International Phase II/NAT workshop

2024

September 25-26

The Ohio State University
1645 Neil Ave, Columbus, Ohio

International Phase II/N-acetyltransferase Workshop
September 25-26, 2024
Hamilton Hall, Ohio State University Medical Center, 1645 Neil Ave, Columbus, Ohio 43210

All roundtable and platform sessions include onsite and virtual (Zoom) presentations and discussions.

Workshop registration is free of charge to all participants. Refreshments and meals are provided at no cost to the speakers and to a limited number of onsite participants. Anyone interested in presenting or attending (either onsite or virtually) should send their contact information to David W. Hein at david.hein@louisville.edu as soon as possible since the number of additional onsite attendees for whom meals will be provided at no cost may be limited.

Special thanks to the Society of Toxicology for funding, the University of Louisville for logistic support and to Ohio State University for logistic support and hosting the workshop.

Organizing Committee

- David W. Hein, University of Louisville, Louisville, Kentucky USA
- Sotiria Boukouvala, Democritus University of Thrace, Alexandroupolis, Greece
- Giannoulis Fakis, Democritus University of Thrace, Alexandroupolis, Greece

The workshop will immediately follow the Pharmacogenomics Global Research Network meeting scheduled for September 23-25 at Ohio State University. Meeting site: https://www.pgrn.org/event-5628011.

Accommodation Recommendations:

The Blackwell Hotel: 2110 Tuttle Park Place, to Hamilton Hall 0.9 miles - 19 minute walk
Hyatt House: 633 W 5th Avenue, to Hamilton Hall 0.9 miles - 21 minute walk
Aloft: 1295 Olentangy River Road, to Hamilton Hall 1.2 miles - 26 minute walk
Springhill Suites: 1421 Olentangy River Road, to Hamilton Hall 1.0 miles - 23 minute walk
The Graduate (recently acquired by Hilton, so Hilton rewards will apply here): 750 N High Street, to Hamilton Hall 1.7 miles 38 minute walk

Pharmacogenomics GLOBAL RESEARCH NETWORK

SOT Society of Toxicology
Creating a Safer and Healthier World by Advancing the Science and Increasing the Impact of Toxicology

THE OHIO STATE UNIVERSITY
COLLEGE OF PHARMACY

UNIVERSITY OF LOUISVILLE
SCHOOL OF MEDICINE

September 25

Registration and refreshments (2:30-3:00 pm)

Welcome by **David W. Hein**; Introduction of Organizing Committee; funding acknowledgements; expressions of thanks; schedule updates; conference dinners; participant introductions

Conference Roundtable (3:00-5:30 pm)

- NAT nomenclature committee and PharmVar expert panel updates on *NAT2* allele nomenclature
  - *Sotiria Boukouvala and Georgia Papanikolaou, Democritus University of Thrace, Alexandroupolis, Greece*

- CPIC update on *NAT2* allele function
  - *David W. Hein, University of Louisville School of Medicine, Louisville, Kentucky USA*

- CPIC therapeutic recommendations for hydralazine therapy related to NAT2 phenotype
  - *Michael T. Eadon, Indiana University School of Medicine, Indianapolis, Indiana USA*

- The use of language related to human diversity in pharmacogenetics: The case of NAT2
  - *Kyle B. Brothers, University of Louisville School of Medicine, Louisville, Kentucky USA*

- Discussion regarding NAT nomenclature updates and recommendations
  - *All workshop participants*

Platform Session I: Diversity in *NAT2* and other pharmacogenes (6:00-6:30 pm)

- Evolution of human diversity in NAT2 and other pharmacogenes
  - *Estella S. Poloni, University of Geneva, Genève, Switzerland*

Private Conference Dinner (7 – 10 pm; The Columbus Fish Market, 1245 Olentangy River Road, Columbus Ohio 43212)

September 26

Breakfast (8:00- 8:30 am)

- The polymorphic enzymes NAT2, GSTM1, and GSTT1 and urinary bladder cancer risk after the structural change in the local chemical industry
  - *Klaus Golka, Leibniz Research Centre for Working Environment and Human Factors at TU Dortmund (IfADo), Dortmund, Germany (via Zoom)*

Platform Session II: NATs in chronic diseases (8:30 to 10:30 am)

- Phenotypic Distribution of Acetylation and Hydroxylation Profiles Based on *NAT2*, *CYP2E1*, *CYP3A4*, and *CYP3A5* Genes Across Brazil: Implications for Adverse Drug Reactions in Leprosy
    - *Adalberto R. Santos, Oswaldo Cruz Institute, Rio de Janeiro, Brazil (via Zoom)*

- The role of arylamine N-acetyltransferases in chronic degenerative diseases: exploring their possible function in the immune system
    - *Diana Portales-Perez, Autonomous University of San Luis Potosí, Mexico*

- Non-coding and intergenic genetic variants of human arylamine N-acetyltransferase 2 (*NAT2*) gene are associated with differential plasma lipid and cholesterol levels and cardiometabolic disorders
    Kyung U. Hong, Western New England University, Springfield, Massachusetts, USA (via Zoom)

- Differential expression of *NAT1* in hormone receptor positive vs. negative female breast cancer
    - *Giannoulis Fakis, Democritus University of Thrace, Alexandroupolis, Greece*

Refreshment Break (10:30 am to 11:00 am)

Platform Session III: *NAT2* allele definition and function (11:00 am to 12:15 pm)

- Single nucleotide and copy number variation at the *NAT2* locus, assessed according to PharmVar criteria and nomenclature
    - *Georgia Papanikolaou, Democritus University of Thrace, Alexandroupolis, Greece*

- Differences in β-naphthylamine metabolism and toxicity in Chinese hamster ovary cell lines transfected with human *CYP1A2* and *NAT2*4*, *NAT2*5B* or *NAT2*7B* N-acetyltransferase 2 haplotypes
    - *Mariam R. Habil, University of Louisville, Louisville, Kentucky, USA*

- The role of N-acetyltransferase 1 in epithelial to mesenchymal transition of U87 cells
    - *Luke A. Schroeder, University of Louisville School of Medicine, Louisville, Kentucky USA*

Conference lunch and roundtable discussion of *NAT2* allele function (12:15 – 1:30 pm)

- The effect of the rs1799931 c.857G>A (p.Gly286Glu) polymorphism on N-acetyltransferase 2-mediated carcinogen metabolism and genotoxicity differs with heterocyclic amine exposure
    - *David W. Hein, University of Louisville, Louisville, Kentucky USA*

Platform Session IV: NATs and mitochondrial function (1:30 – 2:30 pm)

- Stable isotope tracing reveals an altered fate of glucose in N-acetyltransferase 1 knockout breast cancer cells
    - *James TF Wise, Louisiana State University, Baton Rouge, Louisiana, USA*

- The arylamine N-acetyltransferases as therapeutic targets in metabolic diseases associated with mitochondrial dysfunction
    - *Rodney F. Minchin, University of Queensland, Brisbane, Australia (via Zoom)*

Platform Session V: NAT functions in xenobiotic metabolism and beyond (2:30-5:30 pm)

- N-acetyltransferase 2 genetic polymorphism modifies genotoxic and oxidative damage from new psychoactive substances
    - *Raul Salazar-Gonzalez, Discovery Life Sciences, Malden, Massachusetts, USA*

- Assaying NATs of human and other primates
    - *Ioanna Stavrakaki, Democritus University of Thrace, Alexandroupolis, Greece (currently at University of Crete, Heraklion, Greece; via Zoom)*

- Bacterial NATs in xenobiotic metabolism
    - *Maria-Giusy Papavergi, Democritus University of Thrace, Alexandroupolis, Greece (currently at Harvard Medical School, Cambridge, Massachusetts, USA)*

- Bacterial NATs in secondary metabolism
    - *Dionysios Patriarcheas, Democritus University of Thrace, Alexandroupolis, Greece (currently at University of West Virginia, Morgantown West Virginia, USA)*

- NATs in plant-pathogenic fungi
    - *Anthony E. Glenn, US Department of Agriculture, Agricultural Research Service, Athens, Georgia, USA (via Zoom)*

- Unraveling the evolutionary origins of microbial NATs: from transglutaminases to acetyltransferases, and from xenobiotic biotransformation to the biosynthesis of secondary metabolites
    - *Sotiria Boukouvala, Democritus University of Thrace, Alexandroupolis, Greece*

- A summary of antibody reagents against NATs - all available to a good home!
    - *Edith Sim, University of Oxford, Oxford, UK (via Zoom)*

Platform Session VI: UDP- UDP-glucuronosyltransferases (5:30 – 6:30 pm)

- Drug-drug interactions between cannabinoids and UGT-mediated metabolism of opioids and benzodiazepines
    - *Philip Lazarus, State University of New York at Buffalo, Buffalo, New York, USA*

- Role of N-glycosylation in the activity, function, and cellular localization of human uridine diphosphate glucuronosyltransferase 1A6 (UGT1A6)
    - *Yuejian Liu, University of British Columbia, Vancouver, British Columbia, Canada (via Zoom)*

- Comprehensive characterization of rat and mouse UDP-glucuronosyltransferases
    - *Yuji Ishii, Kyushu University, Fukuoka, Japan (via Zoom)*

Private Conference Celebration and Dinner (7 – 10 pm; upstairs loft, Wine on High 789 North High Street, Short North Arts District, Columbus, Ohio 43215; dinner provided by Hubbard Grill).

Celebrating over 25 years of International N-acetyltransferase Workshops hosted in eight different countries around the world

First International Arylamine N-acetyltransferase Workshop
October 22-24,1998; Kuranda, Australia

Second International Arylamine N-acetyltransferase Workshop
October 5-6, 2001; Oxford, UK

Third International Arylamine N-acetyltransferase Workshop
August 27-28, 2004; Vancouver, Canada

Fourth International Arylamine N-acetyltransferase Workshop
September 14-16, 2007; Alexandroupolis, Greece

Fifth International Arylamine N-acetyltransferase Workshop
September 1-3, 2010; Paris, France (Meeting website)

Sixth International Arylamine N-acetyltransferase Workshop
October 4-6, 2013; Toronto, Canada (Meeting website)

Seventh International Workshop on N-acetyltransferases
June 18-20, 2016; Trier, Germany (Meeting website)

Eighth International Workshop on N-acetyltransferases
September 25-26, 2024; Columbus, Ohio USA*

*Rescheduled from April 1-3, 2020 in Louisville, Kentucky USA due to worldwide COVID19 pandemic.

International Phase II/N-acetyltransferase Workshop

Onsite Participants

Ammar Almarzoog
Kuwait Cancer Control Center
Kuwait, Cityu, Kuwait

Kyle B. Brothers
University of Louisville School of Medicine
Louisville, Kentucky USA

Sotiria Boukouvala
Democritus University of Thrace
Alexandroupolis, Greece

Jerome Dixon
Virginia Commonwealth University
Richmond, Virginia USA

Michael T. Eadon
Indiana University School Medicine
Indianapolis, Indiana USA

Giannoulis Fakis
Democritus University of Thrace
Alexandroupolis, Greece

Yelena Guttman
University of California, San Francisco
San Francisco, California USA

Mariam R. Habil
University of Louisville School of Medicine
Louisville, Kentucky USA

David W. Hein
University of Louisville School *of* Medicine
Louisville, Kentucky USA

Philip Lazarus
State University of New York at Buffalo
Buffalo, New York, USA

Georgia Papanikolaou
Democritus University of Thrace
Alexandroupolis, Greece

Maria-Giusy Papavergi
Harvard University
Cambridge, Massachusetts USA

Dionysios Patriarcheas
West Virginia University
Morgantown, West Virginia USA

Estella S. Poloni
University of Geneva
Geneve, Switzerland

Diana Portales-Perez
Autonomous University of San Luis Potosi
San Luis Potosi, Mexico

Raul Salazar-Gonzalez
Discovery Life Sciences
Malden, Massachusetts USA

Luke A. Schroeder
University of Louisville School of Medicine
Louisville, Kentucky USA

Marcus Stepp
AmplifyBio
Columbus, Ohio USA

Chonlaphat Sukasem
Mahidol University
Salaya, Thailand

Bailey Tibben
St. Jude Children's Research Hospital
Memphis, Tennessee USA

International Phase II/N-acetyltransferase Workshop

Michelle Whirl-Carrillo
Stanford University
Stanford, California USA

James TF Wise
Louisiana State University
Baton Rouge, Louisiana USA

Virtual Speakers

Adalberto R. Santos
Oswaldo Cruz Institute
Rio de Janeiro, Brazil

Klaus Golka
Leibniz Research Centre for Working Environment and Human Factors at TU Dortmund (IfADo), Dortmund, Germany

Rodney F. Minchin
University of Queensland
Brisbane, Australia

Ioanna Stavrakaki
University of Crete
Heraklion, Greece

Anthony E. Glenn
US Department of Agriculture Agricultural Research Service
Athens, Georgia, USA

Kyung U. Hong
Western New England University
Springfield, Massachusetts USA

Edith Sim
University of Oxford
Oxford, UK

Yuejian Liu
University of British Columbia Vancouver, Canada

Yuji Ishii
Kyushu University
Fukuoka, Japan

International Phase II/N-acetyltransferase Workshop

Virtual Participants

Christina Aquilante
University of Colorado
Denver, Colorado, USA

Dimitra Basdani
Democritus University of Thrace
Alexandroupolis, Greece

Joshua Hood
University of Louisville School of Medicine
Louisville, Kentucky, USA

Nicola Laurieri
University of Oxford
Oxford, UK

Yeeming Lee
University of Colorado
Denver, Colorado, USA

Marcia Quinhones Pires Lopes
Fiocruz
Rio de Janeiro, Brazil

James Martin
University of Colorado
Denver, Colorado, USA

Charlene McQueen
University of Arizona
Tucson Arizona USA

Mederic Mouterde
University of Geneva
Geneve, Switzerland

Andrew Paterson
University of Toronto
Toronto, Canada

Mariana Puzer Regis
Fiocruz
Rio de Janeiro, Brazil

Katrin Sangkuhl
Stanford University
Stanford, California USA

Victória de Moraes Silva
Fiocruz
Rio de Janeiro, Brazil

Youssef Tawik
University of Mainz
Mainz, Germany

Raquel Lima de Figueiredo Teixeira
Fiocruz
Rio de Janeiro, Brazil

Janet Zang
US Food and Drug Administration
College Park, Maryland USA

Sokratis Zekkas
Democritus University of Thrace
Alexandroupolis, Greece

Phase II/N-acetyltransferase Workshop Photos
September 25-26, 2024
Columbus, Ohio, USA


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