Laszlo Prokai, PhD
College of Biomedical and Translational Sciences
Pharmacology & Neuroscience
Email: Laszlo.Prokai@unthsc.edu



Area of Expertise

Dr. Prokai is the first Chair in Biochemistry endowed by the Houston-based Welch Foundation, one of the United States' oldest and largest private funding sources for basic research, at UNT Health Science Center. He is affiliated with UNTHSC's Department of Pharmacology and Neuroscience, and with the Institute of Healthy Aging. Dr. Prokai also is Adjunct Professor at the Department of Chemistry and Biochemistry, University of Texas at Arlington, as well as Adjunct Professor and Associate Member of the Graduate Faculty at the Department of Chemistry and Biochemistry of Texas Christian University.
His interests focus on chemistry-driven multidisciplinary research and include the discovery, chemical biology, bioorganic, and medicinal chemistry of central nervous system agents, as well as neuropeptides, proteomics, and mass spectrometry.

Dr. Prokai has maintained an actively funded research program from grant support by the National Institutes of Health (NIH) as well as through collaborations with pharmaceutical and chemical companies. Dr. Prokai was the recipient of the 2017 Wilfred T. Doherty Award of the Dallas/Fort Worth Section of the American Chemical Society (ACS) and the 2017 Southwest ACS Regional Award.

Qualifications

MS in Chemistry, University of Veszprem

BS in Chemical Engineering, University of Veszprem

PhD in Radiochemistry, University of Veszprem

Recent Publications

Cyclic stretch increases transglutaminase 2-mediated serotonylation of extracellular fibronectin in cultured optic nerve head astrocytes: a pilot study
Rangan, R. S., Kapic, A., do Valle, R., Lam, C., Patel, P. D., Pham, J. H., Raphi, R., Prokai, L., Tovar-Vidales, T. & Clark, A. F., Sep 2026, In: Matrix Biology Plus. 31, 100201.

Sex-Dependent Responses in the Retina Proteome to Ocular Hypertension in a Mouse Model of Glaucoma
Zaman, K., Morgan, A. B., Prokai-Tatrai, K., Inman, D. M. & Prokai, L., Aug 2026, In: International journal of molecular sciences. 27, 16, 7153.

Brain-Selective Estrogen Therapy in Male and Female Marmosets Partially Counteracts the Adverse Effects of Aromatase Inhibition on the Brain and Behavior
Cournoyer, H., Monroy Duenas, A., Bharadwaj, A., Kania, N., Burns, I., Regan, K., Sweet, J., Amato, J., Saia, C., Sabbouh, G., Bergman, J., Nguyen, V., Remage-Healey, L., Vazey, E. M., Merchenthaler, I., Prokai, L. & Lacreuse, A., 8 Jul 2026, In: Journal of Neuroscience. 46, 27, e2021252026.

Comprehensive Insights into Obesity and Type 2 Diabetes from Protein Network, Canonical Pathway, Phosphorylation and Antimicrobial Peptide Signatures of Human Serum
Bertalan, P. M., Nokhoijav, E., Pap, Á., Neagu, G. C., Káplár, M., Darula, Z., Kalló, G., Prokai, L. & Csősz, É., Dec 2025, In: Proteomes. 13, 4, 67.

Estradiol, via estrogen receptor β signaling, mediates stress-susceptibility in the male brain
Georgiou, P., Postle, A. F., Mou, T. C. M., Potter, L. E., An, X., Zanos, P., Patton, M. S., Pultorak, K. J., Clark, S. M., Ngyuyen, V., Powels, C. F., Prokai-Tatrai, K., Kirmizis, A., Merchenthaler, I., Prokai, L., McCarthy, M. M., Mathur, B. N. & Gould, T. D., Oct 2025, In: Molecular Psychiatry. 30, 10, p. 4445-4459 15 p.

Retina-Targeted 17β-Estradiol by the DHED Prodrug Rescues Visual Function and Actuates Neuroprotective Protein Networks After Optic Nerve Crush in a Rat Model of Surgical Menopause

Prokai-Tatrai, K., Zaman, K., Kapic, A., Hogan, K., Sanchez-Rodriguez, G., Silverio, A. E., Nguyen, V., Prokai, L. & Feola, A. J., Mar 2025, In: International journal of molecular sciences. 26, 5, 1846.

Oral administration of ethinyl estradiol and the brain-selective estrogen prodrug DHED in a female common marmoset model of menopause: Effects on cognition, thermoregulation, and sleep
Rothwell, E. S., Viechweg, S. S., Prokai, L., Mong, J. A. & Lacreuse, A., Jan 2025, In: Hormones and Behavior. 167, 105670.

Identification of Protein Networks and Biological Pathways Driving the Progression of Atherosclerosis in Human Carotid Arteries Through Mass Spectrometry-Based Proteomics
Kalló, G., Zaman, K., Potor, L., Hendrik, Z., Méhes, G., Tóth, C., Gergely, P., Tőzsér, J., Balla, G., Balla, J., Prokai, L. & Csősz, É., Dec 2024, In: International journal of molecular sciences. 25, 24, 13665.

Installation of an Indole on the BRCA1 Disordered Domain Using Triazine Chemistry
Claton, L. E., Baker, C., Martin, H., Dzyuba, S. V., Zaman, K., Prokai, L., Stewart, M. D. & Simanek, E. E., Dec 2024, In: Biomolecules. 14, 12, 1625.

Identification of Estrogen-Responsive Proteins in Mouse Seminal Vesicles Through Mass Spectrometry-Based Proteomics
Kapic, A., Zaman, K., Nguyen, V., Prokai-Tatrai, K. & Prokai, L., Nov 2024, In: Pharmaceuticals. 17, 11, 1508.

Sponsored Projects

2024-1.2.3-HU-RIZONT, STAGE -
Prokai, L. (PI)
Semmelweis University
30/10/25 → 1/07/27

2/2 Langston University-UNTHSC Partnership for Cancer Research and Education Cancer Research
Basha, R. (PI) & Prokai, L. (CoI)
NCI: National Cancer Institute
20/09/18 → 31/08/22

2/2 Langston University-UNTHSC Partnership for Cancer Research and Education Cancer Research
Basha, R. (PI) & Prokai, L. (CoI)
NCI: National Cancer Institute
20/09/18 → 31/08/22

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20/09/18 → 31/08/22

2/2 Langston University-UNTHSC Partnership for Cancer Research and Education Cancer Research
Basha, R. (PI) & Prokai, L. (CoI)
NCI: National Cancer Institute
20/09/18 → 31/08/22

A Novel Neuroprotective Approa
Prokai-Tatrai, K. (PI), Sumien, N. (CoI) & Prokai, L. (CoI)
NEI: National Eye Institute
1/02/23 → 31/01/28

A Novel Neuroprotective Approach for Glaucoma
Prokai-Tatrai, K. (PI) & Prokai, L. (CoI)
NEI: National Eye Institute
1/08/16 → 31/07/22

Brain-Selective Estrogen Thera
Prokai, L. (PI)
University of Maryland, Baltimore
15/01/21 → 31/12/25

Brain-selective estrogen therapy for menopausal hot flushes in an advanced translational animal model
Prokai, L. (CoPI), MERCHENTHALER, I. J. (PI) & PUCHE, A. (CoPI)
National Institute on Aging
15/01/21 → 31/12/21

Brain-selective estrogen therapy for menopausal hot flushes in an advanced translational animal model
PUCHE, A. (CoPI), Merchenthaler, I. (PI), PUCHE, A. (CoPI), Prókai, L. (CoPI), MERCHENTHALER, I. J. (CoPI), Prokai, L. (CoPI) & Prokai, L. (CoPI)
15/01/21 → 31/12/24

Brain-Selective Therapy to Alleviate Hot Flushes of Prostate Cancer Patients
Prokai, L. (PI)
NCI: National Cancer Institute
1/04/17 → 31/03/20

Brain-Selective Therapy to Alleviate Hot Flushes of Prostate Cancer Patients
Prokai, L. (CoPI) & MERCHENTHALER, I. J. (PI)
National Cancer Institute
1/04/17 → 31/03/21

Brain-Selective Therapy to Alleviate Hot Flushes of Prostate Cancer Patients
Prokai, L. (CoPI), Prókai, L. (PI), Prokai, L. (PI), MERCHENTHALER, I. J. (CoPI) & Prokai, L. (PI)
1/04/17 → 31/03/21

BRAIN TARGETING OF THYROTROPIN RELEASING HORMONE ANALOGS
Prokai, L. (PI) & Prókai, L. (PI)
National Institute of Mental Health
5/08/99 → 31/07/04

BRAIN TARGETING OF THYROTROPIN RELEASING HORMONE ANALOGS
Prokai, L. (PI)
5/08/99 → 31/07/04

Effect of Glutaredoxin 2 (Grx2) siRNA on Drug Resistance of Hepatocellular Carcinoma Cells to Doxorubicin
Wu, H. (PI) & Prokai, L. (CoI)
Intramural Research(UNTHSC)
1/09/13 → 31/08/15

Effects of brain-selective estradiol on gene expression and female sex behavior
Prokai, L. (CoPI), MERCHENTHALER, I. J. (PI), WALLEN, K. (CoPI), MERCHENTHALER, I. J. (PI), Prókai, L. (PI), WALLEN, K. (PI), MERCHENTHALER, I. J. (PI), Prókai, L. (PI) & WALLEN, K. (PI)
National Institute of Child Health and Human Development
5/08/13 → 31/05/16

Effects of brain-selective estradiol on gene expression and female sex behavior
WALLEN, K. (PI), MERCHENTHALER, I. J. (CoPI), Prokai, L. (CoPI) & Prokai, L. (CoPI)
5/08/13 → 31/05/16

Effects of Brain-Selective Estradiol on Gene Expression and Female Sex Behavior
Prokai, L. (PI)
Emory University
5/08/13 → 31/05/14

ELECTROSPRAY IONIZATION ATMOSPHERIC PRESSURE CI MS
Prokai, L. (PI)
National Center for Research Resources
15/05/97 → 14/05/98

ELECTROSPRAY IONIZATION ATMOSPHERIC PRESSURE CI MS
Prokai, L. (PI)
15/05/97 → 14/05/98

Estrogen-Derived Para-Quinol Intervention In Alzheimer's Disease
Prokai, L. (PI) & Prokai-Tatrai, K. (CoI)
University of Maryland at College Park
15/09/09 → 31/08/12

High-Resolution Tandem Mass Spectrometer for Advanced Biomolecular Research
Prokai, L. (PI), Forster, M. (CoI) & Cheng, E. Y. (CoI)
Intramural Research(UNTHSC)
27/01/17 → 31/01/18

Impact of Brain Estrogens on C
Prokai, L. (PI)
University of Massachusetts Amherst
1/01/21 → 31/12/26

Impact of brain estrogens on cognition and brain aging in a non-human primate
Prokai, L. (CoPI), LACREUSE, A. (PI) & MERCHENTHALER, I. J. (CoPI)
National Cancer Institute
1/01/21 → 31/12/21

Impact of brain estrogens on cognition and brain aging in a non-human primate
LACREUSE, A. (PI), MERCHENTHALER, I. J. (CoPI), Merchenthaler, I. (CoPI), LACREUSE, A. (CoPI), Prókai, L. (CoPI), Prokai, L. (CoPI) & Prokai, L. (CoPI)
1/01/21 → 31/12/24

MASS SPECTROMETRY CORE
Prókai, L. (PI) & Prokai, L. (PI)
1/04/07 → 31/05/11

Mechanisms of Carisoprodol Abuse
Prokai, L. (PI)
West Virginia University Research Corp
1/02/12 → 31/05/14

Mechanisms of Carisoprodol Abuse
Prokai, L. (CoPI), DILLON, G. (PI), DILLON, G. (PI), Dillon, G. H. (PI), FORSTER, M. J. (PI), Prókai, L. (PI), Dillon, G. H. (PI), FORSTER, M. J. (PI), Prókai, L. (PI), FORSTER, M. (CoPI) & FORSTER, M. (CoPI)
National Institute on Drug Abuse
1/07/09 → 31/05/14

Mechanisms of Carisoprodol Abuse
DILLON, G. (PI), DILLON, G. (CoPI), FORSTER, M. (CoPI), Prókai, L. (CoPI), Forster, M. (CoPI), Prokai, L. (CoPI) & FORSTER, M. (CoPI)

1/07/09 → 31/05/14

Melanocortin Ligands in Disease Cachexia
Prokai, L. (PI)
Tensive Controls, Inc.
26/07/12 → 30/06/14

Metabolic Vulnerability as a D
Inman, D. (PI) & Prokai, L. (CoI)
NEI: National Eye Institute
30/09/21 → 31/07/26

NEUROPEPTIDE FF ANTAGONISTS FOR TREATING OPIATE ABUSE
Prokai, L. (PI)
National Institute on Drug Abuse
9/07/98 → 30/06/00

NEUROPEPTIDE FF ANTAGONISTS FOR TREATING OPIATE ABUSE
Prokai, L. (PI)
9/07/98 → 30/06/00

Novel Mechanistic Targets of Steroid Hormones in the Brain
ALLERAND, D. (CoPI), Koulen, P. (CoPI), SIMPKINS, J. (CoPI), FORSTER, M. (CoPI), Prókai, L. (CoPI), SINGH, M. (CoPI), Prókai, L. (CoPI), Koulen, P. (CoPI), Singh, M. (PI), Forster, M. (CoPI) & Prokai, L. (CoPI)
15/08/07 → 30/11/18

Novel treatment of menopausal hot flushes with an estradiol prodrug
MERCHENTHALER, I. J. (PI), Prokai, L. (CoPI) & Prokai, L. (CoPI)
1/03/09 → 28/02/14

Novel Treatment of Menopausal Hot Flushes with an Estradiol Prodrug
Prokai, L. (PI) & Prokai-Tatrai, K. (CoI)
University of Maryland, Baltimore
30/09/09 → 29/02/12

Novel Treatment of menopausal hot flushes with an extradiol prodrug
Prokai, L. (CoPI), MERCHENTHALER, I. J. (PI), MERCHENTHALER, I. J. (PI), Prókai, L. (PI), MERCHENTHALER, I. J. (PI) & Prókai, L. (PI)
National Institute on Aging
1/03/09 → 28/02/14

Proteomic Analysis of Nasal Washes from Desert Tortoises for Detection of Microbial Pathogens
Simecka, J. (PI) & Prokai, L. (CoI)
San Diego Zoo
1/08/13 → 31/12/16

Quantitative Proteomic Investigation of Estrogenic Endocrine-Disrupting Effects in the Rat Uterus (For: Fatima Sahyouni)
Prokai, L. (PI)
Intramural Research(UNTHSC)
1/01/15 → 31/08/16

Role of Brain Estradiol in the Treatment of Male Depression and Anxiety
Prokai, L. (PI)
University of Maryland, Baltimore
1/04/13 → 31/03/16

Role of Brain Estradiol in the Treatment of Male Depression and Anxiety
Prokai, L. (CoPI), GOULD, T. (PI), Gould, T. D. (PI) & Prókai, L. (PI)
National Institute of Mental Health
1/04/13 → 31/03/16

Role of Brain Estradiol in the Treatment of Male Depression and Anxiety
GOULD, T. (PI), Prokai, L. (CoPI) & Prokai, L. (CoPI)
1/04/13 → 31/03/16

ROLE OF MITHOCHONDRIAL ERB IN NEURONAL VULNDERABILITY TO NEUROTOXIC STRESS
Singh, M. (PI), SIMPKINS, J. (PI), Koulen, P. (PI), Forster, M. (PI), Prokai, L. (PI) & ALLERAND, D. (PI)
National Institute on Aging
1/01/01 → 30/11/18

Survey of Age-Associated Carbonylation of Brain Proteins
Prokai, L. (PI), Prókai, L. (PI) & Prókai, L. (PI)
National Institute on Aging
30/09/04 → 31/08/10

Survey of Age-Associated Carbonylation of Brain Proteins
Prókai, L. (CoPI) & Prokai, L. (PI)
30/09/04 → 31/08/10

The Role of Quinols in Estrogen Neuroprotection
Prokai, L. (PI), Prókai, L. (PI) & Prókai, L. (PI)
National Institute of Neurological Disorders and Stroke
15/01/03 → 31/12/07

The Role of Quinols in Estrogen Neuroprotection
Prókai, L. (PI) & Prokai, L. (CoPI)
15/01/03 → 31/12/03