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Pharmacology & Neuroscience
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Area of Expertise

Many neurological disorders remain untreatable and continue to cause incalculable losses to productivity, independence, and overall quality of life among patients globally. Currently available approaches to the treatment of ischemic stroke and traumatic brain injury do not adequately meet clinical and social demands. Discovery and development of drugs with clinical efficacy presents tremendous intellectual and commercial challenges.

Dr. Uteshev was trained as a neuro-pharmacologist and his lab focuses on developing novel therapeutic strategies and pharmacological tools to treat ischemic stroke, traumatic brain injury, and other challenging neurological disorders linked to brain injury and inflammation. The primary focus is the cholinergic system and $\alpha 7$ nicotinic acetylcholine receptors (nAChRs). These receptors are commonly expressed throughout the body including neuronal, glial, and immune tissues. A balanced activation of $\alpha 7$ nAChRs inhibits inflammation and elevates brain resistance to ischemic and traumatic injury. Accordingly, whenever a brain injury occurs, two simultaneous processes are automatically initiated as the injury stimulates $\alpha 7$ nAChRs: first, the brain tissue near the site of injury becomes protected from spreading injury; and second, the injury-induced inflammation is mitigated to prevent additional injury by the immune system. Positive allosteric modulators (PAMs) of $\alpha 7$ nAChRs hold considerable promise as stroke and TBI treatment. PAMs augment $\alpha 7$ activation by endogenous agonists, choline, and ACh, allowing for a gentle modulation of immune response and recovery from injury.

Qualifications

MS in Biophysics, Moscow Institute of Physics and Technology
BS in General Physics, Moscow Institute of Physics and Technology
PhD in Physiology, University of Toronto

Recent Publications

Expression and function of transient receptor potential ankyrin 1 ion channels in the caudal nucleus of the solitary tract
Feng, L., Uteshev-Gaard, V. V. & Premkumar, L. S., 1 May 2019, In : International journal of molecular sciences. 20, 9, 2065.

Treatment duration affects cytoprotective efficacy of positive allosteric modulation of $\alpha 7$ nAChRs after focal ischemia in rats
Gaidhani, N. & Uteshev-Gaard, V. V., 1 Oct 2018, In : Pharmacological Research. 136, p. 121-132 12 p.

Duration of isoflurane-based surgical anesthesia determines severity of brain injury and neurological deficits after a transient focal ischemia in young adult rats
Gaidhani, N., Sun, F., Schreihof, D. & Uteshev-Gaard, V. V., 1 Sep 2017, In : Brain Research Bulletin. 134, p. 168-176 9 p.

Boosting Endogenous Resistance of Brain to Ischemia
Sun, F., Johnson, S. R., Jin, K. & Uteshev-Gaard, V. V., 1 Apr 2017, In : Molecular Neurobiology. 54, 3, p. 2045-2059 15 p.

Stroke Cytoprotection: Can Repeating History with New Expectations Really Be the Path to Success in Stroke Research?
Lapchak, P. A. & Uteshev-Gaard, V. V., 1 Apr 2017, In : Translational Stroke Research. 8, 2, p. 104-106 3 p.

Allosteric modulation of nicotinic acetylcholine receptors: The concept and therapeutic trends
Uteshev-Gaard, V. V., 1 Apr 2016, In : Current Pharmaceutical Design. 22, 14, p. 1986-1997 12 p.

Editorial

Uteshev-Gaard, V. V., 1 Apr 2016, In : Current Pharmaceutical Design. 22, 14, p. 1979-1980 2 p.

Targeting the cholinergic system for neuroprotection and/or enhancement of functional recovery following neurotrauma

Huber, K. B. G., Uteshev-Gaard, V. V. & Pauly, J. R., 1 Apr 2016, In : Current Pharmaceutical Design. 22, 14, p. 2072-2082 11 p.

The cholinergic potential, the vagus nerve and challenges in treatment of traumatic brain injury

Uteshev-Gaard, V. V., Tenovuo, O. & Gaidhani, N., 1 Apr 2016, In : Current Pharmaceutical Design. 22, 14, p. 2083-2092 10 p.

Are positive allosteric modulators of $\alpha 7$ nAChRs clinically safe?

Uteshev-Gaard, V. V., 1 Jan 2016, In : Journal of Neurochemistry. 136, 2, p. 217-219 3 p.

Sponsored Projects

Developing and Testing of a Novel Human-friendly Intravenous Drug Formulation for Treating Ischemic Stroke in Rats

Uteshev, V.

Intramural Research(UNTHSC)

1/05/16 → 31/08/17

Direct Reprogramming of Reactive Astrocytes after Stroke

Jin, K. & Uteshev, V.

William & Ella Owens Med Research Foun

1/03/18 → 28/02/19

Direct Reprogramming of Reactive Astrocytes in Ischemic Brain

Jin, K., Yang, S. & Uteshev, V.

Intramural Research(UNTHSC)

1/07/16 → 31/12/17

Enhancing Activation of $\alpha 7$ Nicotinic Acetylcholine Receptors for Treatment of Stroke in Aging

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William & Ella Owens Med Research Foun

21/12/15 → 31/12/16

Novel Therapeutic Opportunity in Stroke

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Epigen Biosciences, Inc.

1/04/14 → 31/03/15

Novel Treatment for Traumatic Brain Injury

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Epigen Biosciences, Inc.

28/09/17 → 31/08/18

Responsiveness to Nicotine of Nucleus Tractus Solitarius Neurons

Uteshev, V.

NIDDK: Diabetes & Digestive & Kidney

1/10/11 → 30/06/14

Targeting Nicotinic Receptors to Reduce Inflammation Associated with SLE

Mathis, K. & Uteshev, V.

Lupus Research Alliance

1/03/18 → 28/02/21

Therapeutic Benefits of Intranasal PNU-120596 in Cerebral Ischemia
Uteshev, V. & Jin, K.
Intramural Research(UNTHSC)
1/09/13 → 30/09/14