IBANGS 2022: GENES, BRAIN AND BEHAVIOR 2022

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Genes, Brain and Behavior 2022





23rd Annual Genes, Brains & Behavior Meeting University of Tenessee Health Science Center May 23-27th, 2022

IBANGS 2022: GENES, BRAIN AND BEHAVIOR 2022

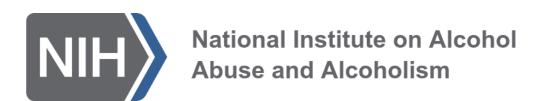
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Leading the search for tomorrow's cures







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Crosscutting applications in genes, brains, and behavior: Single cell and spatial transcriptomics

Workshop schedule Monday May 23rd, Times in CDT

Session A: Single Cell Genomics

9:00 to 9:45am Introduction to Single cell genomics tech talk

9:45 to 10:00 break

10:00 to 11:00am Applications, limitations, and future directions of single cell technology for eQTL mapping

11:00 to 11:15am break

Session B: Spatial Transcriptomics

11:15 to 12:00 pm Spatial transcriptomics tech talk about Visium tools and platform

12:00 to 12:15 pm Boxed lunch, working lunch

12:15 to 1:15 pm Applications, future directions, and limitations

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Networking for success

Workshop schedule Monday May 23rd, Times in CDT

2-2:10pm: check in/ice breaker

2:10-2:40pm: Group 1 (6 highlighted trainees) gives 2-3min lightning talks

2:40pm-2:50pm: Group 1 breaks up into different tables for small group discussions. Each highlighted trainee sits at a table (or pairs of highlighted trainees and the rest of the group walks around and chats with them informally).

2:50pm-3:00pm: break

3:00-3:20pm: Group 2 (6 highlighted trainees) gives 2-3min lightning talks

3:20pm-3:30pm: Group 2 breaks up into different tables for small group discussions. Each highlighted trainee sits at a table (or pairs of highlighted trainees and the rest of the group walks around and chats with them informally).

3:30pm-3:40pm: break

3:40-4:00pm: Group 3 (6 highlighted trainees) gives 2-3min lightning talks.

4:00:4:10pm: Group 3 breaks up into different tables for small group discussions. Each highlighted trainee sits at a table (or pairs of highlighted trainees and the rest of the group walks around and chats with them informally).

4:15-4:30pm: set up for mentor/mentee speed mentoring event.

4:30-6pm: speed mentoring event.

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WORKSHOP TRAINEE

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PROGRAM

Days: Monday, May 23rd Tuesday, May 24th Wednesday, May 25th Thursday, May 26th Friday, May 27th

Monday, May 23rd

View this program: <u>with abstracts</u> <u>session</u> overview talk overview

08:00-09:00 Session 1

Refreshments and Onsite Registration

09:00-09:45 Session 2

Introduction to Single Cell Genomics (Dr. Egon Ranghini, 10X Genomics)

CHAIR: <u>Megan Mulligan</u> 09:00 Egon Ranghini

Trailblazing the future of spatial biology (abstract)

09:45-10:00 Session 3

Q&A

CHAIR: Megan Mulligan

10:00-11:00 Session 4

Applications, limitations, and future directions of single cell technology for eQTL mapping (Virtual Panelist: Dr. Xia Yang, University of California Los Angeles)

CHAIR: Megan Mulligan

10:00 Xia Yang

Integrative systems analysis, applications, and challenges of single cell multiomics (abstract)

11:00-11:15 Session 5

Q&A

CHAIR: Megan Mulligan

11:15-11:30 Lunch Break

11:30-12:30 Session 6

Introduction to Spatial Genomics (Dr. Egon Ranghini, 10X Genomics)

CHAIR: <u>Megan Mulligan</u>

11:30 <u>Egon Ranghini</u>

Reveal the full complexity of cellular diversity, cell by cell (<u>abstract</u>)

12:30-12:45 Session 7

Q&A

CHAIR: Megan Mulligan

12:45-13:45 Session 8

Applications, limitations, and future directions of spatial cell technology for eQTL mapping (Virtual Panelists: Drs. Kristen Maynard and Leo Collado, Lieber Institute for Brain Development)

CHAIR: Megan Mulligan

12:45 Kristen Maynard

Spatial gene expression in the human brain: applications, limitations, and future directions (abstract)

13:45-14:00 Session 9

Q&A

CHAIR: Megan Mulligan

14:00-15:45 Session 10

Trainee Workshop: Networking for Success in Science (Chair:

Kristin Scaplin)

CHAIR: Kristin Scaplen

15:45-16:00 Break

16:00-18:00 Session 11

Trainee Workshop: Trainee Workshop: Networking for Success

in Science (Chair: Kristin Scaplin)

CHAIR: Kristin Scaplen

18:00-20:00

Opening Reception

CHAIR: Kristin Scaplen

Tuesday, May 24th

View this program: with abstracts session

overview talk overview

08:00-09:00 Session 12

Refreshments and Onsite Registration

CHAIR: Kristin Scaplen

08:45-09:00 Session 13

Welcome

CHAIR: Kristin Scaplen

09:00-11:00 Session 14

Symposium I. Mapping the brain: Neuroimaging and connectome approaches to study genetic variation in brain function, structure, and behavior

Speakers: Al Johnson, Neda Jahanshad, Sofie Valk, Antoine Beauchamp

Chairs: Dr. Clyde Francks and Co-Chair: Dr. Megan Mulligan

CHAIR: Clyde Francks

09:00 Allan Johnson

HiDiver: Merging Magnetic Resonance and Light Sheet Microscopy with 3D Labels (abstract)

09:25 Antoine Beauchamp

Whole-brain comparison of rodent and human brains using spatial transcriptomics (abstract)

09:50 Sofie Valk

Genetic and phylogenetic uncoupling of structure and function in human transmodal cortex (abstract)

10:15 Neda Jahanshad

Enhancing Neuro Imaging Genetics through Meta Analysis - Recent GWAS updates and new initiatives from the ENIGMA Consortium (abstract)

10:40 Sha Zhiqiang

Genetic architecture of the white matter connectome of the human brain (abstract)

11:00-11:15 Break

11:15-12:15 Session 15

Outstanding Travel Awardees

CHAIRS: Amy Lasek and Paul Meyer

11:15 Justin Kenney

Towards the Neural Basis of Individual Differences in the Exploratory Behavior of Zebrafish (abstract)

11:30 Luis Hernandez-Nunez

The thermo-balancing act: The molecular, cellular, and behavioral mechanisms underlying thermal homeostasis in larval Drosophila (abstract)

11:45 Laurel Seemlier

Inbred mouse strain differences in adolescent hippocampal learning and gene expression after acute ethanol exposure (abstract)

12:00 Kelly Wingfield

Behavioral differences in neonatal opioid withdrawal syndrome (NOWS) model

phenotypes in FVB substrains following perinatal morphine exposure (abstract)

12:15-13:00 Lunch Break

13:00-15:00 Session 16

Symposium 2. Genetic studies of drug addiction-related traits in outbred rats

Speakers: Abe Palmer, Paul Meyer, Hao Chen, Francesca Telese, Alexandria Szalanczy

Chair: Dr. Oksana Polesskaya

CHAIR: Oksana Polesskaya

13:00 Abraham Palmer

Overview of the NIDA center for genetic studies of drug abuse in outbred rats

(abstract)

13:25 Hao Chen

Genome-Wide Association Study on Three Behaviors Tested in an Open Field in Heterogeneous Stock Rats Identifies Multiple Loci Implicated in Psychiatric Disorders (abstract)

13:50 Paul Meyer

Genome-Wide Association Study Identifies Multiple Loci for Cue-Responsivity Measured During a Pavlovian Conditioned Approach Paradigm. (abstract)

14:15 Francesca Telese

Cell type-specific transcriptional and regulatory mechanisms associated with addiction-related behaviors in HS rats (abstract)

14:40 Alexandria Szalanczy

Keratinocyte-associated protein 3 may participate in the stress response to impact adiposity and behavior (abstract)

15:15-15:30 Break

15:30-17:30 Session 17

Poster Session I

Jeffrey Hatfield

P1 Genetic Variation in Cocaine Preference in the Drosophila melanogaster Genetic Reference Panel (abstract)

Austin Korgan

P3 Diet and Parent-of-Origin Dependent Effects of Body Composition, Locomotor Activity, and AgRP Neuronal Activity are Sex Specific in PWK/PhJ x C57BL/6J F1 Mice (abstract)

Susan Maloney

Participation of the neurodevelopmental disorder associated gene MYT1L in motor function and

sensory responsivity. (abstract)

Neha Rajput

P7 Beyond bold versus shy: zebrafish exhibit multiple distinct behavioral types during exploration of a novel tank. (abstract)

Ashley Hayden

P9 Decoding the Role of Synpatically Translated RNA Binding Proteins in Associative Memory (abstract)

Christina Hansen

P11 Modelling seizure-induced and extinction learning-dependent neuronal activation in pediatric epilepsy (abstract)

Kristin Scaplen

P13 Neural circuits for low and moderate alcohol responses in Drosophila melanogaster (abstract)

Jason Bubier

P15 The relationship between host genetics, microbiome composition and addictive or addictive-predictive behavior in Diversity Outbred mice. (abstract)

Mary Kaldunski

P17 The Rat Genome Database (RGD) facilitates neurological disease genes research and cross-species analyses (<u>abstract</u>)

Katherine McCullough

P19 Characterization of novel clinically-relevant behavioral phenotypes in young adult Mucopolysaccharisosis IIIB mice (abstract)

Justin Anderson

P21 Gene expression profiles in HS-CC founder strains (abstract)

Rilev Marchin

P23 Measuring negative affective withdrawal in CFW mice: Implications for GWAS (abstract)

Ellen McMullen

P25 Interspecific Drosophila Recombinant Inbred Lines as a Tool to Determine Genetic Basis of Neophilia (abstract)

Oksana Polesskaya

P27 Making data from the Center for GWAS in outbred rats FAIR (abstract)

Ariel Zhang

P29 Effect of Chronic Stress on Inflammation in the hippocampus (<u>abstract</u>)

Elizabeth Alcantara

P31 Investigating the role of Methylglyoxal as a GABAA Agonist through Glyoxalase 1 Manipulation (abstract)

Tariq Brown

P33 Alcohol-Induced Alternative Splicing in Drosophila Memory Circuits (abstract)

Laura Smith

P35 Effects of cocaine on brain and behavior: an evaluation of the fragile X mental retardation protein in dopamine D1 receptor-expressing cells of the striatum (abstract)

Amanda Kowalczyk

P37 Evaluating the convergent evolution of genes associated with pair bonding in mammals (abstract)

David Ashbrook

P39 The importance of genetic background for model organism genetics, with implications for Alzheimer's disease and longevity (abstract)

Joshua Dearborn

P41 Development of gait abnormalities and tremor in a mouse model of Krabbe disease (abstract)

Elias Elias

P43 Exercise Promotes Sex-Specific Resilience to The Effects of Chronic Stress (abstract)

Inga Poletaeva

P45 Selecting mice for high cognitive abilities (abstract)

Kelly Wingfield

P47 Behavioral differences in neonatal opioid withdrawal syndrome (NOWS) model phenotypes in FVB substrains following perinatal morphine exposure (abstract)

Benjamin Soibam

P49 Predicting genotype of fruit flies from locomotive trajectories using supervised Machine Learning (abstract)

Wednesday, May 25th

View this program: <u>with abstracts</u> <u>session</u> overview talk overview

08:00-09:00 Session 18

Refreshments and Onsite Registration

09:00-10:00 Session 19

Distinguished Scientist Award

Elissa Chesler

CHAIR: Rob Williams

09:00 Elissa Chesler

Distinguished Investigator Award Presentation: Dr. Elissa Chesler (abstract)

10:00-10:15 Break

10:15-12:15 Session 20

Symposium 3. Behavior Quantification using Machine Learning: Challenges and Opportunities

Speakers: Sara Lisanby, Ann Kennedy, Eric Yttri, Vivek Kumar

Chair: Dr. Vivek Kumar

CHAIR: Rob Williams

10:15 Sarah Lisanby

Brain-Behavior Quantification and Synchronization (abstract)

10:40 Eric Yttri

B-SOiD: Automated extraction of meaningful behaviors from any position data without user bias (abstract)

11:05 Ann Kennedy

Establishing benchmarks for better behavior quantification (abstract)

11:30 Vivek Kumar

Integrated, machine learning based advanced phenotyping platform for the laboratory mouse (abstract)

12:15-13:00 Lunch Break

13:00-14:00 Session 21

Young Investigator Award

Dr. Monica Dus

CHAIR: Karla Kaun
13:00 Monica Dus

Confection Confusion: the Interplay between diet, genes, and taste (abstract)

14:00-14:15 Break

14:15-16:15 Session 22

Symposium 4

Selected talks

CHAIRS: Catharine Rankin and Lisa Tarantino

14:15 Catharine Rankin

Rapid Assessment of the Temporal Function and Phenotypic Reversibility of Neurodevelopmental Disorder Risk Genes using Auxin-Inducible Degradation in C. elegans (abstract)

14:30 Pelin Volkan

Transcriptional and chromatin-based reprogramming of behaviors with social experience and pheromone signaling (abstract)

14:45 Simona Sarafinovska

The automated social operant task: a quantitative measure of social motivation in mice. (abstract)

15:00 Amy Lasek

Role for the poly r(C)-binding protein 1 (PCBP1) in altered RNA splicing in the hippocampus of rats during withdrawal from

chronic ethanol exposure and human subjects with AUD (abstract)

15:15 Steven Clapcote

PDZD8 Disruption Causes Cognitive Impairment in Humans and Mice (abstract)

15:30 Alexis Santana-Cruz

Function of the BN2 neurons in a neural circuit of the adult fruit fly (abstract)

15:45 Lisa Tarantino

Genetic and non-genetic contributors to behavioral differences among inbred mouse substrains (abstract)

16:00 Kayla Nygaard

Increased social motivation, motor deficits, and anxiety-like center avoidance in a mouse model of a Williams Syndrome deletion are not the result of Gtf2ird1 expression alone. (abstract)

16:15-16:30 Break

16:30-18:30 Session 23

Poster Session II

Hayley Thorpe

P2 Cell adhesion molecule 2 deletion reduces impulsivity and voluntary cannabinoid intake, and impairs physiological response to THC in mice (abstract)

David Linsenbardt

P4 High Intensity Alcohol Drinking in Mice Leads to Novel Corticostriatal Gene Expression Alterations (abstract)

Yanning Zuo

P6 Chronic adolescent exposure to cannabis in mice leads to sex-biased changes in gene expression networks across brain regions (abstract)

Soaleha Shams

P8 Effect of Genetic Manipulation of Stress Modulators on Social Interaction in Zebrafish (abstract)

Nicole Leitner

P10 Interactions between neuronal sex determination and Hox gene specification drive the segmental specialization of neural circuits along the anterior-posterior brain axis in Drosophila (abstract)

Danila Cuomo

P12 Interindividual variation in neurological traits in response to early-life Pb exposure (<u>abstract</u>)

Winona Booher

P14 RNA-Sequencing in Heterogeneous Stock Mice Selected for Nicotine Preference (abstract)

Alexandria Wilson

P16 The role of Drosophila Stat92E signaling in response to repeated alcohol exposures (abstract)

Mackenzie Sievers

P18 Impact of repeated alcohol exposure on neural STAT signaling activity in Drosophila (abstract)

Katherine Sena

P20 BALB/cByJ show indiscriminate binge-like eating of both sweetened palatable food and chow compared to BALB/cJ under intermittent, limited access conditions (abstract)

Rebecca Schnabel

P22 Investigating genetic modifiers of vertebrate stress through genome engineering (abstract)

Monserrat Orozco

P24 Daily Binge Drinking Leads to Alterations in Circadian Behavior in C57BL/6J Male and Female Mice (abstract)

Erik Nolan

P26 A Drosophila model for the role of Williams Syndrome-related factor eIF4H in neural development and behavior (abstract)

Erika Mehrhoff

P28 Diazepam Effects on Anxiety-related Defensive Behavior of High and Low Open-Field Activity Inbred Mouse Strains (abstract)

Saeedeh Hosseinian

P30 A forward genetic screen of ENU-mutagenised zebrafish identifies a mutation co-segregating with impulsivity (abstract)

Will Lynch

P32 The methamphetamine-induced hnRNP H targetome identifies CACNA2D2 as a downstream mechanistic target underlying behavior: Pharmacological validation with pregabalin (abstract)

Dana Hodorovich

P34 Location-Specific Mutations In CHD7 Induce Specific Sensorimotor Phenotypes In a Zebrafish CHARGE Syndrome Model (<u>abstract</u>)

<u>Izzabella Green</u>

P36 Both tfbr1b and unkl impact larval zebrafish locomotor responses and may be genetic modifiers of the vertebrate stress response. (abstract)

Eamonn Duffy

P38 Characterization of oxycodone use disorder phenotypes in select rat strains of the Hybrid Rat Diversity Panel (abstract)

Jake Deslauriers

P40 cyfip2 controls the acoustic startle threshold (abstract)

Jacob Beierle

P42 A reduced complexity cross between BALB/c substrains identifies Zhx2 as a candidate gene

underlying oxycodone metabolite brain concentration and state-dependent learning of opioid reward (abstract)

Maria Porter

P44 A Pair of Serotonergic Neurons Influence the Circadian Regulation of Short-Term Learning and Memory in Drosophila melanogaster (abstract)

Levi Gavette

P46 Cocaine withdrawal in the CC/DO founder mouse strains: Interstrain variation and heritability of negative affective withdrawal (abstract)

Michelle Bloyd

P48 PKA RIIα Deficiency is Associated with Altered Downstream Expression of Dopamine and Serotonin Signaling Molecules (abstract)

Franka Rigo

P50 Genetic screen and proteomic analysis: complementary approaches for studying methamphetamine-induced behaviors in D. melanogaster (abstract)

Gaurav Shrestha

P52 Presynaptic Protein Interaction In Alcohol-Related Behavior In Drosophila (abstract)

Prescilla Garcia-Trevizo

P54 Long-term effects of adolescent nicotine exposure vary by genetic background in learning, anxiety-like phenotypes and nicotine sensitivity. (abstract)

Austin Korgan

P56 Deploying genetic diversity to explore the impact of diet-induced obesity on AgRP neuronal activity (abstract)

Kayla Nygaard

P58 Increased social motivation, motor deficits, and anxiety-like center avoidance in a mouse model of a Williams Syndrome deletion are not the result of Gtf2ird1 expression alone. (abstract)

Simona Sarafinovska

P60 The automated social operant task: a quantitative measure of social motivation in mice. (abstract)

Thursday, May 26th

View this program: <u>with abstracts</u> <u>session</u> overview talk overview

08:00-09:00 Session 24

Refreshments and Onsite Registration

08:15-08:45 Session 25

ExComm Meeting

09:00-10:00 Session 26

Presidential Lecture

Dr. Arpana Agarwal

CHAIR: Camron Bryant 09:00 Arpana Agrawal

> Genome-wide Association Studies and the **Gene-Brain-Behavior Pathway to Addiction** (abstract)

10:00-10:15 **Break**

10:15-12:15 Session 27

Symposium 5. Revolutionary genomics: Third-generation sequencing and pangenome approaches to understanding genes and behavior

Speakers: Thomas Keane, Laura Saba, Tomas Fitzgerald, and Erik Garrison

Chair: Dr. David Ashbrook

CHAIR: David Ashbrook

10:15 Tomas Fitzgerald

Genomic variations and epigenomic landscape of the Medaka Inbred Kiyosu-Karlsruhe (MIKK) panel (abstract)

10:40 Laura Saba

Mapping transcriptome structure diversity in rat brain and liver using single molecule RNA sequencing (abstract)

11:05 Erik Garrison

Pangenomes from many points of view (abstract)

11:30 Thomas Keane

New era of mouse genomics with a plurality of reference genomes (abstract)

11:55 Adrian Rothenfluh

Iterative ATAC-seq (assay for transposaseaccessible chromatin) to home in on neurons regulating behavior. (abstract)

12:15-13:00 Lunch Break

Session 28 12:15-13:15

Business Meeting and Lunch

Friday, May 27th

View this program: with abstracts session

overview talk overview

08:00-09:00 Session 29

Refreshments and Onsite Registration

Session 30 09:00-11:00

Symposium 6. Revealing the function of sleep from flies to humans

Speakers: Paul Shaw, Maxime Jan, Malcolm von Shantz, Nirinjini Naidoo

Chair: Dr. Rozi Andretić and Co-Chair: Dr. Kristin Hamre

CHAIR: Kristin Hamre

09:00 Paul Shaw

Symposium: Revealing the function of sleep from flies to humans (abstract)

09:25 Nirinjini Naidoo

Cellular stress and behavior, role of the UPR in sleep and cognition (abstract)

09:50 Maxime Jan

Metabolome, transcriptome, and epigenome: the other phenotypes of sleep loss (abstract)

10:15 Malcolm von Shantz

Defining robust sleep phenotypes for human genetic population studies (<u>abstract</u>)

11:00-11:15 Break

11:15-12:15 Session 31

keynote Speaker

Dr. Susan Ackerman

CHAIR: Megan Mulligan

11:15 Susan Ackerman

tRNAs, Ribosome Stalling, and Neuronal Function (abstract)

12:15-13:00 Lunch Break

13:00-15:00 Session 32

The Cerebellar Nuclei in the Limelight (at Last)

Speakers: Marylka Yoe Uusisaari, Justus Kebschull, Richard Wingate, Abigail Person

Chair: Dr. Dan Goldowitz

CHAIR: Dan Goldowitz

13:00 Tom Ruigrok

The cerebellar nuclei: setting the stage (abstract)

13:25 Justus Kebschull

A deeply conserved cell-type set forms an archetypal cerebellar nucleus (abstract)

13:50 Richard Wingate

The evodevo of cerebellar nuclei: from temporal patterning to autistic spectrum disorder (abstract)

14:15 Abigail Person

Cerebellar refinement of skilled movements (abstract)

18:00-22:00

Banquet

The Jack Robinson Gallery