

# Canadian Neuroethics Report 2008

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Novel Tech Ethics, Canadian Neuroethics Report 2008

[http://www.noveltechethics.ca/site\\_neuro.php?page=351](http://www.noveltechethics.ca/site_neuro.php?page=351)

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## Neuroethics Research

### *CIHR – New Emerging Teams (NET)*

#### **Neuroimaging Ethics: From Theory to Practice (2005-2010)**

**Investigators :** J. Downie, N. Kenny, B. Magwood, K. Malisza, A. Newman, E. Racine, M. Schmidt, D. Yu, M. Hadskis

**Funder:** Canadian Institutes of Health Research

This NET focuses on paediatric Magnetic Resonance Imaging (MRI) research because it has been established as one of the safest methods for anatomical imaging. Its place in our hospitals is unlikely to be challenged, and therefore deserves careful analysis. Our additional focus is on children because as one commentator states, "neuroimaging pediatric patients is accompanied by all the ethical dilemmas associated with neuroimaging in adults, magnified exponentially."

#### **States of Mind: Emerging Issues in Neuroethics (2006-2011)**

**Investigators :** F. Baylis, M. Bernstein, A. Fine, W. Glannon, J. Kimmelman, E. Racine, L. Reid

**Collaborators:** J. Drake, C. Elliott, D. Healy, S. LeBris, M.P. McAndrews, J.S. Robert, S. Wildeman.

**Funder:** Canadian Institutes of Health Research

The States of Mind NET is a platform for expanding and extending our understanding of what belongs in the emerging field of "Neuroethics." Beyond research ethics, beyond the ethics of clinical care, lie questions about the transformations of human identity and society that may be signaled by current and emerging incursions into the brain.

### ***Other Research***

#### **Advanced neuroimaging: Ethical, legal and social issues (2003-2012)**

**Investigators:** J. Illes

**Collaborators:** M. Cynader, E. Frank, P. Reiner, E. Rasmussen, A. Young

**Funder:** National Institutes of Health

In the fifth year of funding this initiative has three specific projects with the goal of identifying and addressing the interactions of neuroscience using citation pattern analysis:

Project 1: Integration of neuroethics into neuroscience using citation pattern analysis.

Project 2: Incentives and barriers for integrating neuroethics into neuroscience using brain mapping-neuroimaging, imaging genomics and neurostimulation – as the model.

Project 3: Patients' attitudes to gene hunting and testing and neuroimaging for mental illness.

#### **Bioethics landscape of neurodegenerative diseases research and treatment (2007-2009)**

**Investigator:** J. Illes

**Funder:** Foundation for Ethics and Biotechnology

This study explores scientists' attitudes and perspectives regarding ethical issues in translational research in neurodegenerative disease and regenerative medicine.

#### **Canada Research Chair in Neuroethics (2007-2014)**

Dr. Judy Illes is Professor of Neurology and Canada Research Chair in Neuroethics at the University of British Columbia. Dr. Illes directs the National Core for Neuroethics at UBC and a research team devoted to ethical, legal, social and policy challenges specifically at the intersection of neuroscience and biomedical ethics.

#### **Clinical Neuroethics (2008-2009)**

**Investigator:** J. Illes

**Funder:** Vancouver Coastal Health Research Institute (VCHRI)

The clinical neuroethics program is focused on medical trainees, elucidating ethical challenges prior to and during the transfer of new research capabilities to the bedside.

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## **Examination of prognostication, end-of-life decision-making and organ donation after cardio circulatory death in severely brain-injured pediatric patients (2008-2013)**

**Investigators:** E. Racine, M. Shevell, S. Shemie

**Collaborators:** B. Mazer, M. Lasberg, F. Carnevale

**Funder:** Canadian Institutes of Health Research, New Investigator Award

This project examines neuroprognostication and end-of-life decision-making in severely ill neurological patients in the new Canadian context of organ donation.

## **Examining stakeholder perspectives and public understanding of the ethical and social issues of cognitive enhancement using methylphenidate (2008-2011)**

**Investigator:** E. Racine

**Funder:** Social Sciences and Humanities Research Council, Standard research grant

This grant supports a project examining stakeholder perspectives and public understanding of the ethical and social issue associated with a commonly used neuropharmaceutical.

## **Examining the translation of neuroscience to healthcare (2007-2011)**

**Investigator:** E. Racine

**Funder:** Fonds de recherche en santé du Québec

This combined career award and operating grant supports part of the research activities of the Neuroethics Research Unit, in particular a study examining stakeholder perspectives and public understanding of the ethical and social issues of cognitive enhancement using methylphenidate (Ritalin). There is growing evidence that methylphenidate is being used by university students to improve concentration and academic performance. Our research objectives are to identify and analyze ethical, social, medical and scientific issues from the point of view of various stakeholders regarding this lifestyle use of a specific neuropharmaceutical.

## **Identifying practices, challenges and solutions for REB review of advanced neuroimaging research in Canada (2007-2009)**

**Investigators:** E. Racine, B. Pike, J. Doyon

**Collaborators:** J. Downie, J. Kimmelman

**Funder:** Canadian Institutes of Health Research

This grant will examine the new and complex ethical landscape for both researchers and Research Ethics Boards (REB) in neuroimaging. Using semi-structured interviews, questionnaires and content analysis of consent documents, Canadian neuroimaging researchers and the chairs of REB will be queried to identify existing practices and proactive strategies for evaluating research protocols.

## **Multicultural concepts of autonomy, mental well-being and cognitive decline in aging and dementia (2008-2010)**

**Investigators:** J. Illes

**Funder:** North Growth Foundation

Some First Nations groups view dementia-related cognitive decline using both biomedical and lay perspectives, others as part of normal aging, and yet others with the belief that declining cognitive behaviors are a means of communication during transition from one life to the next. The perspectives held in a population shape coping mechanisms and attitudes both by individuals and their community about when medical treatment should be sought. By gaining an understanding about such culturally-relevant aspects of aging and dementia, we can develop neuroethics models to bridge existing science and social divides that today jeopardize truly relevant and respectful care.

## **Neuroethics for British Columbia (2008-2009)**

**Investigators:** J. Illes

**Collaborator:** P. Reiner

**Funder:** Michael Smith Foundation for Health Research

This award supports the creation of a team focused on working with practicing neuroscientists, physicians and clinical researchers, ethicists, and health policy-makers in BC to ensure that advances in neuroscience are aligned with societal and individual human values. The team will work towards identifying educational,

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research and clinical needs in neuroethics in BC, and encouraging collaboration between additional teams involved in complementary research activities.

## **Therapeutic Hopes and Ethical Concerns (2005-2009)**

**Investigators:** F. Baylis, M. Bernstein, A. Fine, J. Kimmelman, L. Reid

**Collaborator:** J.S. Robert

**Funder:** Canadian Institutes of Health Research

This grant examines gene transfer for glioblastoma and stem cell transplantation for Parkinson's Disease as case studies in the ethics of novel neurological interventions. Policy recommendations will be examined and formulated in issues relating to the movement from preclinical to clinical research, including the creation of chimeras as intermediate model systems and the ethics of surgical innovation. The nature of personal identity and its disruption through neurological intervention will be considered and conclusions drawn for the formulation of consent forms and consent processes for ethical research in this area.

## ***Trilateral Research Initiative***

This Neuroethics Initiative is a trilateral funding measure by three governmental funding bodies: the Institute of Neuroscience, Mental Health and Addiction of the Canadian Institutes of Health Research (CIHR-INMHA, Canada); the Academy of Finland (AF) and the Federal Ministry of Research and Education, Germany (BMBF) together with the Projektträger in DLR (DLR). It aims to bring together relevant and competitive researchers and research teams from Canada, Finland and Germany to design and carry out jointly organized research projects in the field of neuroethics. The collaborative research projects must involve active communication and cooperation between the participating researchers.

## **Ethical, legal and social aspects of deep brain stimulation. Health, quality of life and personal identity. (2008-2011)**

**Investigators:** C. Woopen, L. Timmermann, **E. Moro**, J. Kuhn, **M.J. Zurowski**, C. Katzenmeier, K.W. Anstey

**Collaborators:** G.R. Fink, J. Klosterkötter, P.A. Tass, V. Sturm

Deep brain stimulation (DBS) is becoming an effective standard surgical treatment for several movement disorders and psychiatric patients. Although able to significantly improve motor and non-motor signs, DBS surgery can have several complications and side effects. This research will explore the impact of ethical, legal and social aspects of DBS on patients with movement and psychiatric disorders. Health, quality of life and personal identity as empirical dimensions will be investigated in Canadian and German patients undergoing DBS for Parkinson's disease, dystonia, Tourette's syndrome, obsessive-compulsive disorder and behavioral problems. Ethical aspects concerning DBS and its impact on dimensions of acting persons will also be investigated in the different groups of DBS patients. Additionally, specific legal aspects of DBS, such as prerequisites for treatment, requirements of counseling, informed consent, medical malpractice will be studied.

## **Neuroethics Initiative: NeuroSCAN NeuroScienceAndNorms: Ethical and legal aspects of norms in neuroimaging (2008-2011)**

**Investigators:** **T. Caulfield**, H. Walter, T. Spranger, T. Takala

This three year project will investigate the normative dimension of the neurosciences of the mind from an international perspective and will incorporate various elements including philosophical, ethical, legal and normative analyses.

## **Neuroethics and chronic disorders of consciousness: investigating new challenges for health care decision making in the context of neuroscience innovation (2008-2011)**

**Investigators:** **E. Racine**, R.J. Jox, J. Raikka, G.D. Barasio

This project will investigate healthcare providers' knowledge of chronic disorders of consciousness and their attitudes toward end-of-life decision-making in a changing neuroscience context.

## **Normality, normalization and enhancement in the neurosciences: Ethical, sociocultural and neuropsychiatric aspects of cognitive enhancement (2008-2011)**

**Investigators:** T. Metzinger, P. Reiner, K. Lieb, N.W. Paul

This project is a consortium of five distinct projects. The Canadian project, *International neuroethics: Enhancement, Drugs and Devices*, is led by Prof. Peter Reiner VMD, PhD, National Core for Neuroethics, Department of Psychiatry & Brain Research Centre, University of British Columbia, Vancouver, Canada. The primary aims of this project are to understand the attitudes of health professionals towards neural enhancement and to determine the ethical principles which they rely upon for their decision-making. To accomplish these objectives, a survey on Enhancement, Drugs & Devices will be administered to practicing health professionals (nurses and physicians) and students in those disciplines in both Canada and Germany. This survey has been previously validated and run at the University of Zulia in Maracaibo, Venezuela, in collaboration with Stanford University, USA, and will be launched in Fall 2007 both at Stanford and in Japan (in collaboration with Tamami Fukushi at the Japan Science & Technology Agency). Prior cross-national, cross-cultural studies of issues such as end-of-life care (Yaguchi et al., 2005; Lago et al., 2007) and brain death (Kimura, 1998; Bowman & Richard, 2003) have shown that fundamental differences in attitudes about issues in bioethics exist as a function of cultural background, nationality, economy, education, and religion. By extending the survey to Canada and Germany, countries with unique cultural heritages and health care infrastructures, we will develop a representative dataset from which we will be able to make comparisons about attitudes towards brain enhancement technology across North and South America, Europe, and Asia.

## **Research Hubs**

### ***Canadian Neuroethics Interest Group***

In June 2007, at the initiative of Dr. Eric Racine, the Canadian Neuroethics Interest Group was created at the Canadian Bioethics Society (CBS) annual meeting. The group met again at the June 2008 CBS annual meeting to discuss future priorities and projects. The Canadian Neuroethics Interest Group publishes a bi-weekly newsletter, *Brainstorm*, which features neuroethics events, literature, profiles, announcements and opportunities.

### ***IRCM Neuroethics Research Unit***

[www.ircm.qc.ca/neuroethics/en/](http://www.ircm.qc.ca/neuroethics/en/)

The Institut de recherches cliniques de Montréal (IRCM) is a non-profit organization devoted to understanding the causes and mechanisms of diseases in order to find diagnostic tools and means of prevention and treatment and, training tomorrow's scientists. The Neuroethics Research Unit is committed to training a new generation of students and researchers in neuroethics through the conduct of collaborative interdisciplinary research within Montreal's unique neuroscience and bioethics environment.

### ***Montreal Neuroethics Network***

The Montreal Neuroethics Network promotes neuroethics training, education and dialogue by exposing various audiences to neuroethics issues; fostering collaboration and mutual learning to ensure Montreal's leadership in addressing ethical and social issues in neuroscience and healthcare delivery through inter-institutional collaborations. The Network was created in 2007 and has now co-hosted over a dozen neuroethics lectures across institutions featuring local and international speakers. The Network will discuss its plans for the future in November this year.

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## ***National Core for Integrated Neuroethics in Canada***

[neuroethics.ubc.ca](http://neuroethics.ubc.ca)

With the remarkable pace of advances in the neurosciences, ethical, legal, policy and social issues are garnering significant attention in both the academic community and the eyes of the general public. Historically, consideration of the social implications of such frontier technology lagged the development of the technology itself. The vision for the National Core for Neuroethics at the University of British Columbia is to tackle these challenges head-on, working hand-in-hand with practicing neuroscientists to ensure the close alignment of innovation with societal and individual human values. The National Core for Neuroethics at the University of British Columbia was established in August 2007, with generous support from Canadian Institutes of Health Research INMHA, Canadian Foundation for Innovation (CFI), British Columbia Knowledge Development Fund (BCKDF), Brain Research Centre (BRC at UBC) and the Canada Research Chairs program.

## ***Neuroethics Net***

[www.neuroethics.ca](http://www.neuroethics.ca)

The Neuroethics New Emerging Team (NET) was created in 2005 in response to developing neuroscience technology. The NET is funded by the Canadian Institute of Health Research, Institute of Neurosciences, Mental Health and Addiction. The NET is led by Dr. Jocelyn Downie at Dalhousie University and is split into three projects, each researching different aspects of the legal and ethical issues raised by the paediatric use of Magnetic Resonance Imaging (MRI).

## ***Novel Tech Ethics – Intellectual Commons***

[www.novelttechethics.ca](http://www.novelttechethics.ca)

The brain is regarded as that which makes us unique as individuals and as a species. Recent developments in brain imaging and pharmacology as well as new surgical procedures such as deep brain stimulation and the transplantation of stem cells have transformed our relationship to our brains. The field of neuroethics has emerged in order to address these new possibilities of neuroscience. Neuroethics is a growing area of expertise for the Novel Tech Ethics Research Team, based at Dalhousie University, Halifax, Canada, under the leadership of Françoise Baylis.

## **Invitational Neuroethics Workshops**

### ***Neuroethics Debate***

March 2008

Sponsored by the Neuroethics NET grant, the debate focused on the ethical issues generated by developments in neuroscience and neurotechnology. It was recorded and made available to the public through the website intending particularly for it to be used as an educational tool for high school and undergraduate courses.

### ***Free Will and Neuroscience***

May 9 & 10, 2008, Banff, Alberta

Attendees: Walter Glannon PhD, University of Calgary  
James Blair PhD, National Institute of Mental Health, Bethesda, Maryland  
Paul Ford PhD, Cleveland Clinic Foundation  
Neil Levy PhD, University of Melbourne  
Mary Pat McAndrews PhD, University Health Network  
Al Mele PhD, Florida State University  
Stephen Morse AB EdM JD PhD, University of Pennsylvania Law School  
Eric Racine PhD, Institut de Recherches Cliniques de Montreal  
Sheila Wildeman LLB, Dalhousie University

### ***Inauguration of the National Core for Neuroethics at UBC***

July 2008, Vancouver, BC

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## ***Deep Brain Stimulation***

September 26 & 27, 2008 Halifax, Nova Scotia

Attendees: Françoise Baylis PhD FRSC, Dalhousie University  
Emily Bell MSc PhD, Institut de Recherches Cliniques de Montreal  
Hillel Braude MD PhD, McGill University  
Jens Clausen Dr.rer. nat, University of Tuebingen  
Alan Fine VMD PhD, Dalhousie University  
Joseph Fins MD FACP, Weill Cornell Medical College  
Walter Glannon PhD, University of Calgary  
Michael Hadskis BSc LLB LLM, Dalhousie University  
Jonathan Kimmelman PhD, McGill University  
John Maher MA MD FRCPC, Whitby Mental Health Centre  
Eric Racine PhD, Institut de Recherches Cliniques de Montreal  
Lynette Reid PhD, Dalhousie University  
Marya Schechtman PhD, University of Illinois, Chicago  
Nicholas Schiff MD, Weill Cornell Medical College  
Sheila Wildeman MA LLB, Dalhousie University

## **Public Education Activities**

### ***States of Mind: A Film Series on the Ethics of Mental Health***

A second States of Mind film series was hosted by Novel Tech Ethics in January and February 2008. For four consecutive weeks, an 'entertainment' film featuring an aspect of mental illness was screened: *Away From Her*, *Awakenings*, *What's Eating Gilbert Grape* and *Thumbsucker*. Each screening was followed by a panel discussion including a neuroethicist, a medical expert and a patient society representative. Novel Tech Ethics will host the third annual States of Mind film series in January and February 2009.

### ***Lessons From the Injured Brain***

Joseph JH. Fins, leading Neuroethicist, Chief of the division of Medical Ethics at Weill Cornell Medical College gave a public lecture on September 25, 2008 in Halifax, Canada. Ever since the case of Karen Ann Quinlan, the vegetative state has been linked to the right to die. New scientific findings, however, suggest that some patients who may appear vegetative are in fact minimally conscious and have the capacity for functional improvement. How do we preserve the right to die and still affirm the right to care for patients with severe brain injury who may harbour the prospect of recovery? How do we avoid the ideological entanglements of Schiavo and have science inform our deliberations about research and care? In *Lessons from the Injured Brain: Bioethics meets Neuroscience*, Dr. Joseph Fins explored the biology and bioethics of disorders of consciousness from his perspective as an investigator in this field trying to improve the lot of patients and families touched by severe brain injury.

### ***Brain Awareness Week 2008 – Rage for Order***

An Oliver Sacks film on autism was screened at the Royal Bank Theatre in Halifax, Canada and followed by a public discussion with the audience and a Novel Tech Ethics team member, a clinical neuropsychologist and the program director at the Nova Scotia Provincial Autism Centre.

## **Conference Planning**

### ***Brain Matters: New Directions in Neuroethics***

International Neuroethics Conference  
September 24, 26, 2009 Halifax, Nova Scotia, Canada

This conference will focus on current and emerging ethical issues associated with rapid scientific and clinical advances in brain imaging, psychopharmacology, and new surgical procedures such as deep brain stimulation and stem cell transplantation.

The Conference program includes 6 plenary sessions. To date, 4 speakers have been confirmed: James Bernat, Professor of Medicine, Psychiatry and Neurology at the Dartmouth-Hitchcock Medical Center; David

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Healy, Director of the North Wales sub-department of Psychological Medicine at Cardiff University; Walter Glannon, Canada Research Chair in Medical Bioethics and Ethical Theory at the University of Calgary; and Barbara Sahakian, Professor of Clinical Neuropsychology at the University of Cambridge School of Clinical Medicine.

The members of the conference planning committee are:

Françoise Baylis (Co-Chair) Canada Research Chair in Bioethics and Philosophy, Professor in the Faculties of Medicine, and Arts and Social Sciences (Dalhousie University), elected Fellow of the Royal Society of Canada and elected Fellow of the Canadian Academy of Health Sciences

Jocelyn Downie (Co-Chair) Canada Research Chair in Health Law and Policy, Professor in the Faculties of Law and Medicine, Faculty Associate in the Health Law Institute (Dalhousie University)

Walter Glannon Canada Research Chair in Medical Bioethics and Ethical Theory, Associate Professor of Philosophy and Community Health Sciences (University of Calgary)

Judy Illes Canada Research Chair in Neuroethics, Professor of Neurology, Adjunct Professor at the School of Population and Public Health, Director of the National Core for Neuroethics (University of British Columbia)

Steven Laureys Head of the Coma Science Group, Cyclotron Research Center (University of Liège) Head of Clinics, Department of Neurology (Liège University Hospital) Senior Research Associate at the Belgian National Fund of Scientific Research

Neil Levy Associate Professor, Centre for Applied Philosophy and Public Ethics (University of Melbourne) Editor-in-Chief, Journal of Neuroethics

Eric Racine Director of the Neuroethics Research Unit, Institut de recherches cliniques de Montréal, Assistant Professor-Research, Department of Medicine (University of Montreal) Adjunct Professor in the Department of Neurology and Neurosurgery (McGill University) and affiliate member of the Biomedical Ethics Unit (McGill University)

## Publications (Selected)

### 2008

Alpert S. (2008) Brain-computer interface devices: Risk and Canadian regulations. *Accountability in Research* 15(2): 63-86

Alpert S. (2008) Neuroethics & nanoethics: Do we risk ethical myopia? *Neuroethics*, 1(1) 56-68

Bell E., Mathieu G. & Racine E. (2008) Ethics and the promises of deep brain stimulation in psychiatry. *Canadian Psychiatry Ajourud'hui*, 4(4):14

Fenton A. (2008) Buddhism and Neuroethics: The ethics of pharmaceutical cognitive enhancement. *Developing World Bioethics*, doi: 10.1111/u.1471-8847.207.00226.x

Fenton A. & Alpert S. (2008) Extending our view on using BCIs for locked-in syndrome. *Neuroethics* 1(2):119-132

Fenton A., & Krahn T. (2008) Who's to regret, what's to regret? *American Journal of Bioethics*, 8:2, 42-43.

Hadskis M., Kenny N., Downie J., Schmidt M. & D'Arcy R. (2008) Therapeutic misconception: A threat to valid parental consent for paediatric neuroimaging research. *Accountability in Research* 15:3, 133-151

Illes J. & Chin V.N. (2008) Bridging philosophical and practical implications of incidental findings in brain research. *Journal of Law, Medicine and Ethics*, 36(2):298-304

Illes J., Kirschen M.P., Edwards E., Bandettini P., Michael D.B., Ford P.J., Glover, G.H., Kulynych J., Macklin R., Wolf S.M., Grabowski T. & Seto B. (2008) Practical approaches to incidental findings in brain imaging research. *Neurology* 70(5): 384-390

Kaposy C. (2008) Will neuroscientific discoveries about free will and selfhood change our ethical practices? *Neuroethics*, DOI 10.1007/s12152-008-9020-x.

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- Knifed E., July J., & Bernstein M. (2008) Neurosurgery patients' knowledge and feelings about the role of residents in their care: A qualitative case study. *Journal of Neurosurgery* 108:287-291
- Lombera S. & Illes J. (2008) International dimensions of neuroethics. *Developing World Bioethics*, DOI 10.1111/j.1471-8847.2008.00235x
- Maibom H. (2008) The Mad, the bad, and the psychopath. *Neuroethics*, 1(3) 167-184
- Master Z., McLeod M. & Mendez I. (2008) Benefits, risks and ethical considerations in translation of stem cell research to clinical applications in Parkinson's disease. *Journal of Medical Ethics* 33(3):169-173
- Meegan D. V. (2008) Neuroimaging techniques for memory detection: Scientific, ethical and legal issues. *American Journal of Bioethics Neuroscience*, 8, 9-20
- Racine E. (2008) Which naturalism for bioethics? A defense of moderate naturalism. *Bioethics* 22(2): 92-100
- Racine E. (2008) Enriching our views on clinical ethics: Results of a qualitative study of the moral psychology of healthcare ethics committee members. *Journal of Bioethical inquiry*, 5:57-67
- Racine E., Amaram R., Seidler M., Karczewska M. & Illes J. (2008) Media coverage of the persistent vegetative state and end-of-life decision-making: A case analysis of Terri Schiavo. *Neurology*, 71:1027-1032
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- Racine E., DuRousseau D. & Illes J. (2008) Ethical issues in performance-enhancing technologies: From bench to headline. *Technology* 11:37-54
- Racine E. & Illes J. (2008) Neuroethics for clinicians: Ethical challenges of directly marketed frontier neurotechnology. In P. Singer (Ed.) *Bioethics for Clinicians*, Cambridge University Press, Cambridge, UK.
- Reid L. & Krahn T. (2008) Minimal risk in Canada's Tri-Council Policy Statement. *Health Law Journal* 15:469-513
- Vierre E., Baylis F., & Downie J. (2008) Promises and perils of cognitive performance tools: A dialogue. *Technology* 2(1): 9-25
- Wolf S.W., Lawrenz F., Nelson C.A., Kahn J.P., Cho M., Clayton E., Fletcher J., Georgieff M., Hammerschmidt D., Hudson K., Illes J., Kapur V., Keane M., King R., Koenig B., LeRoy B., McFarland E., Paradise J., Parker L., Terry S., Van Ness B. & Wilfond B. (2008) Managing incidental findings in human subjects research. *Journal of Law, Medicine and Ethics* 35(2):219-48

## **Forthcoming**

- Baylis F. Animal eggs for human embryonic stem cell research: A path not worth taking. *American Journal of Bioethics*
- Baylis F. Gene transfer for glioblastoma. In UNESCO, *Ethics in Research*, Haifa: UNESCO
- Bell J. Propranolol, post-traumatic stress disorder and narrative identity. *Journal of Medical Ethics*
- Caulfield T. & Ogbogu U. Biomedical research and the commercialization agenda: A review of main considerations for neuroscience. *Accountability in Research*
- Fenton A., Meynell L. & Baylis F. Ethical challenges and interpretive difficulties with non-clinical applications of pediatric fMRI. *American Journal of Bioethics Neuroscience*
- Fins J., Illes J., Bernat J.L., Hirsch J., Laureys S. & Murphy E.R. Neuroimaging and disorders of consciousness: Envisioning an ethical research agenda. *American Journal of Bioethics: Neuroscience*
- Glannon W. Neurostimulation and the minimally conscious state. *Bioethics*
- Glannon W. Deep-Brain stimulation for depression. *HEC Forum*
- Glannon W. Moral responsibility and the psychopath. *Neuroethics*
- Glannon W. Psychopharmacological enhancement. *Neuroethics*
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Illes J. Identifiable neuro ethics challenges to the banking of neuro data. *Minnesota Journal of Law, Science and Technology*

Illes J. Trends in U.S. autism research funding. *Journal of Autism and Developmental Disorders*

Illes J. Medicine, neuroscience, ethics and society: *The Tanner Lectures on Human Values*, University of Utah Press.

Illes J. & Kirschen M.P. Incidental neuroradiological findings. In *Encyclopedia of Imaging*, Springer-Verlag, Heidelberg, Germany

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