepsis
- Novel pain and inflammation pathways in juvenile arthritis
- Diffraction enhanced imaging of growing joints using synchrotron light
- Oral vaccine development for treatment of inflammatory arthritis
- Linking exercise activity and pathogenesis in juvenile idiopathic arthritis
- Vitamin D deficiency in Saskatchewan children: Factors influencing occurrence and response to therapy
- Biologically-based outcome predictors in juvenile idiopathic arthritis
- Childhood antecedents of rheumatic diseases

Dr. Korvangattu Sankaran (Division of Neonatology)

- Age of red blood cells in premature infants

Dr. Natalie Shiff (Division of Rheumatology)

- Validation of administrative data diagnoses of chronic childhood arthritis in Saskatchewan
- Administrative data in rheumatic disease research and surveillance
- Barriers to pediatric rheumatology subspecialty care in British Columbia
- Linking exercise, physical activity, and pathophysiology in childhood arthritis
- Vitamin D Deficiency in Children
- The ARCHiVe Study (A registry for children with vasculitis: e-entry)
- BRAINWORKS: The International Childhood CNS Vasculitis Outcome Study
- The scope of childhood arthritis in BC, Canada: Are children being seen by a pediatric rheumatologist?
- YhES! Young Adult, Health & Employment Study
- Scoping review of the use of administrative data in pediatrics
- Predicting progression of oligoarticular to polyarticular disease in juvenile arthritis

Dr. Ron Siemens (Emergency Medicine and General Pediatrics)

- Building participatory action research in Nampula , Mozambique

TRAINEE RESEARCH PROJECTS

The Department of Pediatrics is committed to fostering and facilitating research opportunities for undergraduate, graduate and resident trainees. Pediatric residents embarking on a new research project are required to complete a Pediatric Trainee Research Application form which is available from the Office of Pediatric Research (Phone 306-966-7608 or e-mail; pediatric.research@usask.ca). Trainees affiliated with the Department of Pediatrics are engaged in a wide variety of research projects. Examples of current projects are listed below.

Dr. Heather Duong (Pediatric Resident)

- Pneumothorax in late preterm
- Vitamin D in neonates

Dr. Andrea Fong (Pediatric Resident)

- Teenager attitudes to participating in medical research

Dr. Michael Friesen (Pediatric Resident)

- Use of Clonidine in weaning from opiate withdrawal

Dr. Meghan Garner (Pediatric Resident)

- Predicting characteristics of children hospitalized with pandemic influenza A H1N1 infection in Saskatoon, SK, Canada, 2009-2010 influenza season

Are you a trainee looking for a research project and mentor or are you a mentor looking for a trainee to participate in a research project? We can help find a suitable match! See The Matchmaker section on page 4 or contact the Pediatric Research Office.

Dr. Miriam Katzman (Masters Student) NEW

- Vitamin D status in neonates

Dr. Miriam Katzman, a graduate of McMaster Medical School, is undertaking a Masters in Health Sciences research project prior to entering residency. She will collect clinical information and cord blood to study associations of newborn vitamin D levels with pregnancy and birth outcomes.

Dr. Abid Lodhi (Pediatric Resident) NEW

- High mobility box-1 proteins in pediatric sepsis

Dr. Abid Lodhi is studying HMGB-1 protein in children with sepsis. Clinical information and a blood sample from children with sepsis will be collected. Procedures relating to this study will be available on the wards, in PICU and in the Pediatric Emergency Department.

Dr. Aaron Moodley (Pediatric Resident) NEW

- Kawasaki Disease awareness among Saskatchewan physicians

Dr. Aaron Moodley will be initiating a project to gauge awareness among Saskatchewan physicians of Kawasaki Disease. This research will help guide the development of information materials for health care providers.

Dr. Lauren Redgate (Pediatric Resident)

- Predicting characteristics of children hospitalized with pandemic influenza A H1N1 infection in Saskatoon, SK, Canada, 2009-2010 influenza season
- Pneumococcal vaccination coverage in high risk populations

Glendon Rhoades (Masters Student)

- Diffraction enhanced imaging of growing joints using synchrotron light

Dr. Dax Rumsey (Pediatric Resident)

- Predicting progression from oligoarticular to polyarticular juvenile arthritis

Susan Tupper (Ph. D. Candidate)

- Within-day variability of pain intensity in children with juvenile idiopathic arthritis

Dr. Tracy Wilson-Gerwing (Post-doctoral Fellow)

- Novel pain and inflammation networks in juvenile arthritis

CCHCSP PCCCSE

In the next issue of The Newsletter…

Watch for a feature article on the Canadian Child Health Clinician Scientist Program (CCHCSP), a transdisciplinary training program for the next generation of clinician scientists in child and youth health research.

www.cchcsp.ca

MATCHMAKER SECTION: RESEARCH PROJECTS SEEKING PEDIATRIC RESIDENTS

- **Attitudes to transitioning to adult rheumatology care: Patient and parent perspectives**
  Study Format: Survey of patients and parents
  Faculty Contact: Alan Rosenberg

- **Approaches to managing synovitis and tenosynovitis in juvenile arthritis using injectable corticosteroids**
  Study Format: Survey of pediatric rheumatologists
  Faculty Contact: Alan Rosenberg

RECENT PUBLICATIONS FROM MEMBERS OF THE DEPARTMENT OF PEDIATRICS (2011)

Saude EJ, Skappak C, Cook K, Regush S, Rowe BH, Moqbel R, Sykes BD, Adamko DJ. Metabolomic profiling pediatric asthma: the diagnostic utility of urine NMR. J Allergy Clin Immunol. 2011 127:757-764

Ilarraza R, Wu Y, Davoine F, Ebeling C, Adamko DJ. Human dendritic cells promote an antiviral immune response when stimulated by CVT-E002. J Pharm Pharmacol. 2011 63:670-678

Ebeling C, Wu Y, Gordon JR, Adamko DJ. Compound CVT-E002 significantly reduces allergen induced airway inflammation and airway hyperresponsiveness in vivo. In Press, Molecular Nutrition and Food Research

Sherar, LB, Eisenmann, JC, Chilibeck, PD, Muhajarine, N, Martin, S, Bailey, DA and Baxter-Jones, ADG. Relationship between trajectories of trunk fat mass development in adolescence and cardiometabolic risk in young adulthood, Obesity 2011 19:1699-1706

Robinson, JL, Salvadori, MI, Canadian Pediatric Society Infectious Diseases and Immunization Committee (including Martin, SM), Management of community-associated methicillin-resistant Staphylococcus aureus skin abscesses in children, Paediatrics and Child Health, 2011 16:115-116.

McDonald, J, Moore, D, Canadian Pediatric Society Infectious Diseases and Immunization Committee (including Martin, SM), FluMist vaccine: Questions and Answers. Paediatrics and Child Health, 2011 16:31.

Seshia SS, Huntsman RJ, Lowry NJ, Seshia M, Yager JY, Sankaran K. Neonatal Seizures: diagnosis and management. Chinese Journal of Contemporary Pediatrics 2011 13:81-100

Huntsman RJ, Lemire EG, Voll C, Wiebe S, Lowry NJ. Neuroimaging and Neurophysiology Studies in Carriers of Cree Leukoencephalopathy. Can J Neurol Sci 2011 38:347-348

Dyck RF, Bingham WT, Lim H, Jiang Y, Osgood ND. Decreased urine albumin:creatinine ratios in infants of diabetic mothers: Does exposure to diabetic pregnancies alter fetal renal development?, ‚Journal of Developmental Origins of Health and Disease 2011 2:265-271

Seshia S, Bingham WT, Kirkham FJ, V Sadanand: Nontraumatic coma in children and adolescents: Diagnosis and management, Neurol Clin 2011 29:1007-1043

Robertson CM, Sauve RS, Joffe AR, Alton GY, Moddemann DM, Blakley PM, Synnes AR, Dinu LA, Harder JR, Soni R, Bodani JP, Kakadekar AP, Dyck JP. Human DG, Ross DB, Rebeyka IM. The registry and follow-up of complex pediatric therapies program of Western Canada: A mechanism for service, audit and research after life-saving therapies for young children. Cardiology Research and Practice, Volume 2011

Bordeleau L, Lipscombe L, Lubinski J, Ghadirian P, Foulkes WD, Neuhausen S, Ainsworth P, Pollak M, Sun P, Narod SA; Hereditary breast cancer clinical study group (including E. Lemire). Diabetes and breast cancer among women with BRCA1 and BRCA2 mutations. Cancer. 2011 117:1812-8.

Huntsman RJ, Lemire EG, Voll CL, Wiebe S, Lowry NJ. Neuroimaging and neurophysiology studies in carriers of Cree Leukoencephalopathy. Canadian Journal of Neurological Sciences. 2011 (38):347-348.

Pierce CW, Hull PR, Lemire EG, Marciniuk DD. Birt-Hogg-Dube syndrome: an inherited cause of spontaneous pneumothorax. Canadian Medical Association Journal. 2011 [Epub ahead of print]

Badea I, Virtanen C, Verrall RE, Rosenberg A,Foldvari M. Effect of topical interferon-g gene therapy using Gemini nanoparticles on pathophysiological markers of cutaneous scleroderma in Tsk/+ mice. Gene Therapy advance online publication, 10 November 2011

Erlandson MC, Sherar LB, Baxter-Jones AD, Jackowski SA, Ludwig-Auser H, Arnold C, Sankaran K. Preterm birth and adolescent bone mineral content Am J Perinatol. 2011 28:157-63.

Please keep us informed. If you have published or presented your research recently please let us know so the work can be reported in a future issue of The Newsletter.

FEATURED RESEARCHER: Dr. Natalie Shiff

Dr. Natalie Shiff joined the Department of Pediatrics, Division of Rheumatology in October 2010. Originally from Toronto, Dr. Shiff completed her undergraduate degree at the University of British Columbia, following which she attended medical school at the University of Calgary and undertook her residency in Pediatrics at Memorial University in Newfoundland. Natalie completed a Pediatric Rheumatology subspecialty residency at BC Children's Hospital and then a Masters of Health Sciences Degree also at UBC. Natalie has a particular interest in health services research, which she recognizes to be a critical component of effective healthcare. Dr. Shiff recently received a Saskatchewan Health Research Foundation New Investigator Award for a project titled: *Validation of Administrative Data Diagnoses of Chronic Childhood Arthritis in Saskatchewan.* Dr. Shiff is involved in local and national pediatric rheumatology research studies. She is the University of Saskatchewan's representative for an international registry of nervous system vasculitis (Brainworks) and a North American vasculitis outcome study (ARCHIVe). She is our representative on a CIHR Team Grant studying relationships between juvenile arthritis and physical activity (The LEAP Study; Linking Exercise, Arthritis and Pathophysiology). Dr. Shiff is also involved in leading the reporting of results from a nationwide juvenile arthritis outcome study. Additionally, she is leading a study examining the effects of corticosteroids on body mass index in children treated with these medications for their rheumatic disease. This is part of a national study investigating effects of these drugs on bone development (the STOPP-CIS study; the Steroid Induced Osteoporosis in the Pediatric Population Canadian Incidence Study).

TRANSLATING KN  **WLEDGE IN$_2$ ACTION:** In future issues of The Newsletter we will be highlighting examples of child health research at the University of Saskatchewan that is being translated into action to improve the health and well being of children. Please let us know of pediatric research projects at the U of S that are making a difference.

AWARD WINNERS!!!
Graduate Trainees Receive Recognition for Research Excellence

Two graduate student studies focussing on juvenile arthritis took top honours at the Canadian Arthritis Network Annual Scientific Conference in Quebec City. The U of S representatives won two of the four categories for poster presentations at the conference where more than 170 abstracts were presented. While most of the presentations related to adult rheumatology, both of these projects had a pediatric focus.

Dr. Tracy Wilson-Gerwing, a post-doctoral fellow, in association with Drs. David Cooper, Tawni Silver and Alan Rosenberg presented her research titled: **Differences Between Juvenile and Adult Rodents in a Model of Experimental Arthritis.** The presentation won top honours in the Immunology and Inflammation Category.

There are apparent differences between adult and childhood arthritis. Differences include the observations that children's bones are still growing and their immune system is not yet mature. Unfortunately, until now, basic science research into arthritis interventions have treated children and adults with arthritis as equals. The current research serves to correct this oversight and demonstrates that, in an experimental model of arthritis, juveniles and adults respond differently. Preliminary data demonstrate distinct differences between juvenile and adult rodents with arthritis. Juveniles developed arthritis earlier than their adult counterparts, had a shorter time to onset of the second paw, and spent fewer days with a Maximal Daily Arthritis Score. Overall, juveniles coped better with the arthritis than did the adults. Bone scans (micro computed tomography, digital x-ray and ultrasound) and tissue scans (ultrasound) also indicated differences between the degree and placement of arthritis between the two age groups. For the first time, this research identifies important differences between juveniles and adults in a model of experimental arthritis and provides a model for testing the efficacy of arthritis interventions in juvenile versus adult rodents eliminating the need to extrapolate data from the adult population to the juvenile population.

Susan Tupper, a doctoral student, in association with Drs. Punam Pahwa, Jen Stinson and Alan Rosenberg presented her research titled: **How does pain change during the day for youth with arthritis?** The presentation won top honours in the Health Services Category.

The project investigated how arthritis pain changed during the day. Using an electronic diary, 112 youth aged 8 to 18 years with juvenile idiopathic arthritis answered a brief survey about their arthritis pain 3 times per day for 7 days. The findings of this study show that pain intensity varies throughout the day for youth with arthritis and the pattern of fluctuation varies for males and females and for the different types of juvenile arthritis. This new knowledge will help design better research studies and education programs for youth with arthritis. More research is needed to understand why pain patterns are different for these groups. It may be because of underlying disease processes or time varying factors, such as physical activity. Health care providers, such as pediatric rheumatologists and physical therapists will be able to use the findings of this study when providing education to patients and their families about the typical pain experience.

See further details about our award winners and their projects at: http://announcements.usask.ca/news/archive/2011/11/u_of_s_research_58.html

If you or someone you know at the University of Saskatchewan has been recognized for achievements in child health related research please let us know by contacting the Pediatric Research Office.

Did you know…

…… the College of Medicine offers a **Clinician Investigator Program** (CIP). See details at: http://www.medicine.usask.ca/research/clinical-programs/clinical-program-files/CIP-2011. Watch for a CIP feature in the next issue of The Newsletter.

OUR PARTNERS

Expert and dedicated care for children through highly productive health research is a well-established tradition in Saskatchewan. The Department of Pediatrics, University of Saskatchewan, was established more than 50 years ago and is currently undergoing expansion. New faculty members with varied interests and expertise are collaborating with scientists from many different disciplines to initiate children's health research programs. This research is crucial to increase knowledge and understanding of childhood diseases, develop new forms of therapy, and promote more effective prevention strategies.

The Children's Health Research Trust Fund (CHRTF) was established by members of the Department of Pediatrics in 1983 to help support child health research. Many generous donors have contributed to the Fund. As all funds donated to The CHRTF are endowed funds, CHRTF has continued to grow to become an important partner in helping to advance research in the Department of Pediatrics.

For further information about the CHRTF and view the CHRTF brochure please go to: http://www.medicine.usask.ca/pediatrics/research/CHRTF/CHRTFBrochureOnePage.pdf

SASKATOON HUB CITY OPTIMIST CLUB SUPPORTS PEDIATRIC RESEARCH

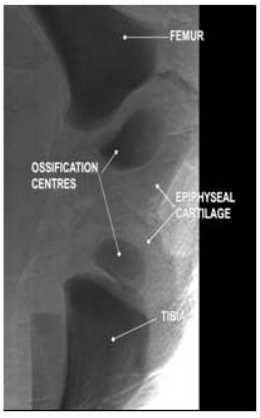
The Saskatoon Hub City Optimist Club has made a generous contribution to the Children's Health Research Trust Fund to create the Optimist Club Research Fund. This contribution is consistent with the Optimist Club's mission to improve the lives of children. The Hub City Optimist Club is dedicated to "Bringing Out the Best in Kids" through community service programs. The Children's Health Research Trust Fund (CHRTF) is delighted to have the Hub City Optimist Club as a partner in pursuing better and healthier lives for children. Further information about the Saskatoon Hub City Optimist Club can be found at: http://www.hubcityoptimistclub.com/

Phil Haughn (left) and Ralph Katzman (right) of the Hub City Optimist Club presenting cheque to Alan Rosenberg of the CHRTF

LINKING WITH THE CANADIAN LIGHT SOURCE TO DEVELOP NOVEL APPROACHES TO IMAGING GROWING JOINTS

Canadian Light Source / Centre canadien de rayonnement synchrotron

Together with scientists at the Canadian Light Source, the Department of Medical Imaging, and the Vaccine Infectious Disease Organization members of the Department of Pediatrics, Division of Rheumatology, are developing innovative approaches to imaging growing joints using synchrotron light. This study is the first to image growing joints using synchrotron light to generate high resolution 3-dimensional DEI CT images that demonstrate detailed joint structures and tissues. The high sensitivity to density gradients and low delivered radiation doses makes DEI imaging technology a valuable tool to study joint disease. The degree of detail, including cartilage detail, makes this technique particularly applicable to studying growing joints. Future experiments will apply DEI CT to the study of inflamed joints. The Newsletter cover photograph and the photograph on this page are images of a 4-week old piglet stifle joint showing anatomical structures in distinctive detail (cover) including vascular channels that are present in growing cartilage. The image on this page shows a lateral view of a piglet stifle (knee) joint using non-CT DEI. In contrast to conventional radiography growth cartilage can be seen clearly.



Glendon Rhoades, a Masters student, is involved in conducting this research under the supervision of Drs. Dean Chapman and Alan Rosenberg. Also involved in this project are Drs. George Belev, Sheldon Wiebe, and Adelaine Wong. You can view a video description by Glendon of this project at: www.usask.ca/research/communications/multimedia/ideas.php.

YOUR OPINION PLEASE!

The Department of Pediatrics is planning to publish The Research Newsletter on a regular basis. We would like your thoughts about the format and content of future issues of The Research Newsletter. Please complete a brief online survey by going to: https://www.surveymonkey.com/s/NQVV6SB

NAME THIS RESEARCH NEWSLETTER CONTEST!

When completing the online survey you will be invited to submit suggestions for names for the Department of Pediatrics Research Newsletter. You could be a winner!

COMING EVENTS

TRAINEE RESEARCH DAY (Tentatively scheduled for April 12th, 2012)

The Department of Pediatrics is planning to host a Child Health Trainee Research Day. The event is tentatively scheduled for April 12, 2012. The event provides an opportunity for trainees from the University of Saskatchewan who are engaged in child health related research to present their research project in an oral format. Further details will be announced in January 2011. The event is open to:

- **Residents:** Residents engaged in child health related research are encouraged to take this opportunity to present their research work. Presentations may be reports of completed research projects, projects currently being undertaken but not yet completed or conceptual ideas for future research.
- **Fellows:** Trainees pursing graduate studies (Master's, Doctoral or Post-doctoral fellows) engaged in child health related research are encouraged to take this opportunity to present their research work. Trainees from any discipline and from any University of Saskatchewan College are invited to participate.
- **Undergraduate Students:** Undergraduate students who have engaged in research projects relating to child health are encouraged to participate in this symposium.

PAWS BULLETIN BOARD AND ON-CAMPUS NEWS SOURCES OF INFORMATION

The Bulletin Board feature on PAWS and On-Campus News are helpful sources for keeping informed about coming child health related research events, lectures and visitors. The Research Newsletter will also provide a calendar of information about events of interest to child health researchers.

DID YOU KNOW ABOUT THE ANNUAL NEONATAL LECTURE?

Did you know that Dr. K. Sankaran supports an annual lectureship in the Department of Pediatrics on topics relevant to neonatology? As a result of Dr. Sankaran's generosity the Department of Pediatrics has been able to invite eminent visiting lecturers to the University of Saskatchewan. This year's visiting lecturer, Dr. R. Dhanireddy, Professor and Chief, Division of Neonatology, University of Tennessee presented a superb lecture titled: "Human Milk in Health and Disease: Mama Knows Best". Watch for information about next year's Neonatal Lecture and look for a feature article on Dr. Sankaran's own illustrious research career in a future issue of The Newsletter.