

NEUROSCIENCE CURRICULUM INTEGRATION

University of Oklahoma - Tulsa

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OVERVIEW

Our program is smaller with 5 residents per year, and 6 core faculty, none of whom had prior specific neuroscience training.

Our curriculum is set up in a 2-year cycle, fully repeating every 2 years, giving each resident the opportunity to see material twice during the course of the 4-year residency. We have 4 hours of didactic discussion every Wednesday afternoon, the first of which is for Grand Rounds/Journal Club. In the second hour the residents are divided up into Intro Psychotherapy (PGY1-2), Advanced Psychotherapy (PGY3), and Practice of Psychiatry (PGY4). In the third and fourth hours, all four PGY classes experience the same didactic discussions together. This curriculum is set up in blocks (ex. – 6 weeks of mood disorders, then 6 weeks of psychotic disorders, etc.).

Our program has some access to clinical neuroscientists through the Laureate Institute for Brain Research, however in the past when they have given didactic discussion the material has been too dense for most residents to assimilate. When creating our neuroscience curriculum, we purposefully planned for it to be as interactive as possible, with minimal formal lectures (even those should incorporate other principles of adult learning). This was spurred by our experiences of NNCI materials at the BRAIN conferences.

We set up the neuroscience block to be longitudinal so that several times a year there is a whole 3-hour afternoon "workshop" dedicated to neuroscience. The neuroscience topics roughly correspond with the other general didactic discussion residents are getting around the same time. We have relied heavily on NNCI materials as primarily it is the Program Director and Assistant Program Director leading each workshop, and it was not feasible to create this much material (especially interactive) from scratch on our own. In some cases we have developed new content using the format of pre-existing NNCI modules, when there was not material already that fit the topics we wanted to cover. *Not all sessions are finalized yet as they had not yet occurred at the time of this writing. NITM=Neuroscience in the Media (an NNCI module).

NNCI INTEGRATION

NS1: Basic Neuroanatomy

1. (NNCI adapted) Basic Neuroanatomy: [Building a PlayDoh Brain](#), YouTube Limbic system, [3-D Brain App](#)
2. [NITM: Effects of Emotions on Memory Accuracy](#)

NS2: Neuroscience of Child/Adolescent Psychopathology

1. Interactive Learning: Neurobiology of ADHD and Developmental Disorders
2. (NNCI adapted) NITM: Neurofeedback and ADHD
3. Didactic Discussion: Neurofeedback

NS3: Neuroscience of Mood disorders

1. (NNCI adapted) Talking Pathways to Patients: Depression
2. (NNCI adapted) Translational Neuroscience: Psychopharmacology and Major Depression

NS4: Neuroscience of Mood disorders

Field trip to Laureate Institute for Brain Research:

1. MRI scanning
2. Demonstrations: affective processing, cognitive processing, exter/interoceptive processing
3. Roundtable discussions of research: neuroinflammation, interoception, neuromodulation, psychotherapy

NS5: Neuroscience of Psychosis

1. Interactive Didactic Discussion: Neurobiology of psychosis
2. (NNCI adapted) Talking Pathways to Patients: Dopaminergic Hypothesis
3. [Neuroscience Lab: Cognition in Schizophrenia](#)

NS6: Neuroscience of Psychosis

1. (NNCI adapted) Clinical Neuroscience Conversations 1: Endophenotypes and Psychosis
2. (NNCI adapted) Translational Neuroscience: Schizophrenia

NS7: Neuroscience in Geriatrics, Imaging, and Neuropsychiatric Testing

1. Interactive Didactic Discussion: Neuroimaging Basics
2. Neuroscience of Psychotherapy
3. [Cut and Paste Clinical Pathology: Neurodegenerative Disorders](#)

NS8: Psychiatric Genetics

1. (NNCI adapted) NITM: epigenetics
2. [Progressive Case Conference: Autism Spectrum Disorder](#)
3. Interactive Didactic Discussion – Psychiatric Genetics: What’s Cool Right Now!?! (epigenetics, optogenetics, pharmacogenetics)

NS9: Neuroscience of Anxiety disorders

1. Interactive Didactic Discussion: neuroscience of anxiety
2. [Find It, Draw It, Know It: Fear Circuitry](#)
3. [Clinical Neuroscience Conversations 1: PTSD](#)

NS10: Neuroscience and CAM treatments

1. Demonstration – deep breathing, guided imagery
2. Discussion – neurobiology of mindfulness/meditation
3. Demonstration/Discussion/FIDIKI (NNCI adapted) – Light Therapy
4. Demonstration – yoga
5. YouTube video – How Meditation Can Reshape our Brains
6. [NITM: Microbiome – Excrement Experiment](#)

NS11: Neuroscience of Addictions

1. [Neuroscience Lab: Reward Pathways](#)
2. [Talking Pathways to Patients: Addiction](#)
3. [NITM: Heroin Vaccine](#)

NS12: Neuroscience of Child Development

1. [*NITM: Effects of marijuana on developing brain](#)
2. [*NITM: Reading/Writing on paper](#)
3. [*Neuroscience Lab: Human Social Interactions and Adult Attachment Style](#)
4. *(NNCI Adapted) Cut and Paste Clinical Pathology: Neurodevelopmental Disorders

NS13: Neuromodulation Techniques

1. *Interactive Didactic Discussion: ECT
2. *Flipped classroom: neuromodulation PowerPoint review and quiz completion before class, then interactive Didactic Discussion
3. *Discussion/YouTube: neuromodulation
4. [NITM: Transcranial Direct Current Stimulation](#)

NS14: Consultation/Liaison Neuroscience

1. [*NITM: Foreign Accent Syndrome](#)
2. [*Clinical Neuroscience Conversations 2: Engaging Stakeholders](#)
3. *Brain stimulation on Conversion disorder
4. *Pain and mindfulness meditation
5. *Food addiction and obesity

NS15: Neuroscience of Personality disorders

1. [*Clinical Neuroscience Conversations 1: Epigenetics and Trauma](#)
2. To be determined

*Not yet finalized

TO CONSIDER FOR FUTURE

- (Mood disorders) [NNCI Neuroscience Lab: Affect Regulation](#)
- (Mood disorders) Psychedelics and depression
- (Psychosis) [NNCI Clinical Neuroscience Conversations 1 – Auditory Verbal Hallucinations](#)
- (Psychosis) NNCI adapted NITM: CBT for Schizophrenia
- (Geriatrics) [Translational Neuroscience – Alzheimer’s Disease](#)
- (Geriatrics) [NITM – Alzheimer’s Disease and Fungus](#)
- (Geriatrics) [NITM – Psilocybin/The Trip Treatment](#)
- (Geriatrics) Sleep and Alzheimer’s
- (Geriatrics) Alzheimer’s and Down Syndrome
- (Genetics) [NNCI Clinical Neuroscience Conversations 1: epigenetics and trauma](#)
- (Genetics) [NITM – optogenetics and appetite](#)
- (Anxiety) [NNCI Integrative Case Conference: PTSD](#)
- (Anxiety) NITM: Hoarding
- (Anxiety) [NITM: Tetris](#)
- (CAM) [NITM - Probiotics](#)
- (CAM) Depression and Omega-3/anti-inflammatory diet
- (CAM) Exercise and neuroplasticity
- (Addictions) Food addiction and obesity