



My Journey as a Schizophrenia Researcher

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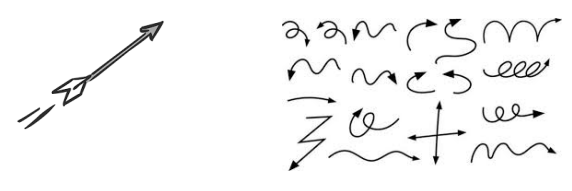
"Females are not resilient enough to go into surgery"



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Career trajectories

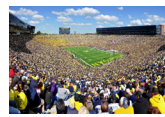


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My American Journey

University of Michigan



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Why schizophrenia research?



My American Journey

University of Michigan

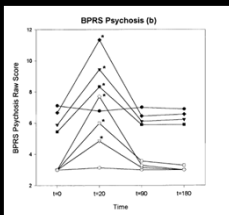


Maryland Psychiatric Research Center (MPRC)
University of Maryland



Carol Tamminga

The Ketamine Model



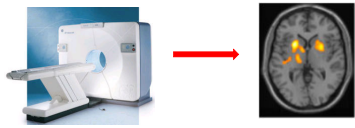
Ketamine induces psychotic symptoms in healthy people

Ketamine worsens psychotic symptoms in patients with schizophrenia

Ketamine can mimic positive and cognitive symptoms

Lahti et al, Neuropsychopharmacology 2001

Johns Hopkins PET Center



GE Advanced 3D PET camera

$H_2^{15}O$ Study

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Maryland Psychiatric Research Center (MPRC)



Carol Tamminga Will Carpenter Jim Gold Bob Buchanan

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My American Journey

University of Michigan University of Maryland UAB




Carol Tamminga Jim Meador-Woodruff

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Community Psychiatry Program (CPP)



Dr. Jacqueline Feldman



Harry Findley

First Episode Psychosis Clinic

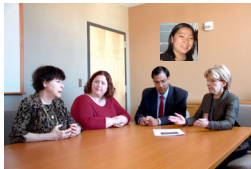


Dr. Clinton Martin



Dr. Blessing Falola

First Episode Psychosis Clinic



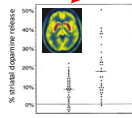


Schizophrenia is an heterogeneous disorder likely involving multiple underlying pathological mechanisms

However, all patients are treated with antipsychotic drugs, which are all dopamine D2 antagonists.....

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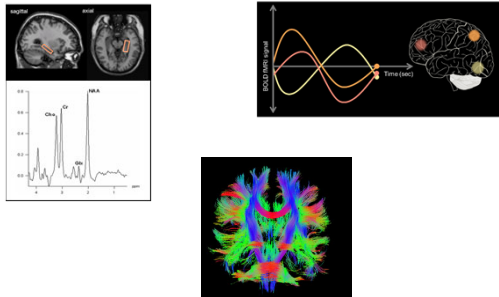
Antipsychotic Treatment Response

Good response	Suboptimal response	Poor response
		

What is the underlying pathology in those with suboptimal or poor response?

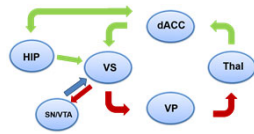
Deconstructing treatment response's heterogeneity will help identify targets for drug development

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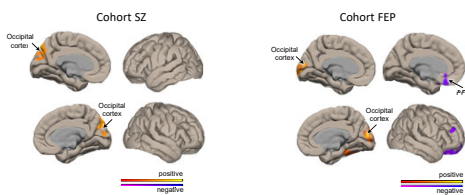
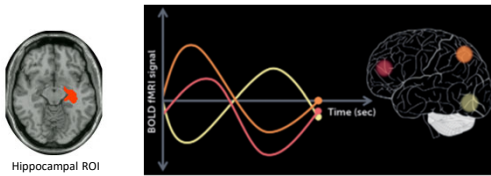


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The hippocampus is part of a network implicated in antipsychotic action



Hippocampal Functional Connectivity



In both cohorts, greater functional connectivity between hippocampus and occipital cortex was associated with better treatment response

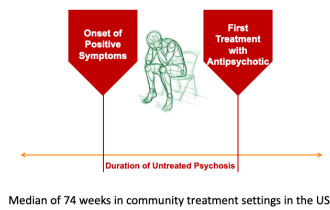
Nelson et al., Schizophr Bull., 2023

Treatment response: are there modifiable risk factors?

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Duration of untreated psychosis

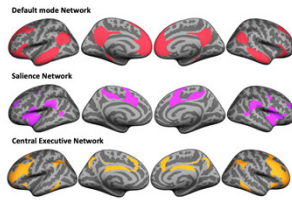
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Functional Connectivity And DUP

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The Three Major Functional Networks

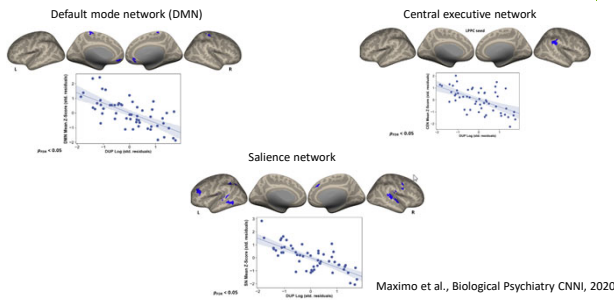


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Dr. David G. Brown

Longer DUP Is Associated With Decreased FC



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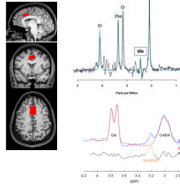
Dr. David G. Brown

The glutamatergic Hypothesis of Schizophrenia or The Excitatory/Inhibitor Hypothesis of Schizophrenia



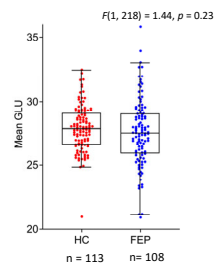
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A Longitudinal Multimodal Imaging Study In Medication-naïve First Episode Psychosis (FEP) Patients



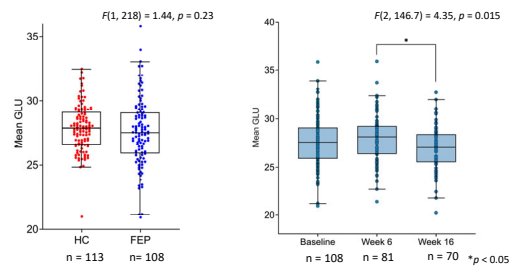
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Glutamate measurements in the anterior cingulate cortex (ACC)

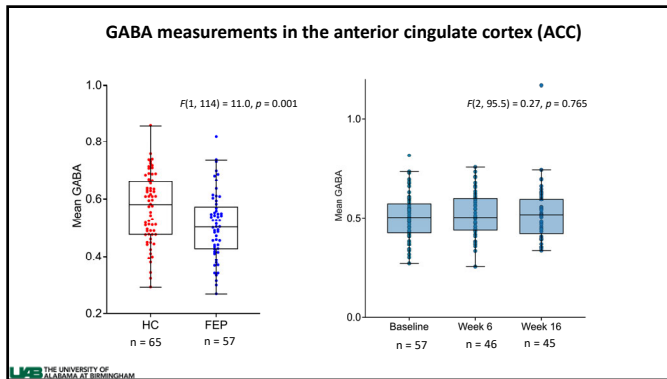


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Glutamate measurements in the anterior cingulate cortex (ACC)



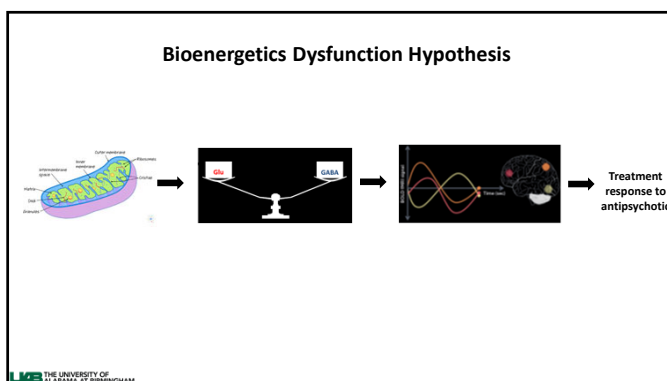
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Brain Metabolism

- Mitochondria generate ~90% of cellular ATP in neurons.
- Synaptic transmission accounts for 40% of ATP consumed
- Neural activities at higher frequencies, such as **GABA interneurons**, are more mitochondria dependent (Inan et al., 2016)

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Collaboration with Auburn's MRI Research Center



7 Tesla (T) magnet



It takes a village...



Dr. Nina Kraguljac



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Serving as the Chair of the Department of Psychiatry and Behavioral Neurobiology



Dean Selwyn Vickers

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