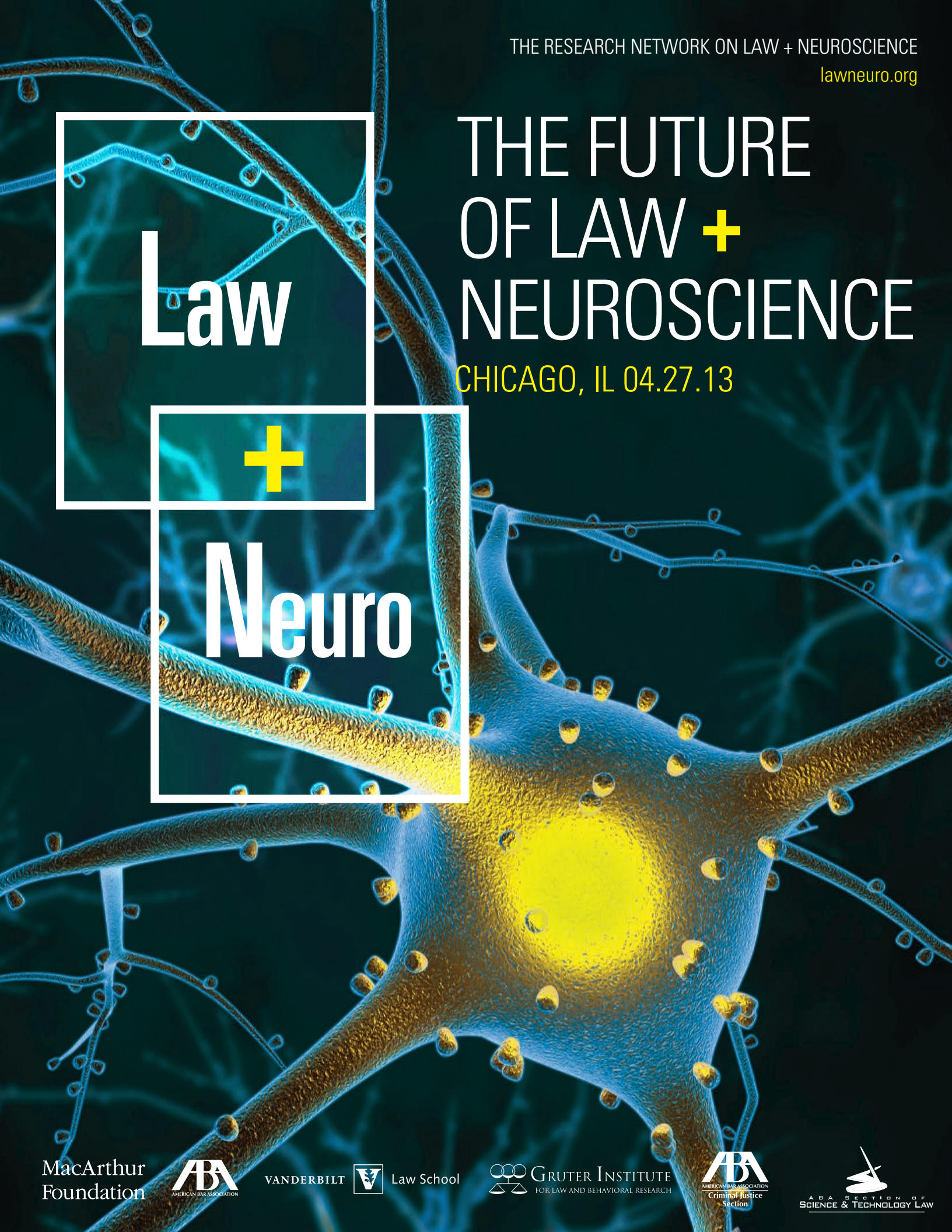

THE RESEARCH NETWORK ON LAW + NEUROSCIENCE
lawneuro.org
THE FUTURE OF LAW + NEUROSCIENCE
CHICAGO, IL 04.27.13
Law
+
Neuro
MacArthur Foundation
AMERICAN BAR ASSOCIATION
VANDERBILT Law School
GRUTER INSTITUTE FOR LAW AND BEHAVIORAL RESEARCH
AMERICAN BAR ASSOCIATION Criminal Justice Section
ABA SECTION OF SCIENCE & TECHNOLOGY LAW

MacArthur Foundation Research Network on Law and Neuroscience · American Bar Association
Vanderbilt Law School · The Gruter Institute for Law and Behavioral Research
ABA Criminal Justice Section · ABA Science & Technology Section

The Future of Law and Neuroscience

Conrad Chicago Hotel
Chicago, IL
April 27, 2013

Conference Briefing Materials

Note: This version of the Briefing Materials was made public on July 25, 2013. Links to conference materials may require a site subscription in order to download full content. Any questions about these materials should be directed to the MacArthur Foundation Research Network on Law and Neuroscience (www.lawneuro.org, 615-322-6047).

Contents

I. Conference Schedule

The Future of Law and Neuroscience

Friday, April 26, 2013

5:00 – 7:00 pm **Reception** (6th Floor Pre-function area (follow signs), Conrad Chicago Hotel, 521 N Rush St., Chicago, IL 60611)

Saturday, April 27, 2013

7:30 – 8:30 am **Materials Pick-up and Breakfast Available**
(11th Floor, Magnolia Ballroom, Conrad Chicago)

8:30 am **Welcome and Introduction**

Laurel Bellows, President, American Bar Association
Julia Stasch, Vice President of U.S. Programs, John D. and Catherine T. MacArthur Foundation
Owen D. Jones, Director, *MacArthur Foundation Research Network on Law and Neuroscience*

8:50 am **Opening Remarks**

Congressman Chaka Fattah, Second District of Pennsylvania

9:00 – 10:15 am **Session 1. Brain Basics: Neuroscience and Neuroimaging for Lawyers**

Neurons to Neuroimaging
Geoffrey Aguirre, Assistant Professor, Department of Neurology, University of Pennsylvania

10:15 – 10:30 am *Break*

10:30 – 12:00 pm **Session 2. Neuroscience and Juvenile Justice**

The Teen Brain: Implications for Legal Responsibility
BJ Casey, Sackler Professor for Developmental Psychobiology, Weill Cornell Medical College, Cornell University

Reasoning from Group Data to Individual Decision-Making (G2i): Using Neuroscience to Assess Developmental Maturity
David L. Faigman, John F. Digardi Distinguished Professor of Law, UC Hastings College of Law and Associate Dean, UCSF/UC Hastings Consortium on Law, Science & Health Policy

Neuroscience and Juvenile Responsibility: Real or Rhetorical Relevance?

Stephen J. Morse, Ferdinand Wakeman Hubbell Professor of Law Professor of Psychology and Law in Psychiatry; Associate Director, Center for Neuroscience & Society, University of Pennsylvania

Discussion Moderator: ***Christopher Slobogin***, Milton R. Underwood Chair in Law, Professor of Psychiatry; Director, Criminal Justice Program, Vanderbilt University Law School

12:00 – 1:00 pm **Lunch**

1:00 – 2:30 pm **Session 3. Decision-Making**

Forensic Assessment of Client Decision-Making: Civil and Criminal Applications

Eric Y. Drogin, Department of Psychiatry, Harvard Medical School; Clinical Instructor in Psychology, Member, Program in Psychiatry and the Law, Beth Israel Deaconess Medical Center; Faculty Member, Harvard Longwood Psychiatry Residency Training Program

Brain Activity During Punishment Decisions

Owen D. Jones, New York Alumni Chancellor's Professor of Law & Professor of Biological Sciences, Vanderbilt University; Director, *MacArthur Foundation Research Network on Law and Neuroscience*

Race Bias, Decisions, and the Brain

Elizabeth A. Phelps, Julius Silver Professor of Psychology and Neural Science, New York University

Discussion Moderator: ***The Honorable Andre Davis***, Judge, U.S. Court of Appeals for the Fourth Circuit

2:30 – 3:00 pm *Break*

3:00 – 4:30 pm **Session 4. Neuroscience in the Courtroom**

Behavioral Science in U.S. Law

Nita A. Farahany, Professor of Law, Professor of Genome Sciences & Policy, Duke University

Neuroscience, Mindreading, and the Law

Hank Greely, Deane F. and Kate Edelman Johnson Professor of Law, Stanford Law School; Director, Center for Law and the Biosciences; Professor (by courtesy) of Genetics, Stanford School of Medicine; Chair, Steering Committee of the Center for Biomedical Ethics; and Director, Stanford Interdisciplinary Group on Neuroscience and Society

Discussion Moderator: ***Judith G. Edersheim***, Department of Psychiatry, Harvard Medical School; senior consultant to the Law and Psychiatry Service, Massachusetts General Hospital; Co-Director of the Center for Law, Brain and Behavior, Massachusetts General Hospital

4:30 – 4:50 pm **Key Note: The Future of Law and Neuroscience**

The Honorable Jed Rakoff, United States District Court Judge for the Southern District of New York

4:50 – 5:00 pm **Closing Remarks**

Francis X. Shen, Associate Professor, University of Minnesota Law School; Executive Director of Education & Outreach for the *MacArthur Foundation Research Network on Law and Neuroscience*

5:00 – 6:30 pm **Reception (off site: at Phil Stefani's 437 Rush; 437 N. Rush St.)**

Directions from hotel: Exit the hotel at the ground level on Rush Street turn left, and cross Illinois Street. 437 Rush is 300 feet from the hotel.

6:30 pm **Dinner (off site: at Phil Stefani's 437 Rush; 437 N. Rush St.)**

II. Participants

MacArthur Foundation

Julia Stasch, Vice President of U.S. Programs, The John D. and Catherine T. MacArthur Foundation

Laurie Garduque, Director, Justice Reform, The John D. and Catherine T. MacArthur Foundation

American Bar Association

Laurel Bellows, President, American Bar Association

Eric Y. Drogin, Department of Psychiatry, Harvard Medical School; Liaison of the Science & Technology Law Section, American Bar Association

Christopher Slobogin, Milton R. Underwood Chair in Law, Professor of Psychiatry, Director of Criminal Justice Program, Vanderbilt University; Liaison of the Criminal Justice Section, American Bar Association

MacArthur Foundation Research Network on Law and Neuroscience

Administration

Owen D. Jones, Director and *Network* Chair; New York Alumni Chancellor's Professor of Law & Professor of Biological Sciences, Vanderbilt University

Sarah Grove, Executive Assistant, Vanderbilt University Law School

Mollie Bodin Claar, Administrative Assistant, Vanderbilt University Law School

Education & Outreach Working Group

Francis X. Shen, Associate Professor, University of Minnesota Law School; Executive Director of Education and Outreach for the *Research Network*

Monika Gruter Cheney, Executive Director, Gruter Institute for Law and Behavioral Research; Senior Director of Education and Outreach for the *Research Network*

Oliver R. Goodenough, Professor of Law, Vermont Law School; Senior Director of Education and Outreach for the *Research Network*

Presenters

Geoffrey Aguirre, Assistant Professor of Neurology, University of Pennsylvania

BJ Casey, Sackler Professor and Director of the Sackler Institute at Weill Medical College, Cornell University

The Honorable Andre Davis, Judge, U.S. Court of Appeals for the Fourth Circuit

Judith G. Edersheim, Department of Psychiatry, Harvard Medical School; Senior Consultant to the Law and Psychiatry Service, Massachusetts General Hospital; Co-Director of the Center for Law, Brain and Behavior, Massachusetts General Hospital

David L. Faigman, John F. Digardi Distinguished Professor of Law, UC Hastings College of Law, Associate Dean, UCSF/UC Hastings Consortium on Law, Science & Health Policy

Nita A. Farahany, Professor of Law, Professor of Genome Sciences & Policy, and Professor of Philosophy, Duke University

Congressman Chaka Fattah, U.S. House of Representatives, 2nd District of Pennsylvania

Hank Greely, Deane F. and Kate Edelman Johnson Professor of Law, Stanford Law School; Director, Center for Law and the Biosciences; Professor (by courtesy) of Genetics, Stanford School of Medicine; Chair, Steering Committee of the Center for Biomedical Ethics; and Director, Stanford Interdisciplinary Group on Neuroscience and Society

Stephen J. Morse, Ferdinand Wakeman Hubbell Professor of Law Professor of Psychology and Law in Psychiatry; Associate Director, Center for Neuroscience & Society, University of Pennsylvania

Elizabeth A. Phelps, Julius Silver Professor of Psychology and Neural Science, New York University

The Honorable Jed Rakoff, U.S. District Judge for the Southern District of New York

III. Suggested Pre-Conference Reading & Viewing

Learning objectives. In these briefing materials, we provide a list of the learning objectives for each presentation at the *Future of Law and Neuroscience* conference. We encourage you to review these objectives in advance of the event. Optional background readings and video links are provided as well.

Video orientation. To orient you to the field of law and neuroscience, and the work of the *Research Network on Law and Neuroscience*, we invite you to watch:

- **Professor Owen D. Jones**, Director of the *Research Network*, presents on **"Lobes and Robes: An Introduction to Neuroscience for Judges."** This presentation was given at the 2011 Ninth Circuit Judicial Conference (Carlsbad, California), and is made available for viewing with permission. (running time: 23:20)

To gain a sense of current dialogue at the intersection of law and neuroscience, we encourage you to view these short videos from a much lengthier "Brains on Trial" series airing on PBS in Fall 2013:

- *What Can Neuroscience Tell Criminal Justice About Behavior?* (Interview with Joshua Greene, Harvard University)
- *How Will Neuroscience Affect Views on fMRI Lie Detection?* (Interview with Professor Henry T. Greely, Stanford University Law School)
- *How Could Neuroscience Be Helpful To Criminal Justice?* (Interview with Professor Owen D. Jones, Vanderbilt University Law School & Department of Biological Sciences)
- *Behavior, Not Brain Scans, Matters Most In Criminal Justice.* (Interview with Stephen J. Morse, University of Pennsylvania Law School)
- *What Is The Default Mode Network?* (Interview with Marcus Raichle, Washington University School of Medicine) (Part 2 of interview available here)
- *Could Neuroscience Bring Alternatives To Incarceration?* (Interview with Robert Sapolsky, Stanford University)

Finally, by way of background, you may be interested in these book chapters providing general background on law and neuroscience:

- Owen D. Jones & Francis X. Shen, *Law and Neuroscience in the United States*, in INTERNATIONAL NEUROLAW: A COMPARATIVE ANALYSIS, TADE M. SPRANGER (ED.) SPRINGER-VERLAG, 2012.

- Henry T. Greely & Anthony D. Wagner, *Reference Guide on Neuroscience*, *in* REFERENCE MANUAL ON SCIENTIFIC EVIDENCE (3 ED.) FEDERAL JUDICIAL CENTER; NATIONAL RESEARCH COUNCIL, 2011.

IV. Curriculum & Learning Objectives

The Mission and History of the Research Network on Law and Neuroscience

The Research Network on Law and Neuroscience, supported by the John D. and Catherine T. MacArthur Foundation, addresses a focused set of closely-related problems at the intersection of neuroscience and criminal justice. These include: 1) investigating law-relevant mental states of, and decision-making processes in, defendants, witnesses, jurors, and judges; 2) investigating in adolescents the relationships between brain development and cognitive capacities; and 3) assessing how best to draw inferences about individuals from group-based neuroscientific data.

The *Research Network* is an interdisciplinary collaborative initiative with two main goals: (1) to help the legal system avoid misuse of neuroscientific evidence in criminal law contexts, and (2) to explore ways to deploy neuroscientific insights to improve the fairness and effectiveness of the criminal justice system.

The MacArthur Foundation laid the cornerstones for the *Network* by drawing together several dozen of the nation's top researchers beginning in 2007 to conduct a coordinated and comprehensive investigation of basic issues at the intersection of law and neuroscience, funded by a four-year grant. In 2011, the new *MacArthur Foundation Research Network on Law and Neuroscience* began to build on those cornerstones with an interconnected program of research with three foci: Mental States, Development, and Evidence.

The Network's Education and Outreach Activities

A central component of the *Network's* mission is Education and Outreach to the legal community. The centerpiece of these Education and Outreach activities is the *Network's* Introduction to Law and Neuroscience curriculum, which is presented through events for judges, lawyers, and others in the legal and criminal justice communities. To date, the *Network* and its members have introduced over 800 judges to law and neuroscience. The *Future of Law and Neuroscience* conference uses this curriculum, with specific adaptation and emphasis for the practicing bar.

In addition to these events, the *Network* engages in a variety of additional educational activities, including:

- Distribution of introductory neurolaw materials online at: www.lawneuro.org ;
- Maintenance of a publicly-accessible, sortable, and searchable *Law and Neuroscience Bibliography* (over 900 sources) at: http://www.lawneuro.org/bibliography.php ;
- Dissemination of *Network* research findings through Knowledge Briefs;
- Publication of the first *Law and Neuroscience* coursebook, forthcoming from Aspen Publishers
- Publication of *A Primer on Criminal Law and Neuroscience*, forthcoming from Oxford University Press
- Co-sponsorship of Neuroscience Boot Camp at the University of Pennsylvania's Center for Neuroscience and Society

The Curriculum: Introduction to Law and Neuroscience

The *Research Network* has designed a curriculum to introduce neuroscience in a legally relevant way for lawyers, judges, and other actors in the legal system. The curriculum emphasizes the real-world connections that judges and lawyers are already making between neuroscience and law. The primary objectives of the program are to:

- enable participants to ask the right questions when confronted with neuroscientific evidence;
- reflect on legal doctrine and practice in light of emerging neuroscience research on legally relevant questions;
- improve the legal system through dissemination of *Network* research that may aid legal fact-finding and adjudication; and
- strengthen neuroscience research by learning from participants how research can become more legally relevant and ecologically valid.

In these ways, the program is not simply a dissemination of information, but rather a dialogue between faculty presenters and audience participants about the current status and future possibilities of neurolaw. The curriculum, only a subset of which can be reached in any given event, allows for coverage of the following topics:

1. Brain Basics: What do lawyers need to know about neuroscience and neuroimaging?
2. Brain and Behavior: What is the relationship between mind, brain, and behavior?
3. Limits and Cautions: What do brain scans really tell us?
4. Admissibility: How should the admissibility of neuroscientific evidence be assessed?
5. The Violent Brain: Why do some individuals become violent, and can we know who will be violent in the future?
6. The Adolescent Brain: How does the brain develop, how developed is the adolescent brain, and what are the legal implications that follow?
7. The Addicted Brain: Why do people become addicted, how does this affect decision-making, and what are the legal implications?
8. The Emotional Brain: How does emotion affect our decision-making?
9. The Injured Brain: How does brain injury affect behavior and mental functioning?
10. The Remembering Brain: How does human memory work and can neuroscience tools detect memories?
11. The Lying Brain: Can brain science uncover lies?
12. The Future: What future developments in neuroscience will be most salient for law?

The pages that follow present the specific aspects of this curriculum that will be covered at *The Future of Law and Neuroscience* conference.

Session 1. Brain Basics: Neuroscience and Neuroimaging for Lawyers

Presentation:

Neurons to Neuroimaging

Dr. Geoffrey Aguirre, Assistant Professor of Neurology, University of Pennsylvania

Description and Learning Objectives: Neuroscientific evidence is increasingly being proffered in U.S. courtrooms. This session will provide a concise and readily accessible introduction to human brain structure, brain function, and how structure and function are studied through modern neuroimaging techniques. Specific learning objectives include:

- Introduction to the general organization of the human nervous system, and the terms used in science and medicine to describe basic brain locations and structures.

- Explanation of how neurons communicate with one another, how this communication is related to human thought and behavior, and some of the methods employed in modern neuroscience research to study the activity of neurons in humans.

- Explanation of why an understanding of psychological processes and experimental designs is necessary to evaluate human brain function in imaging studies.

- Introduction to how functional Magnetic Resonance Imaging (fMRI) works, how it relates to other methods of studying brain function, and important limitations and cautions regarding the use and meaning of functional brain imaging evidence.

- Clarification of the types of legal inferences and conclusions that should and should not be drawn from particular types of brain science research and evaluation.

- Discussion of guiding principles and questions judges should ask in order to effectively assess neuroimaging data when proffered in a courtroom.

For additional background and reference, we recommend:

- Dr. Aguirre's presentations available online at: https://cfn.upenn.edu/aguirre/wiki/lab_presentations, including "Brain Imaging: Reality and Hype," a four-part introductory course on fMRI, and "What Lurks Behind the Brain Image: Differentiating Neuroscience from Neuro-Bunk."

- Owen D. Jones, Joshua W. Buckholtz, Jeffrey D. Schall & Rene Marois, *Brain Imaging for Legal Thinkers: A Guide for the Perplexed*, 2009 STAN. TECH. L. REV. 5 (2009).

Session 2. Neuroscience and Juvenile Justice

Presentations:

The Teen Brain: Implications for Legal Responsibility

BJ Casey, Sackler Professor for Developmental Psychobiology, Weill Cornell Medical College, Cornell University

Reasoning from Group Data to Individual Decision-Making (G2i): Using Neuroscience to Assess Developmental Maturity

David L. Faigman, John F. Digardi Distinguished Professor of Law, UC Hastings College of Law and Associate Dean, UCSF/UC Hastings Consortium on Law, Science & Health Policy

Neuroscience and Juvenile Responsibility: Real or Rhetorical Relevance?

Stephen J. Morse, Ferdinand Wakeman Hubbell Professor of Law Professor of Psychology and Law in Psychiatry; Associate Director, Center for Neuroscience & Society, University of Pennsylvania

Discussion Moderator:

Christopher Slobogin, Milton R. Underwood Chair in Law, Professor of Psychiatry; Director, Criminal Justice Program, Vanderbilt University Law School

Description and Learning Objectives: This session will provide an introduction to the adolescent brain, legal contexts in which adolescent brain science has been cited, and on-going debates about how the science of the adolescent brain should (or should not) affect culpability assessments and sentencing decisions. Specific learning objectives include:

- Introduction to the neuroscience of the adolescent brain, with a focus on legally relevant risk processing, emotional regulation, and decision-making capacities.

- Introduction to the work of the *MacArthur Foundation Research Network on Law and Neuroscience* Working Group on Adolescent Development, which is studying the neural and behavioral correlates of age differences in psychological capacities relevant to judgments of criminal responsibility.

- Introduction to the Supreme Court's use of psychology and neuroscience research in recent juvenile justice decisions: *Roper*, *Graham*, and *Miller*.

- Discussion of the challenges of reasoning from group scientific data to individualized legal decision-making, and presentation of the research of the *MacArthur Foundation Research Network on Law and Neuroscience* to address this "G2i" challenge.

- Discussion and debate about how research on the adolescent brain should, and should not, be used in legal adjudication and policymaking.

For additional background and reference, we recommend:

- BJ Casey, *The Teen Brain: Self Control*, 22 CURRENT DIRECTIONS IN PSYCHOLOGICAL SCIENCE 82 (April 2013).

- Richard J. Bonnie & Elizabeth S. Scott, *Adolescent Brain Research and the Law*, 22 CURRENT DEVELOPMENTS IN PSYCHOLOGICAL SCIENCE 158 (April 2013).

- Laurence Steinberg, *Should the Science of Adolescent Brain Development Inform Public Policy?* ISSUES IN SCIENCE AND TECHNOLOGY 67 (Spring 2012).

- David L. Faigman & John Monahan, *Group To Individual (G2i) Inference In Expert Testimony*, Working Paper of the *MacArthur Foundation Research Network on Law and Neuroscience* (Draft of February 15, 2013).

- Stephen J. Morse, *The Future of Neuroscientific Evidence*, *in* THE FUTURE OF EVIDENCE: HOW SCIENCE & TECHNOLOGY WILL CHANGE THE PRACTICE OF LAW (CAROL HENDERSON & JULES EPSTEIN, EDS. ABA 2011).

- Stephen J. Morse, *Avoiding Irrational Neurolaw Exuberance: A Plea for Neuromodesty*, 62 MERCER L. REV. 837 (2011).

- Christopher Slobogin & Mark Fondacaro, *Juvenile Justice: The Fourth Option*, 95 IOWA L. REV. 1 (2009).

- Terry A. Maroney, *Adolescent Brain Science after Graham v. Florida*, 86 NOTRE DAME L. REV. 765 (2010).

- Final Reports, *MacArthur Foundation Research Network on Adolescent Development & Juvenile Justice*.

- Kayla Pope, Beatriz Luna, Christopher R. Thomas, *Developmental Neuroscience and the Courts: How Science Is Influencing the Disposition of Juvenile Offenders*, 51 J AM. ACAD. CHILD ADOLESC. PSYCHIATRY 342 (2012).

- *Brief for the American Psychological Association, American Psychiatric Association, and National Association of Social Workers as Amici Curiae in Support of Petitioners, Evan Miller v. State of Alabama*, Kuntrell Jackson v. Ray Hobbs, Nos. 10-9646, 10-9647 (Supreme Court, January 2012).

Session 3. Decision-Making

Presentations:

Forensic Assessment of Client Decision-Making: Civil and Criminal Applications

Eric Y. Drogin, Department of Psychiatry, Harvard Medical School; Clinical Instructor in Psychology, Member, Program in Psychiatry and the Law, Beth Israel Deaconess Medical Center; Faculty Member, Harvard Longwood Psychiatry Residency Training Program

Brain Activity During Punishment Decisions

Owen D. Jones, New York Alumni Chancellor's Professor of Law & Professor of Biological Sciences, Vanderbilt University; Director, *MacArthur Foundation Research Network on Law and Neuroscience*

Race Bias, Decisions, and the Brain

Elizabeth A. Phelps, Julius Silver Professor of Psychology and Neural Science, New York University

Discussion Moderator:

The Honorable Andre Davis, Judge, U.S. Court of Appeals for the Fourth Circuit

Description and Learning Objectives: This session will provide an introduction to the use of neuroscience to understand and assess decision-making. Specific learning objectives include:

- Introduction to how the forensic mental health evaluator conceptualizes client decision-making, tests and interviews to assess it, and sees it applied in legal contexts such as competency and guardianship.

- Discussion of the present and future role of neuroscience in assessing client decision-making, with particular reference to prospects for—and limitations to—discerning the effects of dementia in civil matters and substance abuse in criminal matters.

- Introduction to research that investigates brain activity during punishment decisions.

- Introduction to the neural systems involved in processing race group information, including explicit and implicit evaluation of race groups.

- Discussion of the relationship between behavioral and neuroimaging studies of race and decision-making.

For additional background and reference, we recommend:

- Joseph H. Baskin, Judith G. Edersheim & Bruce H. Price, *Is a Picture Worth a Thousand Words? Neuroimaging in the Courtroom*, 33 AM. J.L. & MED. 239 (2007).

- Teneille Brown & Emily Murphy, *Through a Scanner Darkly: Functional Neuroimaging as Evidence of a Criminal Defendant's Past Mental States*, 62 STAN. L. REV. 1119 (2010).

- Joshua W. Buckholtz, Christopher L. Asplund, Paul E. Dux, David H. Zald, John C. Gore, Owen D. Jones & René Marois, *The Neural Correlates of Third-Party Punishment*, 60 NEURON 930 (2008).

- Owen D. Jones, Joshua W. Buckholtz, Jeffrey D. Schall & Rene Marois, *Brain Imaging for Legal Thinkers: A Guide for the Perplexed*, 2009 STAN. TECH. L. REV. 5 (2009).

- Jennifer T. Kubota, Mahzarin R. Banaji, & Elizabeth A. Phelps, *The Neuroscience of Race*, 15 NATURE NEUROSCIENCE 940 (2012).

- Jerry Kang, Judge Mark Bennett, Devon Carbado, Pam Casey, Nilanjana Dasgupta, David L. Faigman, Rachel Godsil, Anthony G. Greenwald, Justin Levinson & Jennifer Mnookin, *Implicit Bias in the Courtroom*, 59 UCLA L. REV. 1124 (2012).

Session 4. Neuroscience in the Courtroom

Presentations:

Behavioral Science in U.S. Law

Nita A. Farahany, Professor of Law, Professor of Genome Sciences & Policy, Duke University

Neuroscience, Mindreading, and the Law

Hank Greely, Deane F. and Kate Edelman Johnson Professor of Law, Stanford Law School; Director, Center for Law and the Biosciences; Director, Stanford Interdisciplinary Group on Neuroscience and Society

Discussion Moderator:

Judith G. Edersheim, Department of Psychiatry, Harvard Medical School; Senior Consultant to the Law and Psychiatry Service, Massachusetts General Hospital; Co-Director of the Center for Law, Brain and Behavior, Massachusetts General Hospital

Description and Learning Objectives: This session will review the ways in which neuroscientific evidence is already being introduced in U.S. courtrooms, and explore the ways in which memory detection, lie detection, and pain detection technology may be received by courts. Specific learning objectives include:

- Presentation of evidence on the number and types of cases in which neuroscientific evidence has already been proffered in criminal and civil contexts.

- Consideration of the ways in which courts have responded to different types of proffered neuroscientific evidence.

- Discussion of the future legal uses, and legal regulation, of brain-based detection technologies for detecting memories, lies, and pain.

- Introduction to the work of the *MacArthur Foundation Research Network on Law and Neuroscience* Working Group Deception & Recognition, which is systematically assessing the feasibility of using neuroimaging to identify and characterize the neural processes associated with lying or remembering in legally relevant contexts.

- Identification of legal and scientific challenges to the use of neuroimaging detection technologies in law.

For additional background and reference, we recommend:

- *Online video:* The Promises and Perils of Neuroscience Evidence in the Courtroom, Ninth Circuit Judicial Conference (Aug. 16, 2011) (video featuring presentations by: Owen D. Jones, Nita A. Farahany, Hank Greely, and Stephen J. Morse).

- Henry T. Greely & Anthony D. Wagner, *Reference Guide on Neuroscience*, *in* REFERENCE MANUAL ON SCIENTIFIC EVIDENCE (3 ED.) FEDERAL JUDICIAL CENTER; NATIONAL RESEARCH COUNCIL, 2011.

- Nita A. Farahany & James E. Coleman, Jr., *Genetics, Neuroscience, and Criminal Responsibility*, *in* THE IMPACT OF BEHAVIORAL SCIENCES ON CRIMINAL LAW 183 (OXFORD UNIV. PRESS, NITA A. FARAHANY, ED., 2009).

- Nita A. Farahany & James E. Coleman, Jr., *Genetics and Responsibility: To Know the Criminal From the Crime*, 69 LAW & CONTEMP. PROBS. 115 (2006).

- Nita A. Farahany, *Incriminating Thoughts*, 64 STAN. L. REV. 351, 406 (2012) and Nita A. Farahany, *Searching Secrets*, 160 U. PA. L. REV. 1239 (2012).

- Judith G. Edersheim, Rebecca Weintraub Brendel & Bruce H. Price, *Neuroimaging, Diminished Capacity and Mitigation*, *in* NEUROIMAGING IN FORENSIC PSYCHIATRY: FROM THE CLINIC TO THE COURTROOM (WILEY-BLACKWELL, JOSEPH R. SIMPSON, ED., 2012).

- Teneille Brown & Emily Murphy, *Through a Scanner Darkly: Functional Neuroimaging as Evidence of a Criminal Defendant's Past Mental States*, 62 STAN. L. REV. 1119 (2010).

- Henry T. Greely & Judy Illes, *Neuroscience-Based Lie Detection: The Urgent Need For Regulation*, 33 AM. J.L. & MED. 377 (2007).

- Anthony D. Wagner, *Can Neuroscience Identify Lies?*, *in* A JUDGE'S GUIDE TO NEUROSCIENCE 13 (SAGE CENTER FOR THE STUDY OF THE MIND, 2010).

- Jesse Rissman, Henry T. Greely & Anthony D. Wagner, *Detecting Individual Memories Through the Neural Decoding of Memory States and Past Experience*, 107 PNAS 9849 (2010).

- Francis X. Shen & Owen D. Jones, *Brain Scans As Evidence: Truths, Proofs, Lies, and Lessons*, 62 MERCER L. REV. 861 (2011).

Key Note: The Future of Law and Neuroscience

The Honorable Jed Rakoff, United States District Court Judge for the Southern District of New York

For additional background and reference, we recommend:

- Jed S. Rakoff, *Science and the Law: Uncomfortable Bedfellows*, 38 SETON HALL L. REV. 1379 (2008).

V. Biographies of Presenters

Presenters

Geoffrey Aguirre is an Assistant Professor in the Department of Neurology at the University of Pennsylvania. Dr. Aguirre is a behavioral neurologist and a neuroscientist, with a specialization in visual cognition. He has used functional MRI techniques to study cortical organization for vision since 1995 in both healthy and patient populations. Dr. Aguirre has developed several methodological advances in neuroimaging, including early characterizations of the signal and noise properties of the BOLD fMRI signal, the development of functional perfusion imaging, and the application of cryptography to develop "neural code-breaking" techniques for functional imaging. He has pushed the application of his scientific work beyond clinical questions into the realm of societal impact. Dr. Aguirre has written and lectured extensively on the topic of inferential soundness in neuroimaging technique, and worked with the Dana Foundation, Hastings Center, and MacArthur Law and Neuroscience Project to guide valid applications of neuroimaging to clinical and societal questions. He is the Associate Director of the Center for Neuroscience and Society.

Laurel Bellows, a principal of The Bellows Law Group, P.C. in Chicago, represents executives in the United States and internationally. Bellows is an experienced business lawyer counseling senior executives and corporations on employment matters, employment and severance agreements, executive compensation and workplace disputes. Her expertise in executive compensation matters also includes mid-level management compensation and benefit plans, and matters involving incentives, pensions, retirement and workforce restructuring. Bellows is currently president of the American Bar Association. Her one-year term as president began at the conclusion of the ABA Annual Meeting in August 2012. She has served as chair of the association's policymaking House of Delegates (2006-2008), the second highest elected office in the ABA. Bellows has also served as chair of the ABA Commission on Women in the Profession, and as a member of the ABA Board of Governors, where she chaired the Finance Committee. She was also president of the National Conference of Bar Presidents and chair of its Metropolitan Bar Caucus, ABA affiliates. Bellows' work in the law and her community has been recognized by many publications. *Crain's Chicago Business* lists Bellows among its annual list of Power Players; in 2006, she was named one of the 28 Power Lawyers in the City by *Chicago Magazine;* she was cited as one of Chicago's 100 Women of Influence in 1996, also by *Crain's Chicago Business;* and Bellows was listed among *Working Mother Magazine's* 25 Most Influential Working Mothers in the country in 1997. Bellows has been on the Illinois Supreme Court Commission on the Administration of Justice, and on the U.S. Senate Judicial Nominations Commission for Illinois. She has served as chair of the Chicago Network, a networking organization of diverse, professional women in the Chicago area. Bellows was the second female president of the 22,000-member Chicago Bar Association where she founded the Women's Alliance. She is admitted and qualified as an attorney and counselor of the Supreme Court of the United States and is a mediator, certified through the Institute for Conflict Management. Bellows is licensed to practice in Illinois, Florida and California. A graduate of the University of Pennsylvania and Loyola University School of Law, Bellows has practiced law for more than 30 years. She practices law with her husband, Joel, in Chicago. They have four children and four grandchildren.

BJ Casey is the Sackler Professor for Developmental Psychobiology at Weill Cornell Medical College where she holds appointments in the Departments of Psychiatry, Neurology and Neuroscience. She directs the Sackler Institute and an NIMH Center on environmental and genetic effects on learning and development. She is a world leader in brain imaging and its use in typical and atypical development. She uses brain imaging to uniquely examine transitions into and out of developmental periods such as adolescence - a period of increased risk for psychiatric illnesses. Her leadership in the application of neuroimaging to behavioral development has provided crucial tools for this field that have been widely adopted. She has exploited various imaging methods to develop fundamental and influential models of normal and abnormal brain development. Her most recent work uses human imaging and mouse genetics to identify the role of specific genes as a first step toward individualized and biologically targeted treatments of childhood disorders. She has served on several advisory boards including the NIMH Board of Scientific Counselors, NIMH Council, Scientific Advisory Board for NARSAD, the National Research Council Board of Children, Youth and Families, and IOM committees for Assessing Juvenile Justice Reform, Science of Adolescent Risk Taking, and Sports Related Concussions in Youth. She is the recipient of multiple awards and author of over 150 publications and someone who takes the training of the next generation of scientists as serious as her own research, for which she is passionate.

The Honorable Andre Davis is a judge on the United States Court of Appeals for the Fourth Circuit. Judge Davis received his B.A. in American History from the University of Pennsylvania and his JD, with honors, from the University of Maryland School of Law, where he won Best Advocate in the Myerowitz Moot Court Competition, and chaired the Honor Board. The faculty awarded him the prestigious Roger Howell Award at graduation. Upon graduation from law school, he completed one-year clerkships with Judge Frank A. Kaufman on the U.S. District Court in Baltimore and Judge Francis D. Murnaghan, Jr., on the United States Court of Appeals for the Fourth Circuit. Thereafter, Judge Davis served as an appellate attorney for the Civil Rights Division of the U.S. Department of Justice in Washington and as an Assistant United States Attorney for the District of Maryland, where he handled both civil and criminal cases. He later was in private practice and, from 1984 until 1987, he was an Assistant Professor of Law at the University of Maryland School of Law. He continues to teach as an adjunct faculty member at the law school and he also serves as a member of the law school's Board of Visitors. Judge Davis served on the District Court of Maryland for Baltimore City from 1987 through 1990 and on the Circuit Court for Baltimore City from 1990 until his appointment in August 1995 to the U.S. District Court by President Bill Clinton. Since 1994, he has been a member of the faculty of the National Judicial College. He is a frequent lecturer on aspects of civil and criminal practice for legal and judicial education and training entities. Judge Davis is a past president of the Executive Committee of the Maryland Judicial Conference and a former member of the board of directors of the Judicial Institute of Maryland. He was, for many years, a member of the Section Council on Correctional Reform of the Maryland State Bar Association. He served a one year term as the Chair of the Conference of Federal Trial Judges, one of the constituent entities within the Judicial Division of the ABA. He has served in numerous civic and professional leadership roles, including a two-year term as President of Big Brothers/Big Sisters of Central Maryland and a two-year term as President of the Legal Aid Bureau, Inc. He is a member of the board and Vice Chair of the Open Society Institute-Baltimore. He has served for ten years as chair and member of the board of Community Law and Action, Inc., a law-related high school leadership development program; and Chair of the board of the Baltimore Urban Debate League. Judge Davis has been active in numerous national and

international judicial education and Rule of Law training programs through his membership on the Judicial Conference of the United States/Committee on International Judicial Relations, the Einstein Institute for Science, Health and the Courts, and the Federal Judicial Center. He has participated in many programs, including, among others, workshops and seminars in Russia, Armenia, Poland, Ukraine, Kosovo, Swaziland, Nigeria, Uganda, South Africa, Tanzania, Mali, and Egypt. Judge Davis was nominated by President Obama to a vacancy on the United States Court of Appeals for the Fourth Circuit created by the death of Judge Murnaghan. The Senate confirmed him on November 10, 2009, and he entered on duty on November 12, 2009.

Eric Y. Drogin is a Fellow of the American Academy of Forensic Psychology, a Diplomate and former President of the American Board of Forensic Psychology, and a Diplomate of the American Board of Professional Psychology. Dr. Drogin currently holds faculty appointments with the Harvard Medical School (in the Program in Psychiatry and the Law, as a mentor in the Scholars and Medicine Program, and on the staff of the Forensic Psychiatry Service in the Department of Psychiatry at Beth Israel Deaconess Medical Center) and the Harvard Longwood Psychiatry Residency Training Program (as a course instructor and supervisor), and lectures regularly for the *Prifysgol Aberystwyth* (formerly "University of Wales") as an Honorary Professor of Psychology. Additional positions have included Chair of the American Psychological Association's Committee on Professional Practice and Standards, Chair of the APA's Committee on Legal Issues, Chair of the APA's Joint Task Force with the American Bar Association, and President of the New Hampshire Psychological Association. Dr. Drogin received his Doctor of Philosophy (Ph.D.) degree in Clinical Psychology from Hahnemann University. Dr. Drogin is a Fellow of the American Bar Foundation. His current American Bar Association roles include Chair of the Behavioral and Neuroscience Law Committee and Member of the ABA Advisory Panel. Additional positions have included Chair of the ABA Section of Science & Technology Law, Chair of the ABA Committee on the Rights & Responsibilities of Scientists, and Commissioner of the ABA Commission on Mental and Physical Disability Law. Dr. Drogin teaches on the adjunct faculty of the University of New Hampshire School of Law, and participates as an Instructor in the Harvard Law School Trial Advocacy Workshop. He received his Juris Doctor (JD) degree from the Villanova University School of Law. Having served as the Editor in Chief of the *Journal of Psychiatry and Law* and currently serving as the Co-Editor in Chief of *Psychological Injury and Law*, Dr. Drogin has authored or co-authored over 200 legal and scientific publications to date, including the books *Criminal Law Handbook on Psychiatric and Psychological Evidence and Testimony* (2000), *Civil Law Handbook on Psychiatric and Psychological Evidence and Testimony* (2001), *Mental Disability Law, Evidence, and Testimony* (2007), *Science for Lawyers* (2008), *Evaluation for Guardianship* (2010), and *Handbook of Forensic Assessment* (2011). He has lectured extensively throughout North America and in Europe, Asia, and Australia, and regularly presents continuing education seminars for attorneys and mental health professionals on such topics as forensic assessment, ethics, and professional development. Dr. Drogin's multidisciplinary practice encompasses mental health law, expert witness testimony, and trial consultation.

Judith G. Edersheim is an Assistant Clinical Professor of Psychiatry at Harvard Medical School, a senior consultant to the Law and Psychiatry Service at Massachusetts General Hospital, and Co-Director of the MGH Center for Law, Brain and Behavior (clbb.org). Dr. Edersheim graduated magna cum laude from Brown University and attended law school at Harvard, where she graduated cum laude. She was a law clerk to the Honorable Robert W.

Sweet, United States District Judge for the Southern District of New York, and practiced law at the firm of Hill and Barlow before returning to Harvard Medical School. She was an intern at the Mount Auburn Hospital and received her clinical psychiatry training at the Cambridge Hospital adult psychiatry residency program. Dr. Edersheim completed a fellowship in the Law and Psychiatry service at Massachusetts General Hospital. She is a member of the Bar of the Commonwealth of Massachusetts, is licensed to practice medicine in Massachusetts and is Board Certified by the American Board of Psychiatry and Neurology, with added qualifications in Forensic Psychiatry. Dr. Edersheim has performed a wide variety of forensic evaluations in both civil and criminal settings, including evaluations of competencies to stand trial, testamentary capacity, the capacity to make medical decisions, fitness for duty, the assessment of emotional damages, diminished capacity and criminal responsibility. She is a principal lecturer in the forensic psychiatry fellowship at Massachusetts General Hospital and teaches forensic psychiatry to adult psychiatry residents at Massachusetts and McLean Hospitals. Dr. Edersheim teaches extensively in the legal arena, including lectures sponsored by the Boston Bar Association, the Judicial Institute, and the Mental Health Legal Advisor's Committee. She had been a member of several non-profit boards, including the Mental Health Legal Advisor's Committee and the Board of Governors of Tel Aviv University. Dr. Edersheim continues to pursue her longstanding interest in the translation of psychiatric and neurologic behavior into legal settings. She has published articles on a wide variety of topics in psychiatry, neuroscience and the law.

David L. Faigman is the John F. Digardi Distinguished Professor of Law at the University of California, Hastings College of the Law and Director of the UCSF/UC Hastings Consortium on Law, Science & Health Policy. He also holds an appointment as Professor, Department of Psychiatry, School of Medicine, University of California, San Francisco. He received both his M.A. (Psychology) and J.D. from the University of Virginia. Professor Faigman clerked for the Honorable Thomas Reavley of the U.S. Court of Appeals for the Fifth Circuit. He is the author of numerous articles and essays. He is also the author of three books, *Constitutional Fictions: A Unified Theory of Constitutional Facts* (Oxford, 2008), *Laboratory of Justice: The Supreme Court's 200-Year Struggle to Integrate Science and the Law* (Henry Holt & Co. 2004) and *Legal Alchemy: The Use and Misuse of Science in the Law* (W.H. Freeman,1999). In addition, Professor Faigman is a co-author of the treatise *Modern Scientific Evidence: The Law and Science of Expert Testimony* (with Blumenthal, Cheng, Mnookin, Murphy & Sanders). The treatise has been cited widely by courts, including several times by the U.S. Supreme Court. Professor Faigman was a member of the National Academy of Sciences panel that investigated the scientific validity of polygraphs and he is a member of the *MacArthur Foundation Research Network on Law and Neuroscience*.

Nita A. Farahany is a Professor of Law, Professor of Genome Sciences & Policy, and Professor of Philosophy at Duke University. Dr. Farahany is a leading scholar on the ethical, legal, and social implications of biosciences and emerging technologies, particularly those related to neuroscience and behavioral genetics. In 2010, Farahany was appointed by President Obama to the Presidential Commission for the Study of Bioethical Issues, and continues to serve as a member. Her recent scholarship includes "Searching Secrets," 160 U. Penn. L. Rev. 1239 (2012) which explores the descriptive potential of intellectual property law as a metaphor to describe current Fourth Amendment search and seizure law and predict how the Fourth Amendment will apply to emerging technology. A related article, "Incriminating Thoughts,"

64 Stanford Law Review 351 (2012) demonstrates through modern neuroscience applications the need to redefine the taxonomy of evidence subject to the privilege against self-incrimination. She also is the editor of The Impact of Behavioral Sciences on Criminal Law (Oxford University Press), a book of essays from experts in science, law, philosophy, and policy. Farahany presents her work widely including to audiences at the Judicial Conferences for the Second and Ninth Circuits, the National Judicial College, the American Academy for the Advancement of Science, National Academies of Science Workshops, the American Academy of Forensic Sciences, the National Association of Criminal Defense lawyers, and the American Society for Political and Legal Philosophy. She received her AB in genetics, cell, and developmental biology at Dartmouth College, a JD and MA from Duke University, as well as a PhD in philosophy; her dissertation was entitled "Rediscovering Criminal Responsibility through Behavioral Genetics." Farahany also holds an ALM in biology from Harvard University. In 2004-2005, Farahany clerked for Judge Judith W. Rogers of the U.S. Court of Appeals for the D.C. Circuit, after which she joined the faculty of Vanderbilt University in law and in philosophy. In 2011, Farahany was the Leah Kaplan Visiting Professor of Human Rights at Stanford Law School. She teaches courses related to criminal law, criminal procedure, and courses at the intersection of law, science, and philosophy.

Laurie Garduque is the Director of Justice Reform at the John D. and Catherine T. MacArthur Foundation. Laurie joined the Foundation in 1991 after serving as Director of the National Forum on the Future of Children and Families, a joint project of the National Research Council and the Institute of Medicine. From 1984 to 1987, she was the Director of Governmental and Professional Liaison for the American Educational Research Association in Washington, D.C. This position followed the year she spent, from 1983 to 1984, as a Congressional Science Fellow in the U.S. Senate. From 1980 to 1985, Garduque held a faculty position as an Assistant Professor in human development at Pennsylvania State University. Garduque previously was a member of the American Psychiatric Association Foundation, Asian Americans and Pacific Islanders in Philanthropy, Grantmakers for Children Youth and Families, and the Youth Transition Funders Group Juvenile Justice Working Group, and she currently serves on the federal Center for Mental Health Services National Advisory Council, under SAMHSA. She received her bachelor's degree in Psychology and her Ph.D. in Educational Psychology from the University of California at Los Angeles

Oliver R. Goodenough is a Professor of Law and the Director of the Center for Legal Innovation at Vermont Law School, a Faculty Fellow at Harvard's Berkman Center for Internet & Society, a Research Fellow of the Gruter Institute for Law and Behavioral Research, and an Adjunct Professor at Dartmouth's Thayer School of Engineering. Professor Goodenough is an authority on the impact of neuroscience on law. He has been involved with the MacArthur Law and Neuroscience initiative since its inception, first as a Co-Director and now as a Senior Director of the Education and Outreach Program. He has published a number of works on the subject. *Law, Mind and Brain*, which he co-edited with Michael Freeman, appeared in 2009. With Semir Zeki, he edited the 2004 special issue of the *Philosophical Transactions of the Royal Society* devoted to Law and the Brain, reprinted by Oxford University Press in 2006. A co-authored review article on "Law and Cognitive Neuroscience" appeared in the 2010 Annual Review of Law and Social Science. He has

participated in fMRI experiments with Humboldt University in Berlin and the University of London.

Hank Greely is the Deane F. and Kate Edelman Johnson Professor of Law at Stanford University. He is also the Director of the Center for Law and the Biosciences; Professor (by courtesy) of Genetics, Stanford School of Medicine; Chair, Steering Committee of the Center for Biomedical Ethics; and Director, Stanford Interdisciplinary Group on Neuroscience and Society. Professor Greely specializes in the ethical, legal, and social implications of new biomedical technologies, particularly those related to neuroscience, genetics, or stem cell research. He frequently serves as an advisor on California, national, and international policy issues. He is chair of California's Human Stem Cell Research Advisory Committee and served from 2007-2010 as co-director of the Law and Neuroscience Project, funded by the MacArthur Foundation. Active in university leadership, Professor Greely chairs the steering committee for the Stanford Center for Biomedical Ethics and directs both the law school's Center for Law and the Biosciences and the Stanford Interdisciplinary Group on Neuroscience and Society. In 2007 Professor Greely was elected a fellow of the American Association for the Advancement of Science. Before joining the Stanford Law School faculty in 1985, Greely was a partner at Tuttle & Taylor, served as a staff assistant to the secretary of the U.S. Department of Energy, and as special assistant to the general counsel of the U.S. Department of Defense. He served as a law clerk to Justice Potter Stewart of the U.S. Supreme Court and to Judge John Minor Wisdom of the Court of Appeals for the Fifth Circuit.

Owen D. Jones holds the New York Alumni Chancellor's Chair in Law at Vanderbilt University, where he is also Professor of Biological Sciences. In addition, he serves as Director of the *MacArthur Foundation Research Network on Law and Neuroscience*. Jones' work, both empirical and theoretical, bridges law, biology, and behavior and is published in both scientific and legal venues. His research uses behavioral biology, behavioral economics, and brain-imaging (fMRI) to learn more about how the brain's varied operations affect behaviors relevant to law. Most recently, he co-discovered with colleagues at Vanderbilt the brain activity underlying decisions of whether to punish someone and, if so, how much. Before joining the legal academy, he clerked for Judge Thomas Penfield Jackson of the U.S. District Court for the District of Columbia and practiced law with the D.C. law firm Covington & Burling. Jones is a graduate of Amherst College and Yale Law School. He is the author, with biologist Timothy Goldsmith, of the *Columbia Law Review* article "Law and Behavioral Biology" (2005), and his book *Law and Neuroscience*, with J. Schall and F. Shen, will appear in 2014.

Stephen J. Morse is the Ferdinand Wakeman Hubbell Professor of Law; Professor of Psychology and Law in Psychiatry; and Associate Director of the Center for Neuroscience & Society at the University of Pennsylvania. Dr. Morse is an expert in criminal and mental health law, whose work emphasizes individual responsibility and the relation of the behavioral sciences and neurosciences to responsibility and social control. Dr. Morse has published Foundations of Criminal Law (Foundation Press, with Leo Katz and Michael S. Moore), Crime and Culpability: A Theory of Criminal Law (Cambridge University Press, with Larry Alexander and Kimberly Ferzan), and he is currently working on a book, Desert and Disease: Responsibility and Social Control. Professor Morse was Co-Director of the MacArthur Foundation Law and Neuroscience Project and he co-directed the Project's

research group on Criminal Responsibility and Prediction. He is currently a member of the *MacArthur Foundation Research Network on Law and Neuroscience*. Professor Morse is a Diplomate in Forensic Psychology of the American Board of Professional Psychology; a past president of Division 41 of the American Psychological Association (the American Psychology-Law Society); a recipient of the American Academy of Forensic Psychology's Distinguished Contribution Award; a member of the *MacArthur Foundation Research Network on Mental Health and Law* (1988-1996); a founding director of the Neuroethics Society; and a trustee of the Bazelon Center for Mental Health Law in Washington, D.C. (1995-present). Prior to joining the Penn faculty in 1988, Dr. Morse was the Orrin B. Evans Professor of Law, Psychiatry and the Behavioral Sciences, and Psychology at the University of Southern California. He has served as a Visiting Professor at a number of institutions, including the California Institute of Technology (Law and Social Science), Cardozo School of Law, Georgetown Law Center, and University of Virginia School of Law.

Elizabeth A. Phelps received her PhD from Princeton University in 1989, served on the faculty of Yale University until 1999, and is currently the Julius Silver Professor of Psychology and Neural Science at New York University. Her laboratory has earned widespread acclaim for its groundbreaking research on how the human brain processes emotion, particularly as it relates to learning, memory and decision-making. Dr. Phelps is the recipient of the 21st Century Scientist Award from the James S. McDonnell Foundation and a fellow of the American Association for the Advancement of Science and the American Academy of Arts and Sciences. She has served on the Board of Directors of the Association for Psychological Science and the Society for Neuroethics, was the President of the Society for Neuroeconomics and has served as the editor of the journal Emotion. She is the current President-elect for the Association for Psychological Science.

The Honorable Jed S. Rakoff is a United States district judge for the Southern District of New York, a post which he has held since March 1, 1996. During his career, Judge Rakoff has authored three books, published over 100 articles, written over 200 speeches and over 400 judicial opinions. Since 1988, Judge Rakoff has served as a lecturer in law at Columbia Law School. In 2002, Judge Rakoff declared the federal death penalty unconstitutional. Although the decision was reversed on appeal, it has received wide currency. More recently, Judge Rakoff ordered the Department of Defense to release the names of the prisoners being held at Guantanamo. The government complied with the order and did not appeal.

Christopher Slobogin is the Milton R. Underwood Chair in Law, Professor of Psychiatry, and Director of the Criminal Justice Program at Vanderbilt Law School. Professor Slobogin has authored more than 100 articles, books and chapters on topics relating to criminal procedure, mental health law and evidence. Named director of Vanderbilt Law School's Criminal Justice Program in 2009, Professor Slobogin is one of the 10 most cited criminal law and procedure law professors in the nation, according to the *Leiter Report*. The book *Psychological Evaluations for the Courts*, which he co-authored with another lawyer and two psychologists, is considered the standard-bearer in forensic mental health; in recognition for his work in that field, he was named an honorary distinguished member of the American Psychology-Law Society in 2008. Professor Slobogin has also served as reporter for the American Bar Association's Task Force on the Insanity Defense, chair of the Florida Assessment Team for the ABA's Death Penalty Moratorium Implementation Project, and co-reporter for standards dealing with mental disability and the death penalty that have been

adopted by the ABA, the American Psychiatric Association and the American Psychological Association. Professor Slobogin holds a secondary appointment as a professor in the Vanderbilt School of Medicine's Department of Psychiatry.

Francis X. Shen is the Executive Director of Education and Outreach activities for the *MacArthur Foundation Research Network on Law and Neuroscience*, and an Associate Professor at the University of Minnesota Law School. Professor Shen conducts empirical and interdisciplinary research at the intersection of law and the brain sciences. He is co-authoring the first law coursebook on *Law and Neuroscience* (forthcoming, Aspen Publishers, 2014), and has explored the implications of cognitive neuroscience for criminal law, tort, and legislation in the United States. Additional research areas of focus are criminal law and crime policy, and education law and policy. Professor Shen completed his B.A. in Economics and in English at the University of Chicago in 2000, his J.D. at Harvard Law School in 2006, and his Ph.D. in Government and Social Policy at Harvard University and the Kennedy School of Government in 2008. During graduate school he was a doctoral fellow in the Harvard University Multidisciplinary Program in Inequality & Social Policy, supported by the National Science Foundation. His research has been published in a variety of outlets in law, political science, psychology, and education, and he has co-authored two books, *The Education Mayor* (Georgetown, 2007) and *The Casualty Gap* (Oxford, 2010). In 2009 he joined the MacArthur Foundation Law and Neuroscience Project, at the University of California Santa Barbara, as a post-doctoral research fellow. In 2010-11 he became associate director of the Project and a visiting scholar at Vanderbilt Law School. In 2011-12 he was a visiting assistant professor at Tulane University Law School and The Murphy Institute.

Julia Stasch is Vice President of U.S. Programs of the John D. and Catherine T. MacArthur Foundation. She is responsible for U.S. grantmaking, with a focus on the disconnect between the major institutions and systems that affect people's lives and profound global economic, social, demographic and technological trends. Current areas of interest include community and economic development, housing, the justice system, digital media and learning, and projects on critical cross-cutting social and economic policy issues. Prior to joining the Foundation, she worked for the City of Chicago, first as Commissioner of the city's Department of Housing and then as Chief of Staff to Mayor Richard M. Daley. As Commissioner she led a process resulting in the city's commitment to a $1.3 billion five-year plan for affordable housing. As Chief of Staff, one of her significant accomplishments was the design and negotiation of the $1.5 billion plan for transformation of public housing in Chicago. From 1996 to 1997 she was President and Chief Executive Officer of Shorebank Chicago Companies where she was responsible for Chicago operations of Shorebank, including South Shore Bank, the nation's first community development bank. In 1977 Stasch was one of the first four employees of the Chicago-based real estate development firm Stein & Company. When she left in 1996 as President and Chief Operating Officer, the staff numbered 220 and projects included the Metcalfe Federal Building, Chicago's United Center, and expansion of McCormick Place. While at Stein and Company she became nationally known for her work to include women and minorities in the construction industry. During the first Clinton Administration Stasch served as Deputy Administrator of the General Services Administration in Washington, a 20,000-person agency responsible for management of government-wide building construction, leasing, and management. Earlier in her career she was a Vista volunteer and a teacher in the Chicago public school system. Stasch was the founding President of the Board of the Women's Issues Network, and

previously served on the Board of Directors of the Women's Business Development Center. She is a member of the Economic Club and the Chicago Network and on the Board of the Chicago Architecture Foundation. She served as the chair of the Mayor's Advisory Council on Closing the Digital Divide and is a member of the steering committee for the Economic Growth and Jobs Plan. Stasch is a summa cum laude graduate of Loyola University, and has a master's degree from the University of Illinois at Chicago.

VI. *Research Network* Publications & Resources

The following publications were authored or co-authored by a member of the *Law and Neuroscience Project* (2007-2011):

Aharoni, Eyal, Chadd Funk, Walter Sinnott-Armstrong, & Michael Gazzaniga, *Can Neurological Evidence Help Courts Assess Criminal Responsibility? Lessons from Law and Neuroscience,* 1124 ANNALS N.Y. ACAD. OF SCI. 145 (2008).

Aharoni, Eyal, Walter Sinnott-Armstrong & Kent A. Kiehl, *Can Psychopathic Offenders Discern Moral Wrongs? A New Look at the Moral/Conventional Distinction,* 121 J. ABNORM. PSYCHOL. 484 (2012).

Aharoni, Eyal, Gina M. Vincent, Carla L. Harenski, Vince D. Calhoun, Walter Sinnott-Armstrong, Michael S. Gazzaniga, & Kent A. Kiehl, *Neuroprediction of Future Rearrest*, PNAS (2013).

Belcher, Annabelle & Walter Sinnott-Armstrong, *Neurolaw*, 1 WILEY INTERDISCIPLINARY REVIEWS: COGNITIVE SCIENCE 18 (2010).

Brown, Teneille & Emily Murphy, *Through a Scanner Darkly: Functional Neuroimaging as Evidence of a Criminal Defendant's Past Mental States*, 62 STAN. L. REV. 1119 (2010).

Buckholtz, Joshua W., Christopher L. Asplund, Paul E. Dux, David H. Zald, John C. Gore, Owen D. Jones, and René Marois, *The Neural Correlates of Third Party Punishment*, 60 NEURON 930 (2008).

Buckholtz, Joshua W. & René Marois, *The Roots of Modern Justice: Cognitive and Neural Foundations of Social Norms and their Enforcement*, 15 NATURE NEUROSCIENCE 5 (2012).

Bunge, Silvia A. & Sarah E. Munro, *Trends In Research On Cognitive and Brain Development*, TRENDS IN COGNITIVE SCIENCES (Forthcoming).

Faigman, David, *Evidentiary Incommensurability*, 75 BROOKLYN L. REV. 1115 (2010).

Farah, Martha J., M. Elizabeth Smith, Cyrena Gawuga, Dennis Lindsell, & Dean Foster, *Brain Imaging and Brain Privacy: A Realistic Concern?* 21 JOURNAL OF COGNITIVE NEUROSCIENCE 119 (2008).

Gazzaniga, Michael S., *The Law and Neuroscience*, 60 NEURON 412 (2008).

Gazzaniga, Michael S., *Neuroscience and the Correct Level of Explanation For Understanding Mind*, 14 TRENDS IN COGNITIVE SCIENCES 291 (2010).

Gazzaniga, Michael S., *Neuroscience In The Courtroom*, 304 SCI. AMER. 54 (2011).

Gazzaniga, Michael S., et. al., A JUDGE'S GUIDE TO NEUROSCIENCE: A CONCISE INTRODUCTION, SAGE Center, UC Santa, Barbara (2010). Contents:

1. Michael S. Gazzaniga, "What Is Cognitive Neuroscience?"

2. Marcus Raichle, "What Is An fMRI?"
3. Anthony Wagner, "Can Neuroscience Identify Lies?"
4. Louis J. Ptacek, "What Is Neurogenetics?"
5. Howard Fields, "Can Neuroscience Identify Pain?"
6. Helen Mayberg, "Does Neuroscience Give Us New Insights Into Criminal Responsibility?"
7. Floyd E. Bloom, "Does Neuroscience Give Us New Insights Into Drug Addiction?"
8. Kent A. Kiehl, "Can Neuroscience Identify Psychopaths?"
9. Scott T. Grafton, "Has Neuroscience Already Appeared in the Courtroom?"
10. Read Montague, "How Is Neuroscience Likely to Impact Law in the Near Future"
11. Adina Roskies, "How Is Neuroscience Likely to Impact the Law in the Long Run?"

Goodenough, Oliver R., & Micaela Tucker, *Law and Cognitive Neuroscience*, 6 ANNU. REV. LAW SOC. SCI. 28.1 (2010).

Greely, Henry, *Neuroscience and Criminal Justice: Not Responsibility But Treatment*, 56 KAN. L. REV. 1103 (2008).

Greely, Henry, *Neuroscience-Based Lie Detection: The Need for Regulation*, in USING IMAGING TO IDENTIFY DECEIT: SCIENTIFIC AND ETHICAL QUESTIONS (2009).

Greely, Henry, *Neuroscience and Criminal Responsibility Proving "Can't Help Himself" as a Narrow Bar to Criminal Liability*, in LAW & NEUROSCIENCE, CURRENT LEGAL ISSUES 13 (MICHAEL FREEMAN ED. 2011) p. 61.

Greely, Henry, *Who Knows What Evil Lurks In The Hearts Of Men? Behavioral Genomics, Neuroscience, Criminal Law, And The Search For Hidden Knowledge*, in THE IMPACT OF BEHAVIORAL SCIENCES ON CRIMINAL LAW (N.A. Farahany, ed., 2009) 161-182.

Greely, Henry, Nita Farahany, & James Coleman, *Genetics, Neuroscience, And Criminal Responsibility*, in in THE IMPACT OF BEHAVIORAL SCIENCES ON CRIMINAL LAW (N.A. Farahany, ed., 2009) 183-241.

Greely, Henry, & Anthony Wagner, *Reference Guide on Neuroscience*, in FEDERAL JUDICIAL COLLEGE REFERENCE MANUAL ON SCIENTIFIC EVIDENCE (3rd. Ed.)

Greene, Joshua D., and Joseph M. Paxton, *Patterns Of Neural Activity Associated With Honest And Dishonest Moral Decisions*, 106 PNAS 12506 (2009).

HOFFMAN, MORRIS, THE PUNISHER'S BRAIN: AN EVOLUTIONARY HISTORY OF JUDGE AND JURY (forthcoming Cambridge University Press).

Hoffman, Morris, *Ten Legal Dissonances*, 62 Mercer L. Rev. 989 (2011).

Hoffman, Morris, *Evolutionary Jurisprudence: The End Of The Naturalistic Fallacy And The Beginning Of Natural Reform?*, in LAW & NEUROSCIENCE, CURRENT LEGAL ISSUES 13 (MICHAEL FREEMAN ED. 2011) p. 483.

Hyman, Steven E., *Meditations on Self-Control: Lessons from the Neurobiology of Addiction*, in ADDICTION AND SELF CONTROL (NEIL LEVY, ED., FORTHCOMING).

ILLES, JUDY, & BARBARA J. SAHAKIAN, EDS., OXFORD HANDBOOK OF NEUROETHICS (2011). Selections:

1. Joshua D. Greene & Jonathan Cohen, "For the Law, Neuroscience Changes Nothing and Everything"
2. Emily R. Murphy & Henry T. Greely, "What Will Be the Limits of Neuroscience-Based Mindreading in the Law?"
3. Susan Wolf, "Incidental Findings in Neuroscience Research: A Fundamental Challenge to the Structure of Bioethics and Health Law"

Jones, Owen D., Joshua W. Buckholtz, Jeff Schall, and Rene Marois, *Brain Imaging For Legal Thinkers: A Guide For the Perplexed*, 2009 Stan. Tech. L. Rev. 5 (2009). Reprinted in: LAW & NEUROSCIENCE, CURRENT LEGAL ISSUES 13 (MICHAEL FREEMAN ED. 2011).

JONES, OWEN, JEFFREY SCHALL, & FRANCIS SHEN, LAW AND NEUROSCIENCE (Law School Coursebook; Forthcoming 2013, Aspen Legal Publishers).

Jones, Owen & Francis Shen, *Law and Neuroscience in the United States*, in INTERNATIONAL NEUROLAW – A COMPARATIVE ANALYSIS (Tade Spranger, ed. 2011) p. 349.

Joshi, Swapna, S. Karthikeyan, B.S. Manjunath, Scott Grafton, & Kent A. Kiehl, *Anatomical Parts-Based Regression Using Non-Negative Matrix Factorization*, Paper presented at Computer Vision and Pattern Recognition conference (2011).

KIEHL, KENT A., & WALTER SINNOTT-ARMSTRONG, EDS., HANDBOOK ON PSYCHOPATHY AND LAW FORTHCOMING). Contents:

1. Kent A. Kiehl, "Introduction"
2. Adelle Forth, "Assessment of Psychopathy: The Hare Psychopathy Checklist Measures"
3. Katherine Fowler, "Alternatives to the Psychopathy Checklist - Revised (PCL-R)"
4. Michael Koenigs, "The Decision-Making Impairment In Psychopathy: Psychological And Neurobiological Mechanisms"
5. Jana Schaich Borg, "Do Psychopaths Make Moral Judgments?"
6. Kent A. Kiehl, "Functional Imaging of Psychopaths"
7. Marina Boccardi, "Neuroscience of Psychopathy: Structural Imaging"
8. E. Viding, "Quantitative Genetic Studies Of Psychopathic Traits In Minors: Review And Implications For The Law"
9. Irwin Waldman, "The Search for Genes and Environments That Underlie Psychopathy and Antisocial Behavior: Quantitative and Molecular Genetic Approaches"
10. Michael Caldwell, "Treatment of Adolescents with Psychopathic Features"
11. Marnie Rice, "Psychopathy and Violent Recidivism"
12. John Edens, "Taking Psychopathy Measures "Out of the Lab" and into the Legal System: Some Practical Concerns"
13. Paul Litton, "Criminal Responsibility and Psychopathy"
14. Samuel Pillsbury, "Why Psychopaths are Responsible"
15. Stephen Morse, "Preventive Detention of Psychopaths and Dangerous Offenders"
16. Michael Corrado, "Some Notes on Preventative Detention and Psychopathy"
17. Eric Luna, "Psychopathy and Sentencing"

Kiehl, Kent A., *Without Morals: The Cognitive Neuroscience of Criminal Psychopaths*, in MORAL PSYCHOLOGY, VOL. 3: THE NEUROSCIENCE OF MORALITY (MIT Press, Walter Sinnott-Armstrong, Ed., 2008) p. 119.

Kiehl, Kent A. & Morris Hoffman, *The Criminal Psychopath: History, Neuroscience, Treatment, and Economics*, 51 JURIMETRICS 4 (2011).

MacArthur Foundation Law & Neuroscience Project, *Law and Neuroscience Bibliography*, http://www.lawneuro.org/bibliography.php (2010).

Moore, Michael S., *Intention as a Marker of Moral Responsibility and Legal Liability*, in THE PHILOSOPHICAL FOUNDATIONS OF CRIMINAL LAW (ANTONY DUFF AND STUART GREEN, EDS., 2010) p. 179.

Moore, Michael S., *Mechanical Brains and Responsible Choices* (Forthcoming).

Moore, Michael S., *The Neuroscience of Rational Human Action and Responsibility* (Forthcoming)

Moore, Michael S., *Responsible Choices, Desert-Based Legal Institutions, and the Challenges of Contemporary Neuroscience*, 29 SOCIAL PHILOSOPHY & POLICY 1 (2011).

Moore, Michael S., *Renewed Questions About the Causal Theory of Action*, in CAUSING HUMAN ACTIONS: NEW PERSPECTIVES ON THE CAUSAL THEORY OF ACTION (JESÚS H. AGUILAR & ANDREI A. BUCKAREFF, EDS., 2010).

Moore, Michael S., & Heidi Hurd, *Blaming the Stupid, Clumsy, Selfish, and Weak: The Culpability of Negligence*, CRIMINAL LAW AND PHILOSOPHY. Shortened version to appear in Rowan Cruft, Matt Kramer, and Mark Reiff, eds., Crime, Punishment, and Responsibility (2011).

MOORE, MICHAEL S., & HEIDI HURD, NEW ESSAYS IN CRIMINAL LAW THEORY (Forthcoming).

Morse, Stephen, *Actions Speak Louder than Images, Using Imaging to Identify Deceit: Scientific and Ethical Questions*, in USING IMAGING TO IDENTIFY DECEIT: SCIENTIFIC AND ETHICAL QUESTIONS (2009) p. 23.

Morse, Stephen, *Determinism and the Death of Folk Psychology: Two Challenges to Responsibility from Neuroscience*, 9 MINN. J.L. SCI. & TECH. 1 (2008).

Morse, Stephen, *The Future of Neuroscientific Evidence*, *in* THE FUTURE OF EVIDENCE: HOW SCIENCE & TECHNOLOGY WILL CHANGE THE PRACTICE OF LAW 137 (Carol Henderson & Jules Epstein eds., ABA Publishing: 2011).

Morse, Stephen, *Lost In Translation? An Essay On Law And Neuroscience*, in LAW & NEUROSCIENCE, CURRENT LEGAL ISSUES 13 (MICHAEL FREEMAN ED. 2011) p. 529.

Morse, Stephen, *Irrational Exuberance: Neuroscience in the Courts*, 62 MERCER L. REV. 837 (2011).

MORSE, STEPHEN & ADINA ROSKIES, EDS., A PRIMER ON CRIMINAL LAW AND NEUROSCIENCE, (Forthcoming 2013, Oxford University Press). Contents:

1. Stephen Morse, "Introduction to Law and Neuroscience"
2. Adina Roskies, "Cellular Mechanisms: Fundamentals of Neuronal Signaling"
3. Adina Roskies, "Functional Neuroanatomy"
4. Adina Roskies, "Overview of Imaging Techniques"
5. Scott Grafton, Et Al., "Neuroscience in Law Beyond Imaging"
6. David Faigman, "Admissibility of Neuroscientific Evidence"
7. Henry Greely, "Mind Reading"
8. Stephen Morse and Bill Newsome, "Criminal Responsibility and Competence"
9. Barry Feld, Et Al., "Brain Development and Juveniles"
10. Douglas Husak and Emily Murphy, "Neuroscience and Addiction"

Morse, Stephen, *Psychopathy and Criminal Responsibility*, 1 NEUROETHICS 205 (2008).

Morse, Stephen, *Vice, Disorder, Conduct and Culpability*, 5 PHILOSOPHY , PSYCHIATRY, & PSYCHOLOGY 47 (2008).

NADEL, LYNN, & WALTER SINNOTT-ARMSTRONG, EDS. MEMORY & LAW (2012). Contents:

1. Elizabeth Phelps, "Emotion And The Reliability Of Memory"
2. Henry L. Roediger, "Confidence And The Reliability Of Memory"
3. Elizabeth Loftus, "Eye-Witness Memory"
4. Scott Gronlund, "Line-Up Procedures And Memory"
5. Lisa E. Hasel, "Confessions And Eyewitness Memory"
6. Daniel Schacter, "Detecting True Vs. False Memories"
7. Anthony Wagner, "Episodic Memory and Guilty Knowledge Tests"
8. Linda J. Demaine, "Effect Of Judicial Instructions To Ignore"
9. William Hirst, "Jury Setting Effects On Memory"
10. Adam Kolber, "Memory Dampening"
11. Anders Sandberg, "Memory Enhancement"
12. Francis X. Shen, "Monetizing Memory Science: Neuroscience and the Future of PTSD Litigation"
13. Martin Conway, "Implications and Future Directions"

NADELHOFFER, THOMAS, ED. THE FUTURE OF PUNISHMENT (Forthcoming 2013).

Nadelhoffer, Thomas, Stephanos Bibas, Scott Grafton, Kent A. Kiehl, Andrew Mansfield, Walter Sinnott-Armstrong, & Michael Gazzaniga, *Neuroprediction, Violence, and the Law: Setting the Stage*, 17 NEUROETHICS 1 (2010).

Phelps, Elizabeth, *Lying Outside the Laboratory: The Impact of Imagery and Emotion on the Neural Circuitry of Lie Detection*, in USING IMAGING TO IDENTIFY DECEIT: SCIENTIFIC AND ETHICAL QUESTIONS (2009) p. 14.

Raichle, Marc, *An Introduction to Functional Brain Imaging in the Context of Lie Detection*, in USING IMAGING TO IDENTIFY DECEIT: SCIENTIFIC AND ETHICAL QUESTIONS (2009) p. 3.

Rakoff, Jed, *Lie Detection in the Courts: The Vain Search for the Magic Bullet*, in USING IMAGING TO IDENTIFY DECEIT: SCIENTIFIC AND ETHICAL QUESTIONS (2009) p. 40.

Rakoff, Jed, *Science and the Law: Uncomfortable Bedfellows*, 38 SETON HALL LAW REV. 1379 (2008).

Rissman, Jesse, Hank Greely, and Anthony D. Wagner, *Detecting Individual Memories Through The Neural Decoding Of Memory States And Past Experience,* 107 PNAS 9849 (2010).

Robillard, Julie M.., & Judy Illes, *Neuroscience and Law in the Media: What About Addiction?* in ADDICTION NEUROETHICS (2011), Carter, Hall and Illes (Eds)., Elsevier.

Roskies, Adina L., *How Does Neuroscience Affect Our Conception Of Volition?,* 33 ANN. REV. OF NEUROSCIENCES 33 (2010).

Roskies, Adina L., *Neuroimaging and Inferential Distance*, 1 NEUROETHICS 19 (2008).

Roskies, Adina L., *Response to Sie and Wouters: A Neuroscientific Challenge To Free Will And Responsibility?* 12 TRENDS IN COGNITIVE SCIENCES 4 (2008).

Roskies, Adina L., & Walter Sinnott-Armstrong, *Brain Images as Evidence in the Criminal Law*, in LAW AND NEUROSCIENCE: CURRENT LEGAL ISSUES (Oxford Univ. Press, Michael Freeman, Ed., 2010) p. 97.

Schauer, Frederick, *Can Bad Science Be Good Evidence? Lie Detection, Neuroscience and the Mistaken Conflation of Legal and Scientific Norms*, 95 CORNELL L.R. 1191 (2010).

Schauer, Frederick, *Neuroscience, Lie-Detection, and the Law*, 14 TRENDS IN COGNITIVE SCIENCES 101 (2010).

Schweitzer, Nicholas J. & Michael J. Saks, *Neuroimage Evidence and the Insanity Defense*, 29 BEHAV. SCI. LAW 4 (2011).

Schweitzer, Nicholas J., Michael J. Saks, Emily Murphy, Adina Roskies, Walter Sinnott-Armstrong, & Lyn M. Gaudet, *Neuroimages as Evidence in a Mens Rea Defense: No Impact*, PSYCHOLOGY, PUBLIC POLICY, AND THE LAW (2011).

Shannon, Benjamin J., Marcus E. Raichle, Abraham Z. Snyder, Damien A. Fair, Kathryn L. Mills, Dongyang Zhang, Kevin Bache, Vince D. Calhoun, Joel T. Nigg, Bonnie J. Nagel, Alexander A. Stevens, & Kent A. Kiehl, *Premotor Functional Connectivity Predicts Impulsivity In Juvenile Offenders*, 108 PNAS 27 (2011).

Shen, Francis X., Morris B. Hoffman, Owen D. Jones, René Marois & Joshua D. Greene, *Sorting Guilty Minds*, 86 NYU L. REV. (2011).

Shen, Francis X., *The Law and Neuroscience Bibliography: Navigating The Emerging Field*, 38 INT. J. LEGAL INFO. 352 (2010).

Shen, Francis X., & Owen D. Jones, *Brain Scans As Evidence: Truths, Proofs, Lies, And Lessons*, 62 MERCER L. REV. 861 (2011).

Shen, Francis X., *Law and Neuroscience: Possibilities For Prosecutors*, 33 CDAA Prosecutor's Brief 17 (2011).

SINGH, ILINA, WALTER SINNOTT-ARMSTRONG, & JULIAN SAVULESCU, EDS., BIOPREDICTION: SCIENTIFIC, LEGAL AND SOCIO-ETHICAL CHALLENGES IN THE USE OF BIOMARKERS TO PREDICT ABERRANT BEHAVIOR (Forthcoming).

Sinnott-Armstrong, Walter, *Neural Lie Detection in Courts*, in USING IMAGING TO IDENTIFY DECEIT: SCIENTIFIC AND ETHICAL QUESTIONS (2009).

Sinnott-Armstrong, Walter, *Are Addicts Responsible?,* in ADDICTION AND SELF CONTROL (NEIL LEVY, ED., FORTHCOMING).

Sinnott-Armstrong, Walter, Et Al., *Brain Images as Legal Evidence*, 5 EPISTEME 359 (2008).

Sinnott-Armstrong, Walter, & Ken Levy. *Insanity Defenses*, in John Deigh and David Dolinko, eds. THE OXFORD HANDBOOK OF PHILOSOPHY AND CRIMINAL LAW (2010).

SINNOTT-ARMSTRONG, WALTER, & LYNN NADEL, EDS. CONSCIOUS WILL AND RESPONSIBILITY: A TRIBUTE TO BENJAMIN LIBET (Oxford, 2010). Contents:

1. Benjamin Libet, "Do We Have Free Will?"
2. Adina L. Roskies, "Why Libet's Studies Don't Pose a Threat to Free Will"
3. Alfred R. Mele, "Libet on Free Will: Readiness Potentials, Decisions, and Awareness"
4. Susan Pockett and Suzanne Purdy, "Are Voluntary Movements Initiated Preconsciously? The Relationships Between Readiness Potentials, Urges, and Decisions"
5. William P. Banks and Eve A. Isham, "Do We Really Know What We are Doing? Implications of Reported Time of Decision for Theories of Volition"
6. Elisabeth Pacherie and Patrick Haggard, "What are Intentions?"
7. Mark Hallett, "Volition: How Physiology Speaks to the Issue of Responsibility"
8. John-Dylan Haynes, "Beyond Libet: Long-term Prediction of Free Choices from Neuroimaging Signals"
9. F. Carota, M. Desmurget, and A. Sirigu, "Forward Modeling Mediates Motor Awareness"
10. Tashina Graves, Brian Maniscalco, and Hakwan Lau, "Volition and the Function of Consciousness"
11. Deborah Talmi and Chris D. Frith, "Neuroscience, Free Will, and Responsibility"
12. Jeffrey P. Ebert and Daniel M. Wegner, "Bending Time to One's Will"
13. Thalia Wheatley and Christine Looser, "Prospective Codes Fulfilled: A Potential Neural Mechanism of the Will"
14. Terry Horgan, "The Phenomenology of Agency and the Libet Results"
15. Thomas Nadelhoffer, "The Threat of Shrinking Agency and Free Will Disillusionism"
16. Gideon Yaffe, "Libet and the Criminal Law's Voluntary Act Requirement"
17. Larry Alexander, "Criminal and Moral Responsibility and the Libet Experiments"
18. Michael S. Moore, "Libet's Challenge(s) to Responsible Agency"
19. Walter Sinnott-Armstrong, "Lessons from Libet"

Wolf, Susan, *Neurolaw: The Big Question*, 8 AJOB 21 (2008).

Yaffe, Gideon, *Are Addicts Akratic?: Interpreting the Neuroscience of Reward*, in ADDICTION AND SELF CONTROL (NEIL LEVY, ED., FORTHCOMING).

Law and Neuroscience

Owen D. Jones
Vanderbilt University
Law & Biological Sciences

Jeffrey D. Schall
Vanderbilt University
Psychology

Francis X. Shen
University of Minnesota
Law

About the Book

Law and Neuroscience is the first coursebook to cover the newly emerging field of neurolaw. The book explores both the promise within and the limitations of the intersection of these two disciplines. The book includes engaging, informative, and provocative excerpts from cases, commentary, scientific articles, and news accounts. Dispersed through each chapter are notes and questions designed to challenge, provoke, inform, and inspire.

Contents

Forthcoming 2014

Sample chapters available at:
www.vanderbilt.edu/lawbrain

Forthcoming!

A PRIMER ON CRIMINAL LAW AND NEUROSCIENCE

A contribution of the Law and Neuroscience Project, supported by the MacArthur Foundation

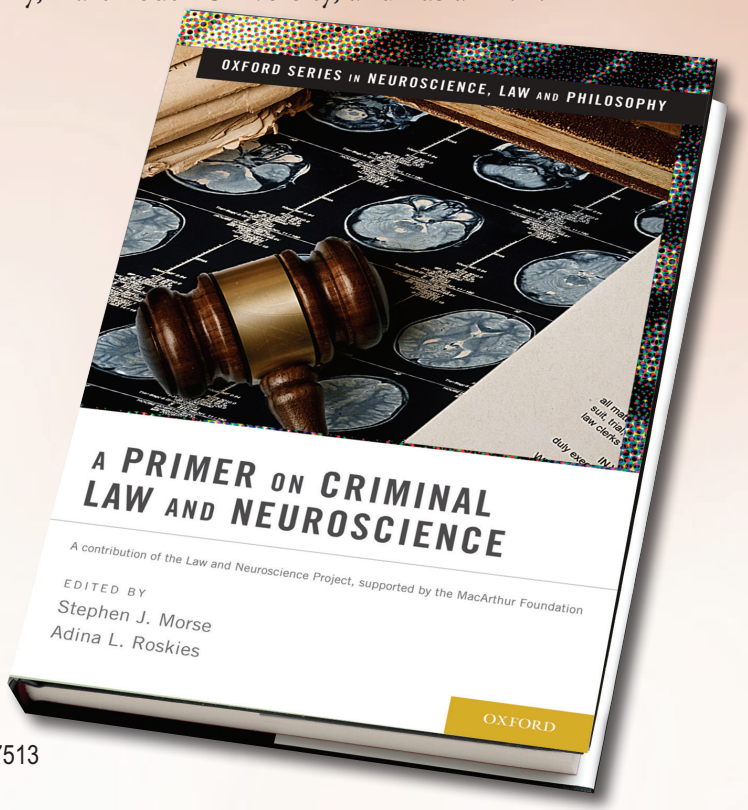
EDITED BY STEPHEN J. MORSE AND ADINA L. ROSKIES

A Primer on Criminal Law and Neuroscience is the first volume devoted to providing a comprehensive review for criminal lawyers and judges of the current, basic neuroscientific and legal knowledge they will need to evaluate arguments that are based on neuroscientific evidence.

All the chapters are written by noted experts. A general introduction first provides a framework for thinking about the relation of neuroscience to the criminal law. Three chapters address the basics of the brain and nervous system and the investigative techniques neuroscientists use to study the brain and its relation to behavior. The legal chapters begin with a survey of the scientific evidence issues concerning the admissibility of neuroscience evidence in the courts. Other legal chapters address , the ability of neuroscience to detect lying or the content of thoughts, criminal responsibility, competence and prediction, juvenile delinquency, and addiction. Each of these chapters addresses in detail the relevance of neuroscience to the applicable doctrines and assesses what is known at present. All sections of the book may be consulted independently by readers seeking specific information about a discrete topic. A final chapter speculates about how possible future advances in neuroscientific knowledge may shape legal practice and doctrine more generally.

Stephen J. Morse, J.D., Ph.D., is the Ferdinand Wakeman Hubbell Professor of Law, Professor of Psychology and Law in Psychiatry, & Associate Director of the Center for Neuroscience and Society, University of Pennsylvania

Adina L. Roskies, Ph.D., is Associate Professor of Philosophy, Dartmouth University, and has a Ph.D. in Neuroscience



2013	304 pages	
9780199859177	Hardback	~~$75.00~~/**$60.00**

OXFORD
UNIVERSITY PRESS

4 Easy Ways to Order
Promo Code: 31595

- Phone: 800.451.7556
- Fax: 919.677.1303
- Web: www.oup.com/us
- Mail: Oxford University Press. Order Dept., 2001 Evans Road, Cary, NC, 27513

For more information on the

MacArthur Foundation Research Network on Law and Neuroscience:

www.lawneuro.org

The Network's web site provides a wealth of additional resources in law and neuroscience, including the *Law & Neuroscience Bibliography*, which features over 900 publications and is regularly updated.