CLE WRITTEN MATERIALS

2015 Colorado Judicial Conference Presentation

Title: Neuroscience and the Legal System

Date: Monday, September 21, 2015, 3:45 p.m. - 5:00 p.m.

Presenters (bios below):
1. Morris Hoffman, District Judge, Second Judicial District
2. Dr. BJ Casey, Sackler Professor for Developmental Psychobiology, Weill Cornell Medical College, Cornell University
3. Dr. Francis X. Shen, McKnight Land-Grant Professor & Associate Professor of Law, University of Minnesota

Summary of Seminar and Written Materials

This panel will introduce recent and exciting developments at the intersection of neuroscience and law. Neuroscience is increasingly introduced in courtrooms, and considered in policy debates. These developments create a pressing need for increased dialogue between neuroscience and law, and this panel brings together neuroscientists and lawyers to enable that conversation. The panel will provide a general introduction to neurolaw, and then focus on an illustrative topic of great relevance to the legal system: adolescent decision-making. The panel will consider questions such as: How does the brain develop, how mature is the adolescent brain, and what are the legal implications that follow for juvenile justice?

Panelists are members of the Research Network on Law and Neuroscience, supported by the John D. and Catherine T. MacArthur Foundation, and based at Vanderbilt Law School. Additional information on the Network, including extensive educational materials, is available online at: www.lawneuro.org.

The enclosed pages of written material – a combination of original material and published materials -- are submitted for review for Continuing Legal Education credit. Creation of the materials was sponsored by the MacArthur Foundation Research Network on Law and Neuroscience, headquartered at Vanderbilt University.

In addition, for interested attendees, many full length videos of more extensive judicial education programs are available for free viewing at: https://www.youtube.com/user/LawNeuroOrg
Introduction

The MacArthur Foundation Research Network on Law and Neuroscience 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.

The comprehensive 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 on the Neuroscience and the Legal System panel at the 2015 Colorado Judicial Conference Presentation.
**Briefing Materials**

**Panelist Biographies**

**B.J. Casey** is the Sackler Professor for Developmental Psychobiology and the Director of the Sackler Institute at Weill Cornell Medical College in New York where she holds appointments in the Department of Psychiatry and Brain and Mind Research Institute as well as an adjunct faculty appointment at the Rockefeller University. She is a world leader in brain imaging and its use in typical and atypical development. She uses this technology to uniquely examine transitions into and out of developmental periods such as adolescence - a period of increased risk for psychopathology, risk taking and deviant behaviors. Casey's 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 interventions and treatments for neurodevelopmental and neuropsychiatric disorders. Casey 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 including an honorary doctorate from the University of Utrecht and author of nearly 200 publications. Casey takes the training of the next generation of scientists as serious as her own research, for which she is passionate.

**Morris Hoffman** was appointed to the Denver District Court in December 1990. He is chair of the Colorado Supreme Court's Panel on Multidistrict Litigation and is a member of the Colorado Supreme Court's Criminal Rules Committee. He is an adjunct professor of law at the University of Colorado and the University of Denver, where he teaches courses on jury history, jury selection, law and biology, and law and neuroscience. He has written on these same topics in law reviews and op-eds in national newspapers. Judge Hoffman’s science publications include papers in Social, Cognitive and Affective Neuroscience, and the Royal Society’s Philosophical Transactions B. He is a member of the John D. and Catherine T. MacArthur Foundation's Research Network on Law and Neuroscience, and a research fellow at the Gruter Institute for Law and Behavioral Research. He is the author of *The Punisher’s Brain: The Evolution of Judge and Jury* (Cambridge 2014).

**Francis X. Shen** is the Executive Director of Education and Outreach activities for the *MacArthur Foundation Research Network on Law and Neuroscience*, and a McKnight Land-Grant Professor and Associate Professor of Law at the University of Minnesota, where he directs the Shen Neurolaw Lab. He is also a member of the Board of Scientific Advisors for the National Courts and Science Institute. Dr. Shen received his B.A. from the University of Chicago, his J.D. from Harvard Law School, and his Ph.D. from Harvard University. During graduate school he was a doctoral fellow in the Harvard University Multidisciplinary Program in Inequality & Social Policy, supported by the National Science Foundation. Dr. Shen conducts empirical and legal research at the intersection of law and neuroscience. He recently co-authored the first *Law and Neuroscience* textbook (Aspen, 2014), and has published on a range of neurolaw topics, including memory, lie detection, mental health, neurolegislation, criminal law, and tort law. At the University of Minnesota Law School, he
teaches Criminal Law, Evidence, Law and Neuroscience, and Education Law. Previous to Minnesota, he taught at Tulane Law School, Vanderbilt Law School, and Harvard University.

**Panel Summaries**

**Part 1: What is “law and neuroscience”?**

*Description and Learning Objectives:* Neuroscientific evidence is increasingly being proffered in U.S. courtrooms. This part of the seminar will provide a concise introduction to how neuroscience is presently being used for legal purposes, and how it may be used in the future. Dr. Shen will lead this portion of the seminar. After this part of the seminar, participants will be able to:

- Appreciate the emerging field of neurolaw, and the many ways in which neuroscience might affect law.
- Understand the ways in which neuroscience is being proffered as evidence in criminal and civil contexts.
- Recognize basic concerns about the use of neuroscientific evidence in courtroom proceedings.
- Discuss the promises and limitations of future uses of neuroscience in law.

The following attached background readings will facilitate this portion of the seminar:

- **Owen D. Jones, Jeffrey D. Schall & Francis X. Shen,** *Law and Neuroscience* (Chapter 1, Introduction) (2014).


Part 2: Adolescent Decision Making and the Law

Description and Learning Objectives: This part of the seminar, led by Dr. Casey, 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. Following this session, participants will be able to:

- Recognize the historical context of current juvenile justice legal challenges, and assess the Supreme Court’s use of psychology and neuroscience research in recent juvenile justice decisions: *Roper, Graham,* and *Miller.*

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

- Summarize 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.

- Discuss how research on the adolescent brain should, and should not, be used in legal adjudication.

The following attached background readings will facilitate this portion of the seminar:


Part 3: Discussion and Questions

Description and Learning Objectives: This final part of the panel will allow audience members an opportunity to interact with panelists through discussion and question-and-answer.