Curriculum Vitae of András Imre Mihály, MD, PhD, DSc

Contact	Department of Anatomy Faculty of Medicine, University of Szeged Kossuth L. sgt. 40, 6724 Szeged, Hungary

Academic Education/Scientific Degrees

1994	DSc, Doctor of Science in Neuromorphology and Histochemistry, diploma issued by the Scientific Qualification Committee of the Hungarian Academy of Sciences, Budapest, Hungary
1988	PhD, Doctor of Philosophy in Neuromorphology, Medical University, Szeged, Hungary (certificate issued by the Hungarian Academy of Sciences)
1976	MD, Doctor of General Medicine, Medical University, Szeged, Hungary

Employments

From 1998. until 06-14- 2017:	Professor and Chairman, Department of Anatomy, University of Szeged, Szeged, Hungary
At present:	Professor of Anatomy, Department of Anatomy, University of Szeged, Szeged, Hungary
1997-1998	Scientific Advisor, Department of Zoology and Cell Biology, University of Szeged, Hungary
1995-1997	Associate Professor, Department of Anatomy, Kuwait University, Kuwait
1991-1995	Associate Professor, Department of Anatomy, Albert Szent-Györgyi Medical University, Szeged, Hungary
1985-1991	Assistant Professor, Department of Anatomy, Albert Szent-Györgyi Medical University, Szeged, Hungary
1988-1990	Humboldt Research Fellow, Max Planck Institute for Biophysical Chemistry, Department of Neurobiology, Göttingen, Germany
1976-1985	Teaching and Research Assistant, Department of Anatomy, Medical University, Szeged, Hungary
1978-1979	General practitioner

Awards and honours

2011	Albert Szent-Györgyi Silver Medal, awarded by the Faculty of Medicine, Szeged University
2005	Best Scientific Teacher Gold Medal, awarded by the Ministry of Education, Hungary
1997-1999	Széchenyi Professorship (granted by the Ministry of Education, Hungary)
1988 -1990	Alexander von Humboldt Fellowship, Max Planck Institute for Biophysical Chemistry, Department of Neurobiology, Göttingen

Scientific (external) research grants of the last 19 years

1. **GINOP 2.3.2-15-2016-00034** The role of kynurenines in the therapy of neurodegeneration. 40 000 000,- HUF; 2017-2020. Research group leader: Dr. András Mihály
2. **TÁMOP4.2.2-A-11/1/KONV-2012-0052** "Neurodegenerative diseases: pathomechanisms, therapy…" research consortium in Szeged University; Dept. Anatomy participating; 14 000 000,- HUF; 2012-2014. Group leader: Dr. András Mihály
3. **TÁMOP4.2.2/B-10/1-2010-0012** "Supporting students' scientific research" consortium in Szeged University; Leader: A.M.; 8 000 000,- HUF; 2011-2013
4. **IT-21/2007 Italian-Hungarian intergovernmental research grant** Brain edema and epilepsy. 2008-2010; Participating: Verona University, Szeged University 2 000 000,- HUF
5. **GB-8/03 British-Hungarian intergovernmental research grant** Expression of glutamate receptors in epilepsy. 2003-2005. Participating: Bristol University, Szeged University 2 000 000,- HUF
6. **OTKA T32566 Research grant** Seizure activity, cytokine secretion and lymphocyte extravasation in rat telencephalon and diencephalon. Leader: A.M. 2000-2004. 4 000 000,- HUF

Main research areas and activities (documented in the publication list)

1. **Experimental epilepsy research (pilocarpine-model, 4-aminopyridine rat- and mouse models)**
2. **Protein kinase immunolocalization in the mammalian central nervous system**
3. **Development of teeth in rodents (histology, immunohistochemistry)**
4. **Gross anatomy and neuroanatomy studies**

Electron microscopy of the cerebral cortex in seizures: neuronal and glial alterations, synaptic changes, alterations of the blood-brain barrier. Histochemical and immunohistochemical investigations on the blood-brain barrier: protein transport from cerebral microvessels in

seizures. Histochemical, immunohistochemical studies of the neuronal alterations in long-term potentiation experiments (neuronal learning) in vivo and in vitro (brain slices). Developing of a histochemical method for ultrastructural calcium detection in synapses. Developing of a histochemical method for the detection of neuronal carbonic anhydrase. Studies on immediate-early gene expression in the cerebral cortex in seizures: demonstration of c-fos expression in interneurons of the hippocampus. Immunohistochemistry of glutamate receptor subunits: alteration of the density of subunits in seizures. Studies on tooth development: ontogenesis of the innervation and the Hertwig-root sheath in rat pups. Gross human anatomy studies on the thoracolumbar fascia: layering of the fascia and the localization of sensory nerve endings in it.

SCIENTIFIC RESEARCH ACCOMPLISHMENTS OF A.M.

PhD dissertation title: Morphological and histochemical investigations of the epileptic rat brain. PhD certificate: 12142/1988 (issued by the Hungarian Academy of Sciences). Year: 1988.

Doctor of Science dissertation title: Histochemical and immunohistochemical detection of neuronal calcium, protein kinases and carbonic anhydrase: their role in the plasticity of the brain. Certificate issued by the Hungarian Academy of Sciences (0.9.945/1994). Year: 1994.

Habilitation (Anatomy – Neuroanatomy – Histology) certificate issued by the Albert Szent-Györgyi Medical University in 1994.

Number of publications (data from the scientific publications' registry of the Hungarian Academy of Sciences - MTMT)

Scientific journal articles: 98

University books: 10

Book chapters: 7

Congress abstracts: 149

Total number of citations: 1384

Hirsch-index: 23

Scientific experimentation skills

1. Electron microscopy techniques (embedding, sectioning, transmission electron microscopy, data analysis).
2. Immunohistochemistry techniques: cryosectioning, vibratome sectioning, paraffin-sectioning, fluorescent- and peroxidase-staining methods. Immunohistochemistry at the light- and electron microscopic level. Quantitative immunohistochemistry, densitometry.
3. Histoblotting and Western blotting techniques.
4. Silver-staining techniques (Golgi-type and other tissue impregnation methods).

5. Wide range of histochemistry techniques (detection of calcium and different enzymes in histological sections); quantitative histochemistry.
6. Small animal surgery (rats).

Number of successful external research grants (1991-2017): 17

All of them are hungarian external research grants, except one: Kuwait Foundation for the Advancement of Science Grant. Time: 1996 (one year). Amount: 3000,- USD.

Number of PhD students who obtained their degree with my guidance successfully: 11 (during 1999-2017).

Student Scientific Research: student scientific research is performed by the medical students in every hungarian Medical Faculty. This activity of the students helps the career of the student and gives important hints when the student has to decide as to future medical specialities. Students' research is organized by the Scientific Students Research Councils, which operate in the Medical Faculties. These councils provide mentorship and also financial support to research work and organizes annual scientific conferences for the students. For 10 years I was leader of the Council in Szeged University Medical Faculty (2001-2011). I was also mentoring several students during my career giving them scientific advises and tuition when they prepared their congress presentations or diploma-theses.

Number of mentored medical students: 27.

SELECTED IMPORTANT PUBLICATIONS IN THE LAST 22 YEARS

1. **Mihály, A.,** Szente, M., Dubravcsik, Zs., Boda, B., Király, E., Nagy, T., Domonkos, A.: Parvalbumin and calbindin containing neurons express c-fos protein in primary and secondary (mirror) epileptic focuses of the rat neocortex. **Brain Res**. **761: 135-145 (1997)**
2. **Mihály, A.,** Szakács, R., Bohata, Cs., Dobó, E., Krisztin-Péva, B.: Time-dependent distribution and neuronal localization of c-fos protein in the rat hippocampus following 4-aminopyridine seizures. **Epilepsy Research 44: 97-108 (2001)**
3. **Mihály, A.,** Borbély, S., Világi, I., Détári, L., Weiczner, R., Zádor, Z., Krisztin-Péva, B., Bagosi, A., Kopniczky, Z., Zádor, E.: Neocortical c-fos mRNA transcription in repeated, brief, acute seizures: is c-fos a coincidence detector? **Internat. J. Molecular Medicine 15: 481-486 (2005)**
4. Kopniczky Z., Dobó, E., Borbély, S., Világi, I., Détári L., Krisztin-Péva, B., Bagosi, A., Molnár, E., **Mihály, A.:** Lateral entorhinal cortex lesions rearrange afferents, glutamate receptors, increase seizure latency and suppress seizure-induced c-fos expression in the hippocampus of the adult rat. **J. Neurochem. 95: 111-124 (2005)**
5. Fabene, P.F., Weiczner, R., Marzola, P., Nicolato, E., Calderan, L., Andrioli, A., Farkas, E., Süle, Z., **Mihály, A.,** Sbarbati, A.: Structural and functional MRI following 4-aminopyridine-induced seizures: A comparative imaging and anatomical study. **Neurobiology of Disease 21: 80-89 (2006)**

6. Zádor, Z., Weiczner, R., **Mihály, A.:** Long-lasting dephosphorylation of connexin 43 in acute seizures is regulated by NMDA receptors in the rat cerebral cortex. **Molecular Medicine Reports 1: 721-727 (2008)**
7. Weiczner, R., Krisztin-Péva, B., **Mihály, A.:** Blockade of AMPA-receptors attenuates 4-aminopyridine seizures, decreases the activation of inhibitory neurons but is ineffective against seizure-related astrocytic swelling. **Epilepsy Research 78: 22-32 (2008)**
8. Világi, I., Dobó, E., Borbély, S., Czégé, D., Molnár, E., **Mihály, A.:** Repeated 4-aminopyridine induced seizures diminish the efficacy of glutamatergic transmission in the neocortex. **Experimental Neurology 2019: 136-145 (2009)**
9. Borbély, S., Dobó, E., Czégé, D., Molnár, E., Bakos, M., Szűcs, B., Vincze, A., Világi, I., **Mihály, A.:** Modification of ionotropic glutamate receptor mediated processes in the rat hippocampus following repeated, brief seizures. **Neuroscience 159: 358-368 (2009)**
10. **Mihály, A.:** Raf serine/threonine protein kinases: immunohistochemical localization in the mammalian nervous system. Chapter 19, pp. 423-442. In: G. Da Silva (ed) Protein Kinases. **InTech Open Access Publisher (ISBN: 9789535106401), Rijeka 2012.**
11. Dobó, E., Török, I., **Mihály, A.**, Károly, N., Krisztin-Péva, B.: Interstrain differences of ionotropic glutamate receptor subunits in the hippocampus and induction of hippocampal sclerosis with pilocarpine in mice. **J. Chem. Neuroanat. 64-65: 1-11 (2015)**
12. Károly, N., Dobó, E., **Mihály, A.:** Comparative immunohistochemical study of the effects of pilocarpine on the mossy cells, mossy fibres and inhibitory neurones in murine dentate gyrus. **Acta Neurobiol. Exp. 75: 1-18 (2015)**
13. Borbély, S., Czégé, D., Molnár, E., Dobó, E., **Mihály, A.,** Világi, I.: Repeated application of 4-aminopyridine provoke an increase in entorhinal cortex excitability and rearrange AMPA and kainite receptors. **Neurotox. Res. 27: 441-452 (2015)**
14. Tóth, Z., Molnár, G., **Mihály, A.,** Krisztin-Péva, B., Morvai, M., Kopniczky Z.: Immunohistochemistry of cerebellar seizures: Mossy fiber afferents play important role in seizure spread and initiation in the rat. **Acta Histochemica 117: 47-55 (2015)**
15. Tóth, Z., **Mihály, A.,** Mátyás, A., Krisztin-Péva, B.: Non-competitive antagonists of NMDA and AMPA receptors decrease seizure-induced c-fos protein expression in the cerebellum and protect against seizure symptoms in adult rats. **Acta Histochemica 120: 236-241 (2018)**
16. **Mihály, A.:** Anatomy (in Hungarian, 2nd edition, textbook). **Szeged University Press, 2018, pp 1-213.**
17. **Mihály, A.:** The reactive plasticity of hippocampal ionotropic glutamate receptors in animal epilepsies. **Int. J. Mol. Sci. 20: 1030-1047 (2019)**

MEDICAL EDUCATIONAL ACCOMPLISHMENTS OF A.M.

The courses listed below were organized by A. M. The course organization included the development of the course content, writing of the presentations, development of the written test questions and course descriptions. My educational activities include giving lectures, seminars, dissection practicals and examinations. Time: between 1998. and 2019. Languages: hungarian and english.

GRADUATE STUDENTS' COURSES

1. Gross- and descritive human anatomy for medical- and dental students: lectures, seminars and practicals.
2. Human neuroanatomy for medical- and dental students: lectures and practicals.
3. Clinical anatomy for medical students (course content developing).
4. Human cell morphology and histology for medical- and dental students: lectures and practicals.
5. Human embryology (embryogenesis and organogenesis) for medical- and dental students: lectures.
6. Student's Scientific Research Courses: for medical students, animal experimentation and scientific cadaver dissection studies.

POSTGRADUATE COURSES FOR MEDICAL DOCTORS (GENERAL PRACTITIONERS, REGISTRARS AND SPECIALISTS). Courses were organized by the clinical center of the Szeged Medical Faculty. A.M. was an invited lecturer in every case.

Name of the course	Lecture title	Date
Airway safety during intubation	Anatomy of the larynx	2000
Peripheral facial nerve paralysis	Anatomy of the facial nerve	2000
Microsurgery oft he larynx	Anatomy and histology of the larynx	2001
Training for general practitioners	Functional anatomy of the nasal cavity and paranasal sinuses	2005
Training for anesthesiologists	Anatomy of the airways	2006
Annual Congress oft he Hungarian Neurology Society	Molecular consequences of brief, recurrent seizures in the neocortex	2005
Congress oft he Hungarian League Against Epilepsy	Molecular plasticity of the mammalian cerebral cortex in acute seizures.	2009
Training for general practitioners	Anatomy of the larynx.	2009
Training for general practitioners	Anatomy of the auditory organ and the auditory pathways	2009
Training for trauma surgeons	Functional anatomy and topography of the brachial plexus	2016
Training for neck surgeons	Microanatomy of the human larynx	2018

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András Imre Mihály, MD, PhD, DSc, Professor of Anatomy, Histology and Embryology

mihaly.andras@med.u-szeged.hu

H-6724 Szeged, Kossuth L. sgt. 40., Szeged, Hungary

P.O.Box 427 (Department of Anatomy, Faculty of Medicine, Szeged University)

Complete list of publications is available:

https://m2.mtmt.hu/api/publication?cond=published;eq;true&cond=core;eq;true&cond=authors.mtid;eq;10010174&sort=publishedYear,desc&sort=firstAuthor,asc&size=20&fields=template&&cite_type=2&page=1&labelLang=eng