

Curriculum Vitae

PERSONAL INFORMATION

Name: Narakorn Khunweeraphong
Gender: Female
Nationality: Thai
Present address: Medical University of Vienna, Max F. Perutz Laboratories (MFPL), Department of Medical Biochemistry, Dr. Bohr Gasse 9/2, A-1030 Vienna, Austria
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EDUCATION

2006-2011 **Ph.D. in Molecular Pharmacology and Medical Sciences**
Department of Pharmacology and Toxicology, Kyorin University Graduate School of Medicine, Tokyo, Japan

2007-2011 **Ph.D. research student** (Joined program with Kyorin University)
Department of Bio-system Pharmacology, Faculty of Medicine, Osaka University Graduate School of Medicine, Osaka, Japan

2004-2006 **M.Sc. in Molecular Genetics and Genetic Engineering**
Institute of Molecular Biosciences, Mahidol University, Salaya Campus, Nakhonpathom, Thailand

1997-2001 **B.Sc. in Medical Technology**
Faculty of Medical Technology, Mahidol University, Salaya Campus, Nakhonpathom, Thailand

LICENSURE INCLUDES: Medical Laboratory Scientists License, Thailand, 2001

SUMMARY OF ACHIEVEMENTS

2016 **Award for young research investigator in the ABC2016 meeting** ATP-Binding Cassette (ABC) Proteins: from Multidrug Resistance to Genetic Diseases, Innsbruck, Austria (Poster and short talk presentation)

2012-2013 **Scholarship for Postdoctoral Researcher (Technology Grants)** of Austrian Government, the Federal Ministry of Science and Research (BMWF)

2006-2011 **Full scholarship for Research student and Ph.D. program from Japanese Government (Monbukagakusho)**, MEXT: Ministry of Education, Culture, Sports, Science and Technology of Japan

RESEARCH INTEREST

Molecular structure and function of membrane transporters
Medical molecular biology especially in cancer research
RNA interference research
Diagnostic research and development for infectious diseases
Inhibitors development and drug design

WORK EXPERIENCE

2013-present Postdoctoral Fellow in Department of Medical Biochemistry, Max F. Perutz Laboratories (MFPL)-Vienna Biocenter, Medical University of Vienna, Vienna, Austria

2012-2013 Postdoctoral Fellow in the Institute of Medical Chemistry, Medical University of Vienna, Vienna, Austria

2011-2012 Postdoctoral Fellow in Division of Instruments for Research, Office for Research and Development, Faculty of Medicine Siriraj Hospital, Mahidol University, Bangkok, Thailand

2011 (6 months) Instructor in Mathematics for English Program students at Sa-ard Phadern Wittaya School, Chumphon, Thailand

2007-2011 Research Assistant in Division of Bio-system Pharmacology, Department of Pharmacology Graduate School of Medicine, Osaka University, Osaka, Japan

2003-2006 Medical Technologist of Clinical Laboratory Department at Krung Siam St. Calos Hospital, Pathumthanee, Thailand

2001-2006 Medical Technologist (Head of Clinical Laboratory Division) at Pathumvej Hospital and the Laboratory quality auditor for Professional Laboratory Management Corp., Co.,Ltd), Pathumthanee, Thailand

RESEARCH EXPERIENCE

- 2013-present** **Research Projects, Max F. Perutz Laboratories (MFPL)-Vienna Biocenter, Dept. of Medical Biochemistry, Medical University of Vienna, Vienna, Austria**
 • Molecular structure function analysis of mammalian ABCGs transporter for multidrug resistance in human cancer and diseases
- 2012-2013** **Research Projects, Institute of Medical Chemistry, Medical University of Vienna, Vienna, Austria**
 • Role of active site tyrosines for interaction of ABCB1 (Multidrug resistance protein 1 (MDR1), P-gp) transporter with propafenone type substrate analogues
 • Establishment of cell-based system for functional study of ABCB11 (Bile Salt Export Pump) transporter
- 2011-2012** **Research Projects, Faculty of Medicine Siriraj Hospital, Mahidol University, Bangkok, Thailand**
 • Development and evaluation of CD4+ T cell expansion protocol using anti-CD3/28 coated beads for autologous adoptive transfer in HIV infected patients
 • Production of humanized monoclonal antibody against endemic infectious microorganism
 • Characterization and functional analysis of CD38 in memory T cell subsets
- 2010-2011** **Ph.D. Dissertation, Bio-system Pharmacology, Department of Pharmacology, Faculty of Medicine, Osaka University Graduate School of Medicine, Osaka, Japan**
 • Establishment of HEK293 cell lines stably expressing human amino acid transporters LAT1 and LAT2 and delineation of LAT2 function by selective substrate L-alanine
- 2007-2011** **Research Projects, Bio-system Pharmacology, Department of Pharmacology, Faculty of Medicine, Osaka University Graduate School of Medicine, Osaka, Japan**
 • Functional characterization of transporters expressed cell lines with library compounds screening
 • Establishment and characterization the biological functions of stable cell lines expressing amino acid transporters, hLAT1, hLAT2, hLAT3, hLAT4, mTAT1, hSERT, hNET, hDAT and hOATP
 • Interaction of an intestinal amino acid transporter AAT4 with PDZ-protein by a yeast two-hybrid system
 • Synergistic enhancement of methylmercury cytotoxicity by L-glutamate in neuroblastoma cell lines
 • Molecular characterization of plasma membrane amino acid sensor for growth signaling in HEK293T through mTOR and Akt pathway
- 2005-2006** **M.Sc. thesis, Institute of Molecular Biosciences, Mahidol University, Salaya campus, Nakhonpathom, Thailand**
 • Expression of Argonaute protein of *Penaeus monodon* and biological assay for its role in RNA interference pathway
- 2005** **M.Sc. Advanced Project, Molecular Biosciences, Mahidol University, Salaya campus, Nakhonpathom, Thailand**
 • Generation of Chimeric NS2B/NS3 Proteases and determinants of cofactor-dependent enzyme activation from four Dengue virus serotypes

PUBLICATIONS

Khunweeraphong N, Stockner T and Kuchler K. The structure of the human ABC transporter ABCG2 reveals a novel mechanism for drug extrusion, *Scientific Reports*, 2017

Montanari F, Pinto M, **Khunweeraphong N**, Wlcek K, Sohail I.M, Noeske T, Boyer S, Chiba P, Stieger B, Kuchler K, and Ecker G.F Flagging Drugs That Inhibit the Bile Salt Export Pump, *Mol. Pharmaceutics*, 2016

Dönmez Y, **Khunweeraphong N**, Parveen Z, Schmid D, Artaker M, Ecker GF, Sitte H, Pusch O, Stockner T, Chiba P. Pore exposed tyrosine residues are important H-bonding partners in P-glycoprotein drug interaction, *Molecular Pharmacology*, 2014.

Onlamoon N, Boonchan M, Unpol P, **Khunweeraphong N**, Sukapirom K, Ammaranond P, Pattanapanyasat K. Influence of cell isolation method on the optimization of CD4+ T cell expansion using anti-CD3/CD28 coated beads., *Asian Pacific journal of allergy and immunology/launched by the Allergy and Immunology Society of Thailand* 06/2013; 31(2):99-105.

Khunweeraphong N, Nagamori S, Wiriyaermkul P, Nishinaka Y, Wongthai P, Ohgaki R, Tanaka H, Tominaga H, Sakurai H, Kanai Y. Establishment of stable cell lines with high expression of heterodimers of human 4F2hc and human amino acid transporter LAT1 or LAT2 and delineation of their differential interaction with α -alkyl moieties. *J Pharmacol Sci.* 2012; 119(4):368-380

Amonpatumrat S, Sakurai H, Wiriyaermkul P, **Khunweeraphong N**, Nagamori S, Tanaka H, Piyachaturawat P, Kanai Y. L-glutamate enhances methylmercury toxicity by synergistically increasing oxidative stress. *J Pharmacol Sci.* 2008; 108(3):280-289

RESEARCH SKILLS

1. Molecular Biology Techniques

Molecular Genetics

- Molecular recombinant gene cloning and manipulations
- Radio-isotope labeling RNA and management
- Electro Mobility Shift Assay (EMSA)
- RNA interference

Protein Biochemistry

- Gel electrophoresis (Native and Denaturing gel)
- Western Blot and Dot blot Analysis (Quantitative and Qualitative analysis)
- Protein expression and purification using Bacterial, Yeast and Mammalian expression system
- Yeast-two hybrid system
- Co-Immunoprecipitation

2. Cell Biology

- Cell culture and manipulations
- Stable cell lines establishment
- Cell based assays; MTT, XTT, viability and toxicity tests
- DNA transfection in cell lines
- Functional transport assay in cell lines and oocytes using radio-isotope labeling amino acids
- Signaling transduction
- Phosphorylation experiments
- Antibody preparation
- Oocyte experiments
- Flow cytometry (FACSCalibur, LSR II, FACS Aria III, LSRFortessa)
- ATPase activity assay
- Protein stability (Cycloheximide chase assay)

3. Microscopic

- Immuno Fluorescent microscopy
- Confocal microscopy

4. Immunology

- ELISA (Direct/Indirect)

5. Structure Biology and Bioinformatics

6. Bioinformatics/Computer skills

- Molecular biology data manipulation programs: Vector NTI, Chromas, BioEdit, GraphPad Prism, Origin, Genedoc, Clustal-X
- Structural modelling and visualize: VMD
- Protein sequence analysis tools: ExPASy
- Flow cytometry analysis: FlowJo, CellQuest, FACSDiva
- Microsoft office, Linux
- ChemDraw, Inkscape, Photoshop, Illustrator

ACADEMIC REFERENCES

1. Professor Dr. Karl Kuchler, MD. Ph.D.

Max F. Perutz Laboratories (MFPL)-Vienna Biocenter, Department of Medical Biochemistry, Medical University of Vienna, Dr.
Bohr Gasse 9/2, A-1030 Vienna, Austria

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2. Professor Dr. Peter Chiba, MD. Ph.D.

Institute of Medical Chemistry, Medical University of Vienna, A-1090 Vienna, Austria

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3. Professor Kovit Pattanapanyasat, Ph.D.

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3. Associate Professor Apinunt Udomkit, Ph.D.

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