***Research Topics studied in the Institute of Physiology (Czech Academy of Sciences)***

***1954 - 2024***

**Critical periods of development, perinatal programming, late effects of early interventions
(1954-2024) Hahn, Křeček, Koldovský, Houštěk, Kopecký**

Hahn P, Křeček J, Křečková J. The development of thermoregulation. I. The development of thermoregulatory mechanisms in young rats. *Physiol Bohemoslov* 1956;5:283-290. 39 citations

Nováková V, Faltin J, Flandera V, Hahn P, Koldovský O. Effect of early and late weaning on learning in adult rats. *Nature* 1962;193:280. 32 citations

## Kraus M, Křeček J, Popp M. Development of corticosterone production by adrenal gland in normally and prematurely weaned rats. *Physiol Bohemoslov* 1967;16: 120-127. 30 citations

Hahn P, Koldovsky O. Development of metabolic processes and their adaptation during postnatal life. In: *Physiology and Pathology of Adaptation Mechanisms*, ed. E. Bajusz, Pergamon Press, 1969, pp. 48-74. 20 citations

Křeček J. The theory of critical developmental periods and post-natal development of endocrine functions. In: *The Biopsychology of Development*, eds E. Tobach et al., Academic Press, New York, 1971, pp. 233-248. 39 citations

\*Hahn P, Kirby L. Immediate and late effects of premature weaning and of feeding a high fat or high carbohydrate diet to weanling rats. *J Nutr* 1973;103: 690-696. 92 citations

\*Coates PM, Brown SA, Sonawane BR, Koldovsky O. Effect of early nutrition on serum cholesterol levels in adult rats challenged with high fat diet. *J Nutr* 1983;113:1046-1050. 31 citations

\*Hahn P. Effect of litter size on plasma cholesterol and insulin and some liver and adipose tissue enzymes in adult rodents. *J Nutr* 1984;114: 1231-1234. 81 citations

\*Koldovský O. Response of the gastrointestinal tract to premature weaning in experimental animals. *Pediatrics* 1985;75:199-206. 29 citations

Houštěk J, Vízek K, Pavelka S, Kopecký J, Krejčová E, Heřmanská E, Čermáková S. Type II iodothyronine
5'-deiodinase and uncoupling protein in brown adipose tissue of human newborns. *J Clin Endocrinol Metab* 1993;77:382-387. 67 citations

Pavelka S, Kopecký P, Bendlová B, Štolba P, Vítková I, Vobruba V, Plavka R, Houštěk J, Kopecký J. Tissue metabolism and plasma levels of thyroid hormones in critically ill very premature infants. *Pediatr Res* 1997;42:812-818. 45 citations

Kus V, Prazak T, Brauner P, Hensler M, Kuda O, Flachs P, Janovska P, Medrikova D, Rossmeisl M, Jilkova Z, Stefl B, Pastalkova E, Drahota Z, Houstek J, Kopecky J. Induction of muscle thermogenesis by high-fat diet in mice: association with obesity-resistance. *Am J Physiol Endocrinol Metab* 2008;295:E356-E367. 62 citations

**Muscle physiology (1954-1979)** **Gutmann, Hanzlíková, Hník, Bass, Syrový**

Hník P, Jirmanová I, Vyklický L, Zelená J. Fast and slow muscles of the chick after nerve cross-union. *J Physiol* 1967;193:309-325. 117 citations

Syrový I, Gutmann E. Changes in speed of contraction and ATPase activity in striated muscle during old age. *Exp Gerontol* 1970;5:31-35. 60 citations

Gutmann E, Hanzlíková V, Vyskočil F. Age changes in cross striated muscle of the rat. *J Physiol* 1971;216:331-343. 126 citations

Gutmann E, Schiaffino S, Hanzliková V. Mechanism of compensatory hypertrophy in skeletal muscle of the rat. *Exp Neurol* 1971;31:451-464. 165 citations

Carlson BM, Gutmann E. Development of contractile properties of minced muscle regenerates in the rat. E*xp Neurol* 1972;36:239-249. 100 citations

Bass A, Gutmann E, Hanzlíková V. Biochemical and histochemical changes in energy supply enzyme pattern of muscles of the rat during old age. *Gerontologia* 1975;21:31-45. 106 citations

Gutmann E, Carlson BM. Contractile and histochemical properties of regenerating cross-transplanted fast and slow muscles in the rat. *Pflügers Arch* 1975;353:227-239. 61 citations

Syrový I, Gutmann E. Differentiation of myosin in soleus and extensor digitorum longus muscle in different animal species during development. *Pflügers Arch* 1977;369:85-89. 65 citations

**Neurotrophic effects in skeletal muscle (1954-1993) Gutmann, Žák, Vrbová, Beránek, Hník, Syrový, Vejsada, Paleček**

Žák R, Gutmann E, Vrbová G. Quantitative changes of muscle proteins after stimulation of the muscle. *Experientia* 1957;13:80-81. 9 citations

Beránek R, Hník P. Long-term effects of tenotomy on spinal monosynaptic response in the cat. *Science* 1959;130: 981. 49 citations

Žák R, Gutmann E. Lack of correlation between synthesis of nucleic acids and proteins in denervated muscle. *Nature* 1960;185:766-767. 14 citations

Gutmann E, Žák R. Nervous regulation of nucleic acid level in cross-striated muscle. Resynthesis of nucleic acids and proteins in normal and denervated muscle. *Physiol Bohemoslov* 1961;10:501-509. 35 citations

Gutmann E, Sandow A. Caffeine-induced contracture and potentiation of contraction in normal and denervated rat muscle. *Life Sci* 1965;4:1149-1156. 85 citations

Gutmann E, Melichna J, Syrový I. Contraction properties and ATPase activity in fast and slow muscle of the rat during denervation. *Exp Neurol* 1972;36:488-497. 68 citations

Carlson BM, Gutmann E. Regneration in free grafts of normal and denervated muscles in the rat: morphology and histochemistry. *Anat Rec* 1975;183:47-62. 149 citations

Carlson BM, Gutmann E. Regeneration in grafts of normal and denervated rat muscles. Contractile properties. *Pflügers Arch* 1975;353:215-225. 76 citations

Gutmann E. Neurotrophic relations. *Annu Rev Physiol* 1976;38:177-216. 314 citations

Vejsada R, Hník P, Navarrete R, Paleček J, Soukup T, Borecka U, Payne R. Motor functions in rat hindlimb muscles following neonatal sciatic nerve crush. *Neuroscience* 1991;40:267-275. 32 citations

\*Vejsada R, Sagot Y, Kato AC. Quantitative comparison of the transient rescue effects of neurotrophic factors on axotomized motoneurons in vivo. *Eur J Neurosci* 1995;7:1081-1015. 139 citations

\*Vejsada R, Tseng JL, Lindsay RM, Acheson A, Aebischer P, Kato AC. Synergistic but transient rescue effects of BDNF and GDNF on axotomized neonatal motoneurons. *Neuroscience* 1998;84:129-139. 78 citations

**Mechanoreceptors development, morphology and function (1954-2016) Zelená, Hník, Hudlická, Jirmanová, Soukup, Vejsada**

Zelena J. The morphogenetic influence of innervation on the ontogenetic development of muscle spindles. *J Embryol Exp Morphol* 1957;5:283-292. 193 citations

Zelená J. Development, degeneration and regeneration of receptor organs. *Prog Brain Res* 1964;13:175-213. 130 citations

Zelená J, Lubińska L, Gutmann E. Accumulation of organelles at the ends of interrupted axons. *Z Zellforsch Mikrosk Anat* 1968;91:200-219. 184 citations

Hník P, Hudlická O, Kucera J, Payne R. Activation of muscle afferents by nonproprioceptive stimuli. *Am J Physiol* 1969;217:1451-1457. 88 citations

Jirmanová I, Thesleff S. Ultrastructural study of experimental muscle degeneration and regeneration in the adult rat. *Z Zellforsch Mikrosk Anat* 1972;131:77-97. 144 citations

Zelená J, Soukup T. Development of muscle spindles deprived of fusimotor innervation. *Z Zellforsch Mikrosk Anat* 1973;144:435-452. 79 citations

Zelená J, Soukup T. The differentiation of intrafusal fibre types in rat muscle spindles after motor denervation. *Cell Tissue Res* 1974;153:115-136. 88 citations

Zelená J. The development of Pacinian corpuscles*. J Neurocytol* 1978;7:71-91. 80 citations

Hník P, Vejsada R, Goldspink DF, Kasicki S, Krekule I. Quantitative evaluation of electromyogram activity in rat extensor and flexor muscles immobilized at different lengths. *Exp Neurol* 1985;88:515-528. 75 citations

Soukup T, Pedrosa F, Thornell LE. Influence of neonatal motor denervation on expression of myosin heavy chain isoforms in rat muscle spindles. *Histochemistry* 1990;94: 245-256. 36 citations

Zelená J. *Nerves and Mechanoreceptors: the Role of Innervation in the Development and Maintenance of Mammalian Mechanoreceptors*. Chapman and Hall, London, 1994. 170 citations

Soukup T, Zachařová G, Smerdu V. Fibre type composition of soleus and extensor digitorum longus muscles in normal female inbred Lewis rats. *Acta Histochem* 2002;104:399-405. 96 citations

**Spreading depression (1954-1999) Bureš, Burešová, Křivánek**

Bureš J, Burešová O. The use of Leao spreading depression in the study of interhemispheric transfer of memory traces. *J Comp Physiol Psychol* 1960;53: 558-563. 81 citations

Křivánek J. Some metabolic changes accompanying Leao's spreading cortical depression in the rat. *J Neurochem* 1961;6:183-189. 84 citations

Bureš J, Burešová O. Cortical spreading depression as a memory disturbing factor. *J Comp Physiol Psychol* 1963;56: 268-272. 153 citations

Bureš J, Burešová O, Křivánek J. *The Mechanism and Applications of Leao's Spreading Depression of Electroencephalographic Activity.* Academic Press: Cambridge, MA, USA, 1974. 634 citations

Gorelova NA, Bureš J. Spiral waves of spreading depression in the isolated chicken retina. *J Neurobiol* 1983;14:353-363. 238 citations

Hernándéz-Cáceres J, Macias-González R, Brožek G, Bureš J. Systemic ketamine blocks cortical spreading depression but does not delay the onset of terminal anoxic depolarization in rats. *Brain Res* 1987;437:360-364. 127 citations

**Water and electrolyte metabolism, body fluids, ion transport (1954-2021) Křeček, Jelínek, Dlouhá, Kuneš, Zicha**

Čapek K, Jelínek J. The development of the control of water metabolism. I. The excretion of urine in young rats. *Physiol Bohemoslov* 1956;5:91-96. 56 citations

Křeček J, Křečková J. The development of the regulation of water metabolism. III. The relation between water and milk intake in infant rats. *Physiol Bohemoslov* 1957;6: 26-34. 43 citations

Jelínek J Thedevelopment of the regulation of water metabolism .6. Changes in the volume of cellular and extracellular fluid in the body of the rat during development.*Physiol Bohemoslov* 1961;10: 259-266. 23 citations

Křeček J, Nováková V, Stibral K. Sex differences in the taste preference for a salt solution in the rat. *Physiol Behav* 1972;8:183-188. 76 citations

Dlouhá H, Křeček J, Zicha J. Postnatal development and diabetes insipidus in Brattleboro rats. *Ann N Y Acad Sci* 1982;394:10-20. 42 citations

Kuneš J, Štolba P, Pohlová I, Jelínek J, Zicha J. The importance of endogenous digoxin-like factors in rats with various forms of experimental hypertension. *Clin Exp Hypertens A* 1985;7:707-720. 34 citations

Zicha J, Duhm J. Kinetics of Na+ and K+ transport in red blood cells of Dahl rats. Effects of age and salt. *Hypertension* 1990;15:612-627. 49 citations

Zicha J, Negrin CD, Dobešová Z, Carr F, Vokurková M, McBride MW, Kuneš J, Dominiczak AF. Altered
Na+-K+ pump activity and plasma lipids in salt-hypertensive Dahl rats: relationship to Atp1a1 gene. *Physiol Genomics* 2001;6:99-104. 18 citations

Zicha J, Kuneš J, Devynck MA. Abnormalities of membrane function and lipid metabolism in hypertension. *Am J Hypertens* 1999;12:315-331. 177 citations

**Toxic effects of mercury and cadmium (1956-1976) Pařízek**

Pařízek J, Záhoř Z. Effect of cadmium salts on testicular tissue. *Nature* 1956;177:1036. 342 citations

Pařízek J. The destructive effect of cadmium ion on testicular tissue and its prevention by zinc. *J Endocrinol* 1957;15:56-63. 408 citations

Pařízek J. Sterilization of the male by cadmium salts. *J Reprod Fertil* 1960;1: 294-309. 203 citations

Pařízek J. Vascular changes at sites of oestrogen biosynthesis produced by parenteral injection of cadmium salts: the destruction of placenta by cadmium salts. *J Reprod Fertil* 1964;7:263-265. 142 citations

Pařízek J. The peculiar toxicity of cadmium during pregnancy -- an experimental "toxaemia of pregnancy" induced by cadmium salts. *J Reprod Fertil* 1965;9:111-112. 95 citations

**Clinical and translational epileptology (1958-2024) Servít, Mareš P, Jiruška**

Servit Z. Prophylactic treatment of post-traumatic audiogenic epilepsy. *Nature* 1960;188:669-670. 17 citations

## Servit Z, Machek J, Štercová A, Dudáš D, Krištof M, Červenková V. Reflex influences in the pathogenesis of epilepsy in the light of clinical statistics. *Epilepsia* 3: 315-322, 1962. 24 citations

Hrbek A, Mareš P. Cortical evoked responses to visual stimulation in full-term and premature newborns. *Electroenceph Clin Neurophysiol* 1964;16:575-581. 86 citations

Servít Z, Musil F. Prophylactic treatment of posttraumatic epilepsy: results of a long-term follow-up in Czechoslovakia. *Epilepsia* 1981;22:315-320. 57 citations

Jiruska P, de Curtis M, Jefferys JG, Schevon CA, Schiff SJ, Schindler K. Synchronization and desynchronization in epilepsy: controversies and hypotheses. *J Physiol* 2013;591:787-797. 379 citations

Janca R, Jezdik P, Cmejla R, Tomasek M, Worrell GA, Stead M, Wagenaar J, Jefferys JG, Krsek P, Komarek V, Jiruska P, Marusic P. Detection of interictal epileptiform discharges using signal envelope distribution modelling: application to epileptic and non-epileptic intracranial recordings*. Brain Topogr* 2015;28:172-183. 73 citations

Jiruska P, Alvarado-Rojas C, Schevon CA, Staba R, Stacey W, Wendling F, Avoli M. Update on the mechanisms and roles of high-frequency oscillations in seizures and epileptic disorders. *Epilepsia* 2017;58:1330-1339. 111 citations

**Higher brain functions (1958-2000) Radil, Bohdanecký, Indra, Mates**

Lánský P, Radil T. Statistical inference on spontaneous neuronal discharge patterns. I. Single neuron. *Biol Cybern* 1987;55:299-311. 33 citations

Paus T, Babenko V, Radil T. Development of an ability to maintain verbally instructed central gaze fixation studied in 8- to 10-year-old children. *Int J Psychophysiol* 1990;10:53-61. 32 citations

Franĕk M, Mates J, Radil T, Beck K, Pöppel E. Finger tapping in musicians and nonmusicians. *Int J Psychophysiol* 1991;11:277-279. 44 citations

Mates J, Radil T, Pöppel E. Cooperative tapping: time control under different feedback conditions. *Percept Psychophys* 1992;52:691-704. 50 citations

Mates J, Müller U, Radil T, Pöppel E. Temporal integration in sensorimotor synchronization. *J Cogn Neurosci* 1994;6:332-340. 171 citations

Radil T, Wysocki CJ. Spatiotemporal masking in pure olfaction. *Ann N Y Acad Sci* 1998;855:641-644. 35 citations

**Lipid metabolism – cholesterol transport (1959-2011) Hahn, Koldovský, Dobiášová**

Drahota Z, P Hahn P, Kleinzeller A, Kostolánská A: Acetoacetate formation by liver slices from adult and infant rats. *Biochem J* 1964; 93:61-65. 73 citations

Dobiasova M, Hahn P, Koldovsky O. Fatty acid composition in developing rats. Fatty acid composition of triglycerides and phospholipids in some organs of the rat during postnatal development. *Biochim Biophys Acta* 1964;84:538-549. 46 citations

## \*Hahn P, Koldovsky O. Late effect of premature weaning on blood cholesterol levels in adult rats. *Nutr Rep Int* 1976;13: 87-91. 41 citations

\*Hahn P, Girard J, Assan R, Frohlich J, Kervran A. Control of blood cholesterol levels in suckling and weanling rats. *J Nutr* 1977;107:2062-2066. 35 citations

Dobiášová M, Frohlich J. The plasma parameter log (TG/HDL-C) as an atherogenic index: correlation with lipoprotein particle size and esterification rate in apoB-lipoprotein-depleted plasma (FERHDL). *Clin Biochem* 2001;34: 583-588. 712 citations

Dobiášová M, Frohlich J, Šedová M, Cheung MC, Brown BG. Cholesterol esterification and atherogenic index of plasma correlate with lipoprotein size and findings on coronary angiography. *J Lipid Res* 2011;52:566-571. 133 citations

**Ontogeny of animal behavior (1959-1987) Lát J, Nováková V, Martínek Z**

Nováková V, Faltin J, Flandera V, Hahn P, Koldovský O. Effect of early and late weaning on learning in adult rats. *Nature* 1962;193:280. 32 citations

Nováková V. Weaning of young rats: effect of time on behavior. *Science* 1966;151:475-476. 35 citations

## Nováková V. Role of mother during suckling period of newborn rats on subsequent adult learning. *Physiol Behav* 1966;1: 219-221. 20 citations

Sandritter W, Nováková V, Pilny J, Kiefer G. Cytophotometrische Messungen des Nukleisäure und Proteingehaltes von Ganglienzellen der Ratte während der postnatalen Entwicklung und im Alter. *Z Zellforsch Mikrosk Anat* 1967;80:145-152. 68 citations

Martínek Z, Lát J. Ontogenetic differences in spontaneous reactions of dogs to a new environment. *Physiol Bohemoslov* 1968;17:545-552. 19 citations

Martínek Z, Lát J. Interindividual differences in habituation of spontaneous reactions of dogs to a new environment. *Physiol Bohemoslov* 1968;17:329-36. 18 citations

Lát J, Gollová-Hémon E. Permanent effects of nutritional and endocrinological intervention in early ontogeny on the level of nonspecific excitability and on lability (emotionality). *Ann N Y Acad Sci* 1969;159:710-720. 43 citations

Irmiš F, Radil-Weiss T, Lát J, Krekule I. Inter-individual differences in hippocampal theta activity during habituation. *Electroencephalogr Clin Neurophysiol* 1970;28:24-31. 30 citations

Nováková V, Sandritter W, Schlueter G. DNA content of neurons in rat central nervous system. *Exp Cell Res* 1970;60:454-6. 35 citations

Flandera V, Nováková V. The development of interspecies aggression of rats towards mice during lactation. *Physiol Behav* 1971;6:161-164. 20 citations

Křeček J, Nováková V, Stibral K. Sex differences in the taste preference for a salt solution in the rat. *Physiol Behav* 1972;8:183-188. 76 citations

Lát J. The analysis of habituation. *Acta Neurobiol Exp (Wars)* 1973;33:771-789. 62 citations

**Epilepsy and brain metabolism (1960-2024) Folbergrová, Kubová, Otáhal**

Folbergrová J, Passonneau JV, Lowry OH, Schulz DW. Glycogen, ammonia and related metabolities in the brain during seizures evoked by methionine sulphoximine*. J Neurochem* 1969;16:191-203. 255 citations

Folbergrová J, Zhao Q, Katsura K, Siesjö BK. N-tert-butyl-alpha-phenylnitrone improves recovery of brain energy state in rats following transient focal ischemia. *Proc Natl Acad Sci U S A* 1995;92:5057-5061. 221 citations

Folbergrová J, Haugvicová R, Mareš P. Behavioral and metabolic changes in immature rats during seizures induced by homocysteic acid: the protective effect of NMDA and non-NMDA receptor antagonists. *Exp Neurol* 2000;161:336-345. 61 citations

Folbergrová J, Druga R, Otáhal J, Haugvicová R, Mareš P, Kubová H. Seizures induced in immature rats by homocysteic acid and the associated brain damage are prevented by group II metabotropic glutamate receptor agonist (2R,4R)-4-aminopyrrolidine-2,4-dicarboxylate. *Exp Neurol* 2005;192:420-436. 40 citations

Folbergrová J, Ješina P, Kubová H, Druga R, Otáhal J. Status epilepticus in immature rats is associated with oxidative stress and mitochondrial dysfunction. *Front Cell Neurosci* 2016;10:136. 30 citations

Folbergrová J, Ješina P, Kubová H, Otáhal J. Effect of resveratrol on oxidative stress and mitochondrial dysfunction in immature brain during epileptogenesis. *Mol Neurobiol* 2018;55:7512-7522. 33 citations

Daněk J, Danačíková Š, Kala D, Svoboda J, Kapoor S, Pošusta A, Folbergrová J, Tauchmannová K, Mráček T, Otáhal J. Sulforaphane ameliorates metabolic changes associated with status epilepticus in immature rats. *Front Cell Neurosci* 2022;16:855161.

**Cardiac development and sensitivity to hypoxia (1963-2024) Poupa, Ošťádal, Kolář, Ošťádalová**

Rakušan K, Poupa O. Changes in the diffusion distance in the rat heart muscle during development. *Physiol Bohemoslov* 1963;12:220-227. 56 citations

Poupa O, Ošťádal B. Experimental cardiomegalies and "cardiomegalies" in free-living animals. *Ann N Y Acad Sci* 1969;156:445-468. 56 citations

Dušek J, Ošťádal B, Dušková M. Postnatal persistence of spongy myocardium with embryonic blood supply. *Arch Pathol* 1975;99:312-317. 192 citations

Šamánek M, Bass A, Ošťádal B, Hučín B, Stejskalová M. Effect of hypoxaemia on enzymes supplying myocardial energy in children with congenital heart disease. *Int J Cardiol* 1989;25:265-269. 22 citations

Ošťádalová I, Kolář F, Ošťádal B, Rohlíček V, Rohlíček J, Procházka J. Early postnatal development of contractile performance and responsiveness to Ca2+, verapamil and ryanodine in the isolated rat heart. *J Mol Cell Cardiol* 1993;25:733-740. 47 citations

Ošťádalová I, Ošťádal B, Kolář F, Parratt JR, Wilson S. Tolerance to ischaemia and ischaemic preconditioning in neonatal rat heart. *J Mol Cell Cardiol* 1998;30:857-865. 51 citations

Ošťádal B, Ošťádalová I, Dhalla NS. Development of cardiac sensitivity to oxygen deficiency: comparative and ontogenetic aspects. *Physiol Rev* 1999;79:635-659. 132 citations

Sedmera D, Thompson RP, Kolář F. Effect of increased pressure loading on heart growth in neonatal rats. *J Mol Cell Cardiol* 2003;35:301-309. 32 citations

Škárka L, Bardová K, Brauner P, Flachs P, Jarkovská D, Kopecký J, Ošťádal B. Expression of mitochondrial uncoupling protein 3 and adenine nucleotide translocase 1 genes in developing rat heart: putative involvement in control of mitochondrial membrane potential. *J Mol Cell Cardiol* 2003;35:321-330. 30 citations

**Mitochondrial calcium metabolism and glycerol-3-phosphate dehydrogenase (1963-2020)**

**Drahota, Houštěk, Mráček**

Drahota Z, Carafoli E, Rossi CS, Gamble RL, Lehninger AL. Steady state maintenance of accumulated Ca++ in rat liver mitochondria. *J Biol Chem* 1965;240:12-20. 226 citations

Drahota Z, Lehninger AL. Movements of H+, K+, and Na+ during energy-dependent uptake and retention of Ca2+ in rat live mitochondria. *Biochem Biophys Res Commun* 1965;19:351-356. 17 citations

Houstek J, Cannon B, Lindberg O. Glycerol-3-phosphate shuttle and its function in intermediary metabolism of hamster brown adipose tissue. *Eur J Biochem* 1975;54:11-18. 73 citations

Rauchová H, Battino M, Fato R, Lenaz G, Drahota Z. Coenzyme Q-pool function in glycerol-3-phosphate oxidation in hamster brown adipose tissue mitochondria. *J Bioenerg Biomembr* 1992;24:235-241. 54 citations

Drahota Z, Chowdhury SK, Floryk D, Mráček T, Wilhelm J, Rauchová H, Lenaz G, Houstěk J. Glycerophosphate-dependent hydrogen peroxide production by brown adipose tissue mitochondria and its activation by ferricyanide. *J Bioenerg Biomembr* 2002; 34:105-113. 89 citations

Mráček T, Holzerová E, Drahota Z, Kovářová N, Vrbacký M, Ješina P, Houštěk J. ROS generation and multiple forms of mammalian mitochondrial glycerol-3-phosphate dehydrogenase *Biochim Biophys Acta Bioenerg* 2014;1837:98-111. 52 citations

Mráček T, Drahota Z, Houštěk J. The function and the role of the mitochondrial glycerol-3-phosphate dehydrogenase in mammalian tissues. *Biochim Biophys Acta Bioenerg* 2012;1827:401-410. 262 citations

**Neurocytology (1963-2012) Lodin, Mareš V**

Mareš V, Lodin Z. The cellular kinetics of the developing mouse cerebellum. II. The function of the external granular layer in the process of gyrification. *Brain Res* 1970;23:343-352. 101 citations

Mareš V, Lodin Z, Šrajer J. The cellular kinetics of the developing mouse cerebellum. I. The generation cycle, growth fraction and rate of proliferation of the external granular layer. *Brain Res* 1970;23:323-342. 80 citations

Mareš V, Lodin Z, Šácha J. A cytochemical and autoradiographic study of nuclear DNA in mouse Purkinje cells. *Brain Res* 1973;53:273-289. 53 citations

Cohen J, Mareš V, Lodin Z. DNA content of purified preparations of mouse Purkinje neurons isolated by a velocity sedimentation technique. *J Neurochem* 1973;20:651-657. 48 citations

Brückner G, Mareš V, Biesold D. Neurogenesis in the visual system of the rat. An autoradiographic investigation. *J Comp Neurol* 1976;166:245-255. 159 citations

Mareš V, Bruckner G. Postnatal formation of non-neuronal cells in the rat occipital cerebrum: an autoradiographic study of the time and space pattern of cell division. *J Comp Neurol* 1978;177:519-528. 51 citations

**Cell cultures (1964-2016) Holečková, Michl, Baudyšová, Tolar, Mareš V**

Soukupová M, Holečková E. The latent period of explanted organs of newborn, adult and senile rats. *Exp Cell Res* 1964;33:361-367. 50 citations

Černý M, Baudyšová M, Holečková E. Adaptation of mammalian cells to cold. II. Cold-induced endoreduplication and polyploidy. *Exp Cell Res* 1965;40:673-677. 31 citations

Michl J, Řezáčová D. Cultivation of mammalian cells in a medium with growth-promoting proteins from calf serum. *Acta Virol* 1966;10:254-259. 40 citations

Michl J, Svobodová J. Primary function of the growth-promoting -globulin in cell culture. *Exp Cell Res* 1969;58:174-177. 24 citations

Štol M, Tolar M, Adam M. Poly(2-hydroxyethyl methacrylate)--collagen composites which promote muscle cell differentiation in vitro. *Biomaterials* 1985;6:193-197. 30 citations

Elleder M, Drahota Z, Lisá V, Mareš V, Mandys V, Müller J, Palmer DN. Tissue culture loading test with storage granules from animal models of neuronal ceroid-lipofuscinosis (Batten disease): testing their lysosomal degradability by normal and Batten cells. *Am J Med Genet* 1995;57:213-221. 19 citations

Stremeňová J, Křepela E, Mareš V, Trim J, Dbalý V, Marek J, Vaníčkova Z, Lisá V, Yea C, Šedo A. Expression and enzymatic activity of dipeptidyl peptidase-IV in human astrocytic tumours are associated with tumour grade. *Int J Oncol* 2007;31:785-792. 61 citations

**Acetylcholine receptors at neuromuscular junction (1965-1998) Beránek, Vyskočil**

Beránek R, Vyskočil F. The action of tubocurarine and atropine on the normal and denervated rat diaphragm. *J Physiol* 1967;188:53-66. 192 citations

Beránek R, Vyskočil F. The effect of atropine on the frog sartorius neuromuscular junction. *J Physiol* 1968;195:493-503. 77 citations

Novotný I, Vyskočil F. Possible role of Ca ions in the resting metabolism of frog sartorius muscle during potassium depolarization. *J Cell Physiol* 1966;67:159-168. 66 citations

Magazanik LG, Vyskočil F. Dependence of acetylcholine desensitization on the membrane potential of frog muscle fibre and on the ionic changes in the medium. *J Physiol* 1970;210:507-518. 172 citations

Magazanik LG, Vyskočil F. The effect of temperature on desensitization kinetics at the post-synaptic membrane of the frog muscle fibre. *J Physiol* 1975;249:285-300. 93 citations

Jones R, Vyskočil F. An electrophysiological examination of the changes in skeletal muscle fibres in response to degenerating nerve tissue. *Brain Res* 1975;88:309-317. 31 citations

Giniatullin RA, Khamitov G, Khazipov R, Magazanik LG, Nikolsky EE, Snetkov VA, Vyskočil F. Development of desensitization during repetitive end-plate activity and single end-plate currents in frog muscle. *J Physiol* 1989;412:113-122. 39 citations

**Cardiotoxicity of catecholamines (1965-1992) Poupa, Ošťádal**

Poupa O, Turek Z, Pelouch V, Procházka J, Krofta K. Increased resistance of the myocardium to anoxia in vitro after repeated application of isoprenalin. *Physiol Bohemoslov* 1965;14:536-541. 17 citations

Turek Z, Kaluš M, Poupa O. The effect of isoprenaline pretreatment on the size of acute myocardial necrosis induced by the same drug. *Physiol Bohemoslov* 1966;15:353-356. 18 citations

Ošťádal B, Rychterová V, Poupa O. Isoproterenol-induced acute experimental cardiac necrosis in the turtle (Testudo Horsfieldi). *Am Heart J* 1968;76:645-649. 49 citations

Ošťádal B, Rychter Z, Rychterová. The action of isoproterenol on the chick embryo heart. *J Mol Cell Cardiol* 1976;8:533-544. 26 citations

Dhalla NS, Yates JC, Naimark B, Dhalla KS, Beamish RE, Ošťádal B. Cardiotoxicity of catecholamines and related agents. In: *Cardiovascular Toxicology*, ed. D. Acosta, Raven Press, New York, 1992, pp. 239-282. 36 citations

**Long-lasting cardioprotective effect of chronic hypoxia (1966-2024) Poupa, Ošťádal, Pelouch, Kolář, Neckář, Hlaváčková**

Poupa O, Krofta K, Prochazka J, Turek Z. Acclimation to simulated high altitude and acute cardiac necrosis. *Fed Proc* 1966;25:1243-1246. 109 citations

Widimský J, Urbanová D, Ressl J, Ošťádal B, Pelouch V, Procházka J. Effect of intermittent altitude hypoxia on the myocardium and lesser circulation in the rat. *Cardiovasc Res* 1973;7:798-808. 88 citations

McGrath J, Procházka J, Pelouch V, Ošťádal B. Physiological responses of rats to intermittent high-altitude stress: effects of age. *J Appl Physiol* 1973;34:289-293. 73 citations

Asemu G, Papoušek F, Ošťádal B, Kolář F. Adaptation to high altitude hypoxia protects the rat heart against ischemia-induced arrhythmias. Involvement of mitochondrial KATP channel. *J Mol Cell Cardiol* 1999;31:1821-1831. 107 citations

Neckář J, Papoušek F, Nováková O, Ošťádal B, Kolář F. Cardioprotective effects of chronic hypoxia and ischaemic preconditioning are not additive. *Basic Res Cardiol* 2002;97:161-167. 90 citations

Hrbasová M, Novotný J, Hejnová L, Kolář F, Neckář J, Svoboda P. Altered myocardial Gs protein and adenylyl cyclase signaling in rats exposed to chronic hypoxia and normoxic recovery. *J Appl Physiol* 2003;94:2423-2432. 28 citations

Kolář F, Ošťádal B. Molecular mechanisms of cardiac protection by adaptation to chronic hypoxia. *Physiol Res* 2004;53 (Suppl. 1):S3-S13. 102 citations

Fitzpatrick CM, Shi Y, Hutchins WC, Su J, Gross GJ, Ostadal B, Tweddell JS, Baker JE. Cardioprotection in chronically hypoxic rabbits persists on exposure to normoxia: role of NOS and KATP channels. *Am J Physiol Heart Circ Physiol* 2005;288:H62-H68. 41 citations

Kolář F, Ježková J, Balková P, Břeh J, Neckář J, Novák F, Nováková O, Tomášová H, Srbová M, Ošťádal B, Wilhelm J, Herget J. Role of oxidative stress in PKC-delta upregulation and cardioprotection induced by chronic intermittent hypoxia. *Am J Physiol Heart Circ Physiol* 2007;292:H224-H230. 83 citations

Borchert GH, Yang C, Kolář F. Mitochondrial BKCa channels contribute to protection of cardiomyocytes isolated from chronically hypoxic rats. *Am J Physiol Heart Circ Physiol* 2011;300:H507-H513. 34 citations

Chytilová A, Borchert GH, Mandíková-Alánová P, Hlaváčková M, Kopkan L, Khan MA, Imig JD, Kolář F, Neckář J. Tumour necrosis factor-α contributes to improved cardiac ischaemic tolerance in rats adapted to chronic continuous hypoxia. *Acta Physiol (Oxf)* 2015;214:97-108. 20 citations

**Mechanisms of age-dependent salt hypertension (1966-2024) Jelínek, Kuneš, Zicha, Vaněčková**

Musilová H, Jelínek J, Albrecht I. The age of factor in experimental hypertension of the DCA type in rats. *Physiol Bohemoslov* 1966;15:525-531. 41 citations

Kazda S, Pohlová I, Bíbr B, Kočková J. Norepinephrine content of tissues in DOCA-hypertensive rats. *Am J Physiol* 1969;216:1472-1475. 20 citations

Cherchovich GM, Čapek K, Jefremova Z, Pohlová I, Jelínek J. High salt intake and blood pressure in lower primates (Papio hamadryas). *J Appl Physiol* 1976;40:601-604. 37 citations

Zicha J, Kuneš J, Jelínek J. Experimental hypertension in young and adult animals. *Hypertension* 1986;8:1096-1104. 87 citations

Zicha J, Kuneš J, Lébl M, Pohlová I, Slaninová J, Jelínek J. Antidiuretic and pressor actions of vasopressin in age-dependent DOCA-salt hypertension*. Am J Physiol* 1989;256:R138-R145. 33 citations

Zicha J, Kuneš J. Ontogenetic aspects of hypertension development: analysis in the rat. *Physiol Rev* 1999;79:1227-1282. 193 citations

Zicha J, Dobešová Z, Kuneš J. Relative deficiency of nitric oxide-dependent vasodilation in salt-hypertensive Dahl rats: the possible role of superoxide anions. *J Hypertens* 2001;19:247-254. 80 citations

Zicha J, Dobešová Z, Kuneš J, Vaněčková I. Chronic endothelin A receptor blockade attenuates contribution of sympathetic nervous system to salt hypertension development in adult but not in young Dahl rats. *Acta Physiol (Oxf)* 2012;205:124-132. 19 citations

Vaněčková I, Vokurková M, Rauchová H, Dobešová Z, Pecháňová O, Kuneš J, Vorlíček J, Zicha J. Chronic antioxidant therapy lowers blood pressure in adult but not in young Dahl salt hypertensive rats: the role of sympathetic nervous system. *Acta Physiol (Oxf)* 2013;208:340-349. 19 citations

Zicha J, Behuliak M, Vavřínová A, Dobešová Z, Kuneš J, Rauchová H, Vaněčková I. Cooperation of augmented calcium sensitization and increased calcium entry contributes to high blood pressure in salt-sensitive Dahl rats. *Hypertens Res*. 2021;44:1067-1078.

**Chromatographic methods – collagen and elastin studies (1966-2023) Deyl, Macek, Mikšík**

Deyl Z, Rosmus J. Thin layer chromatography of Dansyl amino acid derivatives. *J Chromatogr* 1965;20:514-520. 141 citations

Stuchlíková E, Juricová-Horáková M, Deyl Z. New aspects of the dietary effect of life prolongation in rodents. What is the role of obesity in aging? *Exp Gerontol* 1975;10:141-144. 94 citations

Deyl Z, Macek K, Adam M, Vančíková O. Studies on the chemical nature of elastin fluorescence. *Biochim Biophys Acta* 1980;625:248-254. 91 citations

Adam M, Deyl Z. Altered expression of collagen phenotype in osteoarthrosis. *Clin Chim Acta* 1983;133:25-32. 70 citations

Deyl Z, Hyánek J, Horáková M. Profiling of amino acids in body fluids and tissues by means of liquid chromatography. *J Chromatogr* 1986;379:177-250. 182 citations

Deyl Z, Rohlicek V, Adam M. Separation of collagens by capillary zone electrophoresis. *J Chromatogr* 1989;480:371-378. 51 citations

## Mikšík I, Gabriel J, Deyl Z. Microemulsion electrokinetic chromatography of diphenylhydrazones of dicarbonyl sugars. *J Chromatogr A* 1997;772: 297-303. 50 citations

Mikšík I, Sedláková P. Capillary electrochromatography of proteins and peptides. *J Sep Sci* 2007;30:1686-1703. 60 citations

**Protective and toxic effects of selenium (1967-1987) Ošťádalová, Pařízek**

Pařízek J, Ošťádalová I. The protective effect of small amounts of selenite in sublimate intoxication. *Experientia* 1967;23:142-143. 402 citations

Pařízek J, Beneš I, Ošťádalová I, Babický A, Beneš J, Lener J. Metabolic interrelations of trace elements. The effect of some inorganic and organic compounds of selenium on the metabolism of cadmium and mercury in the rat. *Physiol Bohemoslov* 1969;18:95-103. 83 citations

Pařízek J, Ošťádalová I, Beneš I, Babický A. Pregnancy and trace elements: the protective effect of compounds of an essential trace element--selenium--against the peculiar toxic effects of cadmium during pregnancy. *J Reprod Fertil* 1968;16:507-509. 52 citations

Ošťádalová I, Babický A, Obenberger J. Cataract induced by administration of a single dose of sodium selenite to suckling rats. *Experientia* 1978;34:222-223. 123 citations

**Function and pharmacology of ionotropic glutamate receptors (1968-2024) Vyklický, Vlachová, Krůšek, Smejkalová, Hrčka Krausová, Balík, Kořínek**

Beranek R, Miller PL. The action of glutamate iontophoretically applied on insect muscle fibres. *J Exp Biol* 1968;49:83-93. 79 citations

\*Mayer ML, Vyklicky L Jr, Clements J. Regulation of NMDA receptor desensitization in mouse hippocampal neurons by glycine. *Nature* 1989;338:425-427. 396 citations

Vyklický L Jr., Vlachová V, Krůšek J. The effect of external pH changes on responses to excitatory amino acids in mouse hippocampal neurones. *J Physiol* 1990;430:497-517. 168 citations

Vyklický L Jr. Calcium-mediated modulation of N-methyl-D-aspartate (NMDA) responses in cultured rat hippocampal neurones. *J Physiol* 1993;470:575-600. 103 citations

Vlachová V, Zemková H, Vyklický L Jr. Copper modulation of NMDA responses in mouse and rat cultured hippocampal neurons. *Eur J Neurosci* 1996;8:2257-2264. 88 citations

Horak M, Vlcek K, Petrovic M, Chodounska H, Vyklicky L Jr. Molecular mechanism of pregnenolone sulfate action at NR1/NR2B receptors. *J Neurosci* 2004;24:10318-10325. 72 citations

Horak M, Vlcek K, Chodounska H, Vyklicky L Jr. Subtype-dependence of N-methyl-D-aspartate receptor modulation by pregnenolone sulfate. *Neuroscience* 2006;137:93-102. 81 citations

Cais O, Sedlacek M, Horak M, Dittert I, Vyklicky L Jr. Temperature dependence of NR1/NR2B NMDA receptor channels. *Neuroscience* 2008;151:428-438. 41 citations

Borovska J, Vyklicky V, Stastna E, Kapras V, Slavikova B, Horak M, Chodounska H, Vyklicky L Jr. Access of inhibitory neurosteroids to the NMDA receptor. *Br J Pharmacol* 2012;166:1069-1083. 50 citations

Korinek M, Vyklicky V, Borovska J, Lichnerova K, Kaniakova M, Krausova B, Krusek J, Balik A, Smejkalova T, Horak M, Vyklicky L Cholesterol modulates open probability and desensitization of NMDA receptors*. J Physiol* 2015;593:2279-2293. 41 citations

Vyklicky V, Krausova B, Cerny J, Balik A, Zapotocky M, Novotny M, Lichnerova K, Smejkalova T, Kaniakova M, Korinek M, Petrovic M, Kacer P, Horak M, Chodounska H, Vyklicky L. Block of NMDA receptor channels by endogenous neurosteroids: implications for the agonist induced conformational states of the channel vestibule. *Sci Rep* 2015;5:10935. 73 citations

Vyklicky V, Krausova B, Cerny J, Ladislav M, Smejkalova T, Kysilov B, Korinek M, Danacikova S, Horak M, Chodounska H, Kudova E, Vyklicky L. surface expression, function, and pharmacology of disease-associated mutations in the membrane domain of the human GluN2B subunit. *Front Mol Neurosci* 2018;11:110. 38 citations

Kysilov B, Kuchtiak V, Krausova BH, Balik A, Korinek M, Fili K, Dobrovolski M, Abramova V, Chodounska H, Kudova E, Bozikova P, Cerny J, Smejkalova T, Vyklicky L. Disease-associated nonsense and frame-shift variants resulting in the truncation of the GluN2A or GluN2B C-terminal domain decrease NMDAR surface expression and reduce potentiating effects of neurosteroids. *Cell Mol Life Sci* 2024;81:36.

**Pain mechanisms (1969-2024) Vyklický Sr, Vlachová, Paleček, Špicarová**

Andersson SA, Keller O, Vyklický L Sr. Cortical activity evoked from tooth pulp afferents. *Brain Res* 1973;50:473-475. 30 citations

\*Palecek J, Paleckova V, Dougherty PM, Carlton SM, Willis WD. Responses of spinothalamic tract cells to mechanical and thermal stimulation of skin in rats with experimental peripheral neuropathy*. J Neurophysiol* 1992;67:1562-1573. 169 citations

\*Dougherty PM, Palecek J, Paleckova V, Sorkin LS, Willis WD. The role of NMDA and Non-NMDA excitatory amino acid receptors in the excitation of primate spinothalamic tract neurons by mechanical, chemical thermal and electrical stimuli. *J Neurosci* 1992;12:3025-3041. 355 citations

Vyklický L Sr., Knotková-Urbancová H, Vitásková Z, Vlachová V, Kress M, Reeh PW. Inflammatory mediators at acidic pH activate capsaicin receptors in cultured sensory neurons from newborn rats. *J Neurophysiol* 1998;79:670-676. 94 citations

Vlachová V, Lyfenko A, Orkand RK, Vyklický L Sr. The effects of capsaicin and acidity on currents generated by noxious heat in cultured neonatal rat dorsal root ganglion neurons. *J Physiol* 2001;533:717-728. 24 citations

Pospisilova E, Palecek J. Post-operative pain behavior in rats is reduced after single high-concentration capsaicin application. *Pain* 2006;125:233-243. 23 citations

Vyklický L, Nováková-Toušová K, Benedikt J, Samad A, Touška F, Vlachová V. Calcium-dependent desensitization of vanilloid receptor TRPV1: a mechanism possibly involved in analgesia induced by topical application of capsaicin*. Physiol Res* 2008;57 (Suppl 3):S59-S68. 92 citations

Spicarova D, Palecek J. The role of the TRPV1 endogenous agonist N-Oleoyldopamine in modulation of nociceptive signaling at the spinal cord level. *J Neurophysiol* 2009;102:234-243. 43 citations

Spicarova D, Adamek P, Kalynovska N, Mrozkova P, Palecek J. TRPV1 receptor inhibition decreases CCL2-induced hyperalgesia. *Neuropharmacology* 2014;81:75-84. 37 citations

**Circadian rhythms in brain (1970-2024) Illnerová, Vaněček, Sumová**

Illnerová H, Vanĕček J, Křeček J, Wetterberg L, Sääf J. Effect of one minute exposure to light at night on rat pineal serotonin N-acetyltransferase and melatonin. *J Neurochem* 1979;32:673-675. 93 citations

Illnerová H, Vanĕček J. Pineal rhythm in N-acetyltransferase activity in rats under different artificial photoperiods and in natural daylight in the course of a year. *Neuroendocrinology* 1980;31:321-326. 108 citations

Illnerová H, Vaněček J. Two oscillator structure of the pacemaker controlling the circadian rhythm of
N-acetyltransferase in the rat pineal gland. *J Comp Physiol* 1982;145:539-548. 157 citations

llnerová H, Hoffmann K, Vanĕcek J. Adjustment of pineal melatonin and N-acetyltransferase rhythms to change from long to short photoperiod in the Djungarian hamster Phodopus sungorus. *Neuroendocrinology* 1984;38:226-231. 128 citations

\*Vanecek J, Sugden D, Weller J, Klein DC. Atypical synergistic alpha 1- and beta-adrenergic regulation of adenosine 3',5'-monophosphate and guanosine 3',5'-monophosphate in rat pinealocytes. *Endocrinology* 1985;116:2167-2173. 251 citations

Vaněček J, Pavlík A, Illnerová H. Hypothalamic melatonin receptor sites revealed by autoradiography*, Brain Res* 1987;435:359-362. 394 citations

Sumová A, Trávníčková Z, Peters R, Schwartz WJ, Illnerová H. The rat suprachiasmatic nucleus is a clock for all seasons. *Proc Natl Acad Sci U S A* 1995;92:7754-7758. 161 citations

Sládek M, Sumová A, Kováčiková Z, Bendová Z, Laurinová K, Illnerová H. Insight into core clock mechanism of embryonic and early postnatal rat suprachiasmatic nucleus. *Proc Natl Acad Sci U S A* 2004;101:6231-6236. 117 citations

Čečmanová V, Houdek P, Šuchmanová K, Sládek M, Sumová A.Development and entrainment of the fetal clock in the suprachiasmatic nuclei: The role of glucocorticoids. *J Biol Rhythms* 2019;34:307-322. 22 citations

Greiner P, Houdek P, Sládek M, Sumová A. Early rhythmicity in the fetal suprachiasmatic nuclei in response to maternal signals detected by omics approach. *PLoS Biol* 2022;20:e3001637.

Liška K, Dočkal T, Houdek P, Sládek M, LužnáV, Semenovykh K, DrapšinM, Sumová A. Lithium affects the circadian clock in the choroid plexus – A new role for an old mechanism. *Biomed Pharmacother* 2023;159:114292.

Drapšin M, Dočkal T, Houdek P, Sládek M, SemenovykhK, Sumová A. Circadian clock in choroid plexus is resistant to immune challenge but dampens in response to chronodisruption. *Brain Behav Immun* 2024;117:255-269.

**Developmental models of epileptic seizures and epilepsy (1970-2010) Mareš P, Kubová**

Schickerová R, Mareš P, Trojan S. Correlation between electrocorticographic and motor phenomena induced by pentamethylenetetrazol during ontogenesis in rats. *Exp Neurol* 1984;84:153-164. 55 citations

Mareš P, Velíšek L. N-methyl-D-aspartate (NMDA)-induced seizures in developing rats. *Brain Res Dev Brain Res* 1992;65:185-189. 115 citations

Velisek L, Kubova H, Pohl M, Stankova L, Mareš P, Schickerova R. Pentylenetetrazol-induced seizures in rats: an ontogenetic study. *Naunyn Schmiedebergs Arch Pharmacol* 1992;346:588-591. 133 citations

Kubová H, Folbergrová J, Mareš P. Seizures induced by homocysteine in rats during ontogenesis. *Epilepsia* 1995;36:750-756. 90 citations

Kršek P, Mikulecká A, Druga R, Kubová H, Hliňák Z, Suchomelová L, Mareš P. Long-term behavioral and morphological consequences of nonconvulsive status epilepticus in rats. *Epilepsy Behav* 2004;5:180-191. 48 citations

Mikulecká A, Šubrt M, Pařízková M, Mareš P, Kubová H. Consequences of early postnatal benzodiazepines exposure in rats. II. Social behavior. *Front Behav Neurosci* 2014;8:169. 13 citations

Kubová H, Folbergrová J, Rejchrtová J, Tsenov G, Pařízková M, Burchfiel J, Mikulecká A, Mareš P. The free radical scavenger. The free radical scavenger N-tert-butyl-α-phenylnitrone (PNB) administered to immature rats during status epilepticus alters neurogenesis and has variable effects, both beneficial and detrimental, on long-term outcomes. *Front Cell Neurosci* 2018;12:266.

## ~~A~~cetylcholine synthesis and release in nervous and non-nervous tissues (1970-2002) Tuček, Doležal

Tuček S. Choline acetyltransferase activity in skeletal muscles after denervation. *Exp Neurol* 1973;40: 23-35. 36 citations

Doležal V, Tuček S. Utilization of citrate, acetylcarnitine, acetate, pyruvate and glucose for the synthesis of acetylcholine in rat brain slices. *J Neurochem* 1981;36, 1323-1330. 139 citations

Tuček S. 1982. The synthesis of acetylcholine in skeletal muscles of the rat. *J Physiol* 322: 53-69. 151 citations

Doležal V, Tuček S. The effects of 4-aminopyridine and tetrodotoxin on the release of acetylcholine from rat striatal slices. *Naunyn Schmiedebergs Arch Pharmacol* 1983;323:90-95. 53 citations

Tuček S. Regulation of acetylcholine synthesis in the brain. *J Neurochem* 1985;44:11-24. 260 citations

Doležal V, Tuček S. Calcium channels involved in the inhibition of acetylcholine release by presynaptic muscarinic receptors in rat striatum. *Br J Pharmacol* 1999;127:1627-1632. 18 citations

**Periodization of early postnatal development in the rat (1970-1976) Ošťádalová, Babický, Pařízek**

Babický A, Ošťádalová I, Pařízek J, Kolář J, Bíbr B. Use of radioisotope techniques for determining the weaning period in experimental animals. *Physiol Bohemoslov* 1970;19:457-467. 111 citations

Babický A, Pavlík L, Pařízek J, Ošťádalová I, Kolář J. Determination of the onset of spontaneous water intake in infant rats. *Physiol Bohemoslov* 1972;21:467-471. 40 citations

Babický A, Pařízek J, Ošťádalová I, Kolář J. Initial solid food intake and growth of young rats in nests of different sizes. *Physiol Bohemoslov* 1973;22:557-566. 89 citations

Babický A, Ošťádalová I, Pařízek J, Kolář J, Bíbr B. Onset and duration of the physiological weaning period for infant rats reared in nests of different sizes. *Physiol Bohemoslov* 1973;22:449-456. 66 citations

**Brown adipose tissue development and its thermogenic function (1972-2024) Hahn, Skála, Houštěk, Drahota, Kopecký, Svoboda, Ježek, Rossmeisl**

Bulychev A, Kramar R, Drahota Z, Lindberg O. Role of a specific endogenous fatty acid fraction in the coupling-uncoupling mechanism of oxidative phosphorylation of brown adipose tissue. *Exp Cell Res* 1972;72:169-187. 62 citations

Hahn P, Skála J. Carnitine and brown adipose tissue metabolism in the rat during development. *Biochem J* 1972;127: 107-111. 46 citations

Hahn P, Novák M. Development of brown and white adipose tissue. *J Lipid Res* 1975;16:79-91. 109 citations

Kopecký J, Guerrieri F, Ježek P, Drahota Z, Houštěk J. Molecular mechanism of uncoupling protein in brown adipose tissue mitochondria. The non-identity of proton and chloride conducting pathways. *FEBS Lett* 1984;170:186-190. 27 citations

Kopecky J, Sigurdson L, Park IR, Himms-Hagen J. Thyroxine 5'-deiodinase in hamster and rat brown adipose tissue: Effect of cold and diet. *Am J Physiol* 1986;251:E1-E7. 57 citations

Houštěk J, Kopecký J, Rychter Z, Soukup T. Uncoupling protein in embryonic brown adipose tissue - existence of nonthermogenic and thermogenic mitochondria. *Biochim Biophys Acta* 1988;935:19-25. 55 citations

Ježek P, Houštěk J, Drahota Z. Alkaline pH, membrane potential and magnesium cations are negative modulators of purine nucleotide inhibition of H+ and Cl- transport through the uncoupling protein of brown adipose tissue mitochondria. *J Bioenerg Biomembr* 1988, 20: 603-622. 30 citations

Kopecký J, Baudyšová M, Zanotti F, Janíková D, Pavelka S, Houstĕk J. Synthesis of mitochondrial uncoupling protein in brown adipocytes differentiated in cell culture. *J Biol Chem* 1990, 265:22204-22209. 62 citations

Bronnikov G, Houstĕk J, Nedergaard J. Beta-adrenergic, cAMP-mediated stimulation of proliferation of brown fat cells in primary culture. Mediation via beta 1 but not via beta 3 adrenoceptors. *J Biol Chem* 1992;267:2006-2013. 182 citations

Houstĕk J, Vízek K, Pavelka S, Kopecký J, Krejčová E, Heřmanská J, Čermáková M. Type II iodothyronine 5'-deiodinase and uncoupling protein in brown adipose tissue of human newborns. *J Clin Endocrinol Metab* 1993;77:382-387. 67 citations

\*Kozak UC, Kopecky J, Teisinger J, Enerbäck S, Boyer B, Kozak LP. An upstream enhancer regulating brown-fat-specific expression of the mitochondrial uncoupling protein gene. *Mol Cell Biol* 1994;14:59-67. 157 citations

Houštěk J, Andersson U, Tvrdík P, Nedergaard J, Cannon B. The expression of subunit c correlates with and thus may limit the biosynthesis of the mitochondrial FoF1-ATPase in brown adipose tissue. *J Biol Chem* 1995;270:7689-7694. 69 citations

\*Koza RA, Hohmann SM, Guerra C, Rossmeisl M, Kozak LP: Synergistic gene interactions control the induction of the mitochondrial uncoupling protein (Ucp1) gene in white fat tissue. *J Biol Chem* 2000; 275:34486-34492. 65 citations

Kramarova TV, Shabalina IG, Anderson U, Westerberg R, Carlberg I, Houstek J, Nedergaard J, Canon B. Mitochondrial ATP-synthase levels in brown adipose tissue are governed by the c-Fo subunit P1 isoform. *FASEB J* 2008; 22:55-63. 60 citations

Shabalina IG, Vrbacký M, Pecinová A, Kalinovich AV, Drahota Z, Houštěk J, Mráček T, Cannon B, Nedergaard J: ROS production in brown adipose tissue mitochondria: The question of UCP1-dependence. *Biochim Biophys Acta* 2014;1837:2017-2030. 47 citations

Zouhar P, Janovska P, Stanic S, Bardova K, Funda J, Haberlova B, Andersen B, Rossmeisl M, Cannon B, Kopecky J, Nedergaard J. A pyrexic effect of FGF21 independent of energy expenditure and UCP1. *Mol Metab* 2021;53:101324.

Oeckl J, Janovska P, Adamcova K, Bardova K, Brunner S, Dieckmann S, Ecker J, Fromme T, Funda J, Gantert T, Giansanti P, Hidrobo MS, Kuda O, Kuster B, Li Y, Pohl R, Schmitt S, Schweizer S, Zischka H, Zouhar P, Kopecky J, Klingenspor M. Loss of UCP1 function augments recruitment of futile lipid cycling for thermogenesis in murine brown fat. *Mol Metab* 2022;61:101499. 21 citations

Janovska P, Zouhar P, Bardova K, Otahal J, Vrbacky M, Mracek T, Adamcova K, Lenkova L, Funda J, Cajka T, Drahota Z, Stanic S, Rustan AC, Horakova O, Houstek J, Rossmeisl M, Kopecky J. Impairment of adrenergically-regulated thermogenesis in brown fat of obesity-resistant mice is compensated by non-shivering thermogenesis in skeletal muscle. *Mol Metab* 2023;69:101683.

**Ion-selective microelectrodes and K+ concetrations in muscle and brain (1972-2011) Vyskočil, Hník, Kříž**

Vyskočil F, Kříž N. Modifications of single and double-barrel potassium specific microelectrodes for physiological experiments. *Pflügers Arch* 1972;337:365-376. 106 citations

Hník P, Vyskočil F, Kříž N, Holas M. Work-induced increase of extracellular potassium concentration in muscle measured by ion-specific electrodes. *Brain Res* 1972;40:559-562. 46 citations

Vyskočil F, Kříž N, Bureš J. Potassium-selective microelectrodes used for measuring the extracellular brain potassium during spreading depression and anoxic depolarization in rats. *Brain Res* 1972;39:255-259. 368 citations

Hník P, Holas M, Krekule I, Kříž N, Mejsnar J, Smieško V, Ujec E, Vyskočil F. Work-induced potassium changes in skeletal muscle and effluent venous blood assessed by liquid ion-exchanger microelectrodes. *Pflügers Arch* 1976;362:85-94. 151 citations

Shabunova I, Vyskočil F. Postdenervation changes of intracellular potassium and sodium measured by ion selective microelectrodes in rat soleus and extensor digitorum longus muscle fibres. *Pflügers Arch* 1982;394:161-164. 40 citations

Vyskočil F, Hník P, Rehfeldt H, Vejsada R, Ujec E. The measurement of K+e concentration changes in human muscles during volitional contractions. *Pflügers Arch* 1983;399:235-237. 87 citations

**Altered control of vascular tone in hypertension (1974-2024) Albrecht, Zicha, Kuneš, Behuliak, Vaněčková**

Albrecht I, Hallbäck M, Julius S, Lundgren Y, Stage L, Weiss L, Folkow B. Arterial pressure, cardiac output and systemic resistance before and after pithing in normotensive and spontaneously hypertensive rats. *Acta Physiol Scand* 1975;94:378-385. 58 citations

Kuneš J, Dobešová Z, Zicha J. Altered balance of main vasopressor and vasodepressor systems in rats with genetic hypertension and hypertriglyceridaemia. *Clin Sci (Lond)* 2002;102:269-277. 37 citations

Ueno T, Tremblay J, Kunes J, Zicha J, Dobesova Z, Pausova Z, Deng AY, Sun YL, Jacob HJ, Hamet P. Rat model of familial combined hyperlipidemia as a result of comparative mapping. *Physiol Genomics* 2004;17:38-47. 42 citations

Pecháňová O, Zicha J, Kojšová S, Dobešová Z, Jendeková L, Kuneš J. Effect of chronic N-acetylcysteine treatment on the development of spontaneous hypertension. *Clin Sci (Lond)* 2006;110:235-242. 56 citations

Pecháňová O, Zicha J, Paulis L, Zenebe W, Dobešová Z, Kojšová S, Jendeková L, Sládková M, Dovinová I, Šimko F, Kuneš J. The effect of N-acetylcysteine and melatonin in adult spontaneously hypertensive rats with established hypertension. *Eur J Pharmacol* 2007;561:129-136. 77 citations

Behuliak M, Pintérová M, Bencze M, Petrová M, Líšková S, Karen P, Kuneš J, Vaněčková I, Zicha J. Ca2+ sensitization and Ca2+ entry in the control of blood pressure and adrenergic vasoconstriction in conscious Wistar-Kyoto and spontaneously hypertensive rats. *J Hypertens* 2013;31:2025-2035. 21 citations

Bencze M, Behuliak M, Zicha J. The impact of four different classes of anesthetics on the mechanisms of blood pressure regulation in normotensive and spontaneously hypertensive rats. *Physiol Res* 2013;62:471-478. 45 citations

Vaněčková I, Maletínská L, Behuliak M, Nagelová V, Zicha J, Kuneš J. Obesity-related hypertension: possible pathophysiological mechanisms. *J Endocrinol* 2014;223:R63-R78. 107 citations

Behuliak M, Vavřínová A, Bencze M, Polgárová K, Ergang P, Kuneš J, Vaněčková I, Zicha J. Ontogenetic changes in contribution of calcium sensitization and calcium entry to blood pressure maintenance of Wistar-Kyoto and spontaneously hypertensive rats. *J Hypertens* 2015;33:2443-2454. 17 citations

Behuliak M, Bencze M, Polgárová K, Kuneš J, Vaněčková I, Zicha J. Hemodynamic response to gabapentin in conscious spontaneously hypertensive rats. *Hypertension* 2018;72:676-685. 17 citations

Vavřínová A, Behuliak M, Bencze M, Vodička M, Ergang P, Vaněčková I, Zicha J. Sympathectomy-induced blood pressure reduction in adult normotensive and hypertensive rats is counteracted by enhanced cardiovascular sensitivity to vasoconstrictors. *Hypertens Res* 2019;42:1872-1882. 11 citations

**Non-quantal release of acetylcholine and neuromuscular transmission (1977-1995) Vyskočil, Zemková, Doležal**

Vyskočil F, Illes P. Non-quantal release of transmitter at mouse neuromuscular junction and its dependence on the activity of Na+-K+ ATP-ase. P*flügers Arch* 1977;370:295-297. 133 citations

Vizi ES, Vyskočil F. Changes in total and quantal release of acetylcholine in the mouse diaphragm during activation and inhibition of membrane ATPase. *J Physiol* 1979;286:1-14. 158 citations

Vyskočil F, Nikolsky E, Edwards C. An analysis of the mechanisms underlying the non-quantal release of acetylcholine at the mouse neuromuscular junction. *Neuroscience* 1983;9:429-435. 109 citations

Edwards C, Doležal V, Tuček S, Zemková H, Vyskočil F. Is an acetylcholine transport enzyme responsible for non quantal release of acetylcholine at the mouse myoneural junction? *Proc Natl Acad Sci U S A* 1985;82:3514-3518. 101 citations

Zemková H, Vyskočil F, Edwards C. The effects of nerve terminal activity on non-quantal release of acetylcholine at the mouse neuromuscular junction. *J Physiol* 1990;423:631-640. 38 citations

Vyskočil F, Vrbová G. Non-quantal release of acetylcholine affects polyneuronal innervation on developing rat muscle fibres. *Eur J Neurosci* 1993;5:1677-1683. 29 citations

Nikolsky EE, Zemková H, Voronin VA, Vyskočil F. Role of non‑quantal acetylcholine release in surplus polarization of the mouse diaphragm fibres at the endplate zone. *J Physiol* 1994;477:497‑502. 36 citations

Bukcharaeva EA, Kim KC, Moravec J, Nikolsky EE, Vyskočil F. Noradrenaline synchronizes evoked quantal release at frog neuromuscular junctions. *J Physiol* 1999;517:879-888. 51 citations

Galkin AV, Giniatullin RA, Mukhtarov MR, Svandová I, Grishin SN, Vyskočil F. ATP but not adenosine inhibits nonquantal acetylcholine release at the mouse neuromuscular junction. *Eur J Neurosci* 2001;13:2047-2053. 50 citations

**Beta-adrenergic receptors (1979-1992) Svoboda**

Svoboda P, Svartengren J, Snochowski J, Houštěk J, Cannon B. High number of high affinity binding sites for
(-)-3H dihydroalprenolol on isolated hamster brown fat cells. *Eur J Biochem* 1979;102:203-210. 66 citations

Svartengren J, Svoboda P, Cannon B. Desensitization of beta-adrenergic responsiveness in vivo. Decreased coupling between receptors and adenylate cyclase in isolated brown-fat cells. *Eur J Biochem* 1982;128:481-488. 55 citations

Ransnas LA, Svoboda P, Jasper JR, Insel PA. Stimulation of beta-adrenergic receptors of S49 lymphoma cells redistributes the alpha subunit of the stimulatory G protein between cytosol and membranes. *Proc Nat Acad Sci U S A* 1989; 86:7900-7903. 146 citations

Svoboda P, Kvapil P, Insel PA, Ransnas LA. Plasma-membrane independent pool of the alpha subunit of the stimulatory guanine-nucleotide binding protein in a low-density membrane fraction of S49 lymphoma cells. *Eur J Biochem* 1992;208:693-698. 30 citations

**Electrogenic Na+/K+ pump in skeletal muscle (1979-1995) Vyskočil, Dlouhá-Zemková, Teissinger**

Dlouhá H, Teisinger J, Vyskočil F. Activation of membrane Na+/K+-ATPase of mouse skeletal muscle by acetylcholine and its inhibition by α-bungarotoxin, curare and atropine. *Pflügers Arch* 1979;380:101-104. 44 citations

Vyskočil F, Teisinger J, Dlouhá H. A specific enzyme is not necessary for vanadate-induced oxidation of NADH (NADPH). *Nature* 1980;286:516-517. 61 citations

Dlouhá H, Teisinger J, Vyskočil F. The effect of vanadate on the electrogenic Na+/K+ pump, intracellular Na+ concentration and electrophysiological characteristics of mouse skeletal muscle fibre. *Physiol Bohemoslov* 1981;30:1-10. 39 citations

Vyskočil F, Di Gregorio F, Gorio A. The facilitating effect of gangliosides on the electrogenic (Na+/K+) pump and on the resistance of the membrane potential to hypoxia in neuromuscular preparation. *Pflügers Arch* 1985;403:1-6. 40 citations

Stankovičová T, Zemková H, Breier A, Amler E, Burkhard M, Vyskočil F. The effects of calcium channel blockers on sodium pump. *Pflügers Arch* 1995;429:716-721. 17 citations

**Developmental neuropharmacology of antiepileptic drugs (1980-2024) Mareš P, Kubová, Velíšek**

Kubová H, Mareš P. Time course of the anticonvulsant action of clonazepam in the developing rats. *Arch Int Pharmacodyn* 1989;298: 15-24. 30 citations

Velíšková J, Velíšek L, Mareš P, Rokyta R. Ketamine suppresses both bicuculline- and picrotoxin-induced generalized tonic-clonic seizures during ontogenesis. *Pharmacol Biochem Behav* 1990;37:667-674. 59 citations

Velíšek L, Kusá R, Kulovaná M, Mareš P. Excitatory amino acid antagonists and pentylenetetrazol-induced seizures during ontogenesis. I. The effects of 2-amino-7-phosphonoheptanoate. *Life Sci* 1990;46:1349-1357. 55 citations

Velíšek L, Verešová S, Pobišová H, Mareš P. Excitatory amino acid antagonists and pentylenetetrazol-induced seizures during ontogenesis. 2. The effects of MK-801. *Psychopharmacology* 1991;14:510-514. 46 citations

Kubova H, Mares P. Anticonvulsant effects of phenobarbital and primidone during ontogenesis in rats. *Epilepsy Res* 1991;10:148-155. 54 citations

Mareš P, Mikulecká A. Different effects of two N-methyl-D-aspartate receptor antagonists on seizures, spontaneous behavior, and motor performance in immature rats. *Epilepsy Behav* 2009;14:32-39. 48 citations

Mareš P, Mikulecká A, Tichá K, Lojková-Janečková D, Kubová H. Metabotropic glutamate receptors as a target for anticonvulsant and anxiolytic action in immature rats. *Epilepsia* 2010;51 (Suppl. 3): 24-26. 11 citations

**Catecholamines and Na+/K+-ATPase in the brain (1981-1988) Svoboda, Teisinger**

Svoboda P, Mosinger B. Catecholamines and the brain microsomal Na, K adenosine-triphosphatase I. Protection against lipoperoxidative damage. *Biochem Pharmacol* 1981;30:427-432. 106 citations

Svoboda P, Mosinger B. Catecholamines and the brain microsomal Na, K-adenosine-triphosphatase II. The mechanism of action. *Biochem Pharmacol* 1981;30:433-439. 27 citations

Svoboda P, Teisinger J, Pilař J, Vyskočil F. Vanadyl (VO2+) and vanadate (VO3-) ions inhibit the brain microsomal Na,K-ATPase with similar affinities. Protection by transferrine and noradrenaline. *Biochem Pharmacol* 1984;33:2485-2491. 20 citations

Svoboda P, Teisinger J, Vyskočil F. Vanadyl (VO2+) induced lipoperoxidation in the brain microsomal fraction is not related to VO2+ inhibition of Na,K-ATPase. *Biochem Pharmacol* 1984;33:2493-2497. 12 citations

Amler E, Teisinger J, Svoboda P. Mg2+-induced changes of lipid order and conformation of (Na+ + K+)-ATPase. *Biochim Biophys Acta* 1987;905:376-382. 18 citations

Svoboda P, Amler E, Teisinger J. Different sensitivity of ATP+Mg+Na (I) and Pi+Mg (II) dependent types of ouabain binding to phospholipase A2. *J Membr Biol* 1988;104:211-221. 28 citations

**Computational neuroscience (1982-2024) Lánský, Košťál, Zápotocký**

Lánský P. On approximations of Stein's neuronal model. *J Theor Biol* 1984;107:631-647. 77 citations

Lánský P, Lánská V. Diffusion approximation of the neuronal model with synaptic reversal potentials. *Biol Cybern* 1987;56:19-26. 88 citations

Lánský P, Sacerdote L, Tomassetti F. On the comparison of Feller and Ornstein-Uhlenbeck models for neural activity. *Biol Cybern* 1995;73:457-465. 64 citations

Lánský P, Sacerdote L. The Ornstein-Uhlenbeck neuronal model with signal-dependent noise. *Phys Lett A* 2001;285:132-140. 56 citations

Kostal L, Lansky P, Rospars JP. Neuronal coding and spiking randomness. *Eur J Neurosci* 2007;26:2693-2701. 56 citations

Lansky P, Ditlevsen S. A review of the methods for signal estimation in stochastic diffusion leaky integrate-and-fire neuronal models. *Biol Cybern* 2008;99:253-262. 65 citations

Kostal L, Lansky P, Rospars JP. Efficient olfactory coding in the pheromone receptor neuron of a moth. *PLoS Comput Biol* 2008;4:e1000053. 32 citations

Šmít D, Fouquet C, Doulazmi M, Pincet F, Trembleau A, Zapotocky M. BFPTool: a software tool for analysis of Biomembrane Force Probe experiments. *BMC Biophys* 2017;10:2. 29 citations

**Memory, spatial learning (1982-2024) Bureš, Burešová, Fenton, Stuchlík**

Burešová O, Bureš J. Radial maze as a tool for assessing the effect of drugs on the working memory of rats. *Psychopharmacology (Berl)* 1982;77:268-71. 113 citations

Burešová O, Bolhuis JJ, Bureš J. Differential-effects of cholinergic blockade on performance of rats in the water tank navigation task and in a radial water maze. *Behav Neurosci* 1986 ;100:476-482. 144 citations

Bureš J, Fenton AA, Kaminsky Y, Zinyuk L. Place cells and place navigation. *Proc Natl Acad Sci U S A* 1997;94:343-350. 101 citations

Koistinaho M, Ort M, Cimadevilla JM, Vondrous R, Cordell B, Koistinaho J, Bureš J, Higgins LS. Specific spatial learning deficits become severe with age in beta -amyloid precursor protein transgenic mice that harbor diffuse beta -amyloid deposits but do not form plaques. *Proc Natl Acad Sci U S A* 2001;98:14675-14680. 142 citations

Hort J, Laczó J, Vyhnálek M, Bojar M, Bureš J, Vlček K. Spatial navigation deficit in amnestic mild cognitive impairment. *Proc Natl Acad Sci U S A* 2007;104:4042-4047. 223 citations

Bureš J, Fenton AA, Kaminsky Y, Zinyuk L. Place cells and place navigation. *Proc Natl Acad Sci U S A* 1997;94:343-350. 101 citations

Stuchlik A, Fenton AA, Bures J. Substratal idiothetic navigation of rats is impaired by removal or devaluation of extramaze and intramaze cues. *Proc Natl Acad Sci U S A* 2001;98:3537-3542. 27 citations

Fenton AA, Wesierska M, Kaminsky Y, Bures J. Both here and there: simultaneous expression of autonomous spatial memories in rats. *Proc Natl Acad Sci U S A* 1998;95:11493-11498. 86 citations

Telensky P, Svoboda J, Blahna K, Bureš J, Kubik S, Stuchlik A. Functional inactivation of the rat hippocampus disrupts avoidance of a moving object. *Proc Natl Acad Sci U S A* 2011;108:5414-5418. 22 citations

**Fatty acid cycling mechanims of mitochondrial uncoupling proteins (1984-2015) Ježek, Jabůrek**

Garlid KD, Orosz DE, Modrianský M, Vassanelli S, Ježek P. On the mechanism of fatty acid-induced proton transport by mitochondrial uncoupling protein. *J Biol Chem* 1996;271:2615-2620. 310 citations

Jabůrek M, Vařecha M, Ježek P, Garlid KD. Alkylsulfonates as probes of uncoupling protein transport mechanism. Ion pair transport demonstrates that direct H+ translocation by UCP1 is not necessary for uncoupling. *J Biol Chem* 2001;276:31897-31905. 44 citations

Žáčková M, Škobisová E, Urbánková E, Ježek P. Activating omega-6 Polyunsaturated Fatty Acids and Inhibitory Purine Nucleotides are High Affinity Ligands for Novel Mitochondrial Uncoupling Proteins UCP2 and UCP3. *J Biol Chem* 278:20761-20769, 2003. 84 citations

Jabůrek M, Miyamoto S, Di Mascio P, Garlid KD, Ježek P. Hydroperoxy fatty acid cycling mediated by mitochondrial uncoupling protein UCP2. *J Biol Chem* 2004;279:53097-53102. 88 citations

Beck V, Jabůrek M, Demina T, Rupprecht A, Porter RK, Jezek P, Pohl EE. Polyunsaturated fatty acids activate human uncoupling proteins 1 and 2 in planar lipid bilayers. *FASEB J* 2007;21:1137-1144. 92 citations

**Vascular cell physiology (1985-2004) Bačáková, Lisá, Mareš V**

Bačáková L, Švorčík V, Rybka V, Míček I, Hnatowicz V, Lisá V, Kocourek F. Adhesion and proliferation of cultured human aortic smooth muscle cells on polystyrene implanted with N+, F+ and Ar+ ions: correlation with polymer surface polarity and carbonization. *Biomaterials* 1996;17:1121-1126. 51 citations

Bačáková L, Lisá V, Pellicciari C, Mareš V, Bottone MG, Kocourek F. Sex related differences in the adhesion, migration, and growth of rat aortic smooth muscle cells in culture. *In Vitro Cell Dev Biol Anim* 1997;33:410-413. 20 citations

Bačáková L, Mareš V, Bottone MG, Pellicciari C, Lisá V, Švorčík V. Fluorine ion-implanted polystyrene improves growth and viability of vascular smooth muscle cells in culture.*J Biomed Mater Res* 2000;49:369-379. 74 citations

Bačáková L, Starý V, Kofroňová O, Lisá V. Polishing and coating carbon fiber-reinforced carbon composites with a carbon-titanium layer enhances adhesion and growth of osteoblast-like MG63 cells and vascular smooth muscle cells in vitro. *J Biomed Mater Res* 2001;54:567-578. 75 citations

\*Photos PJ, Bacakova L, Discher B, Bates FS, Discher DE. Polymer vesicles in vivo: correlations with PEG molecular weight. *J Control Release* 2003;90:323-334. 439 citations

\*Engler A, Bacakova L, Newman C, Hategan A, Griffin M, Discher D. Substrate compliance versus ligand density in cell on gel responses. *Biophys J* 2004;86:617-628. 890 citations

**Myocardial sensitivity to hypoxia – sex differences (1984-2024) Ošťádal, Kolář, Pelouch, Ošťádalová**

Ošťádal B, Procházka J, Pelouch V, Urbanová D, Widimský J. Comparison of cardiopulmonary response of male and female rats to intermittent high altitude hypoxia. *Physiol Bohemoslov* 1984; 33:129-138. 32 citations

Ostadal B, Netuka I, Maly J, Besik J, Ostadalova I. Gender differences in cardiac ischemic injury and protection – experimental aspects. Exp Biol Med 2009;234:1011-1019. 94 citations

Ošťádal B, Ošťádal P. Sex-based differences in cardiac ischaemic injury and protection: therapeutic implications. *Br J Pharmacol* 2014:171:541-554. 58 citations

Milerová M, Drahota Z, Chytilová A, Tauchmannová K, Houštěk J, Ošťádal B. Sex difference in the sensitivity of cardiac mitochondrial permeability transition pore to calcium load. *Mol Cell Biochem* 2016;412:147-154. 34 citations

Ošťádal B, Drahota Z, Houštěk J, Milerová M, Ošťádalová I, Hlaváčková M, Kolář F. Developmental and sex differences in cardiac tolerance to ischemia-reperfusion injury: the role of mitochondria. *Can J Physiol Pharmacol* 2019;97:808-814. 17 citations

**Epithelial transport and intestinal functions (1985-2023) Čapek, Pácha, Kolínská, Horáková**

Pácha J, Popp M, Čapek K. Potassium secretion by neonatal rat distal colon. *Pflügers Arch* 1987;410:362-368. 17 citations

Pácha J, Teisinger J, Popp M, Čapek K. Na,K-ATPase and the development of Na+ transport in rat distal colon. *J Membr Biol* 1991;120:201-210. 24 citations

\*Pácha J, Frindt G, Antonian L, Silver RB, Palmer LG. Regulation of Na channels of the rat cortical collecting tubule by aldosterone. *J Gen Physiol* 1993;102:25-42. 197 citations

Pácha J, Pohlová I, Karen P. Regulation of amiloride-sensitive Na+ transport in immature rat distal colon by aldosterone. *Pediatr Res* 1995;38:356-360. 21 citations

Pácha J. Development of intestinal transport function in mammals. *Physiol Rev* 2000;80:1633-1667. 297 citations

Kozakova H, Kolinska J, Lojda Z, Rehakova Z, Sinkora J, Zakostelecka M, Splichal I, Tlaskalova-Hogenova H. Effect of bacterial monoassociation on brush-border enzyme activities in ex-germ-free piglets: comparison of commensal and pathogenic Escherichia coli strains. *Microbes Infect* 2006;8:2629-2639. 27 citations

Soták M, Polidarová L, Musílková J, Hock M, Sumová A, Pácha J. Circadian regulation of electrolyte absorption in the rat colon. *Am J Physiol Gastrointest Liver Physiol* 2011;301:G1066-G1074. 39 citations

Hudcovic T, Kolinska J, Klepetar J, Stepankova R, Rezanka T, Srutkova D, Schwarzer M, Erban V, Du Z, Wells JM, Hrncir T, Tlaskalova-Hogenova H, Kozakova H. Protective effect of Clostridium tyrobutyricum in acute dextran sodium sulphate-induced colitis: differential regulation of tumour necrosis factor-α and interleukin-18 in BALB/c and severe combined immunodeficiency mice. *Clin Exp Immunol* 2012;167:356-365. 43 citations

Pácha J, Sumová A. Circadian regulation of epithelial functions in the intestine. *Acta Physiol (Oxf)* 2013;208:11-24. 43 citations

Vodička M, Ergang P, Hrnčíř T, Mikulecká A, Kvapilová P, Vagnerová K, Šestáková B, Fajstová A, Hermanová P, Hudcovic T, Kozáková H, Pácha J. Microbiota affects the expression of genes involved in HPA axis regulation and local metabolism of glucocorticoids in chronic psychosocial stress. *Brain Behav Immun* 2018;73:615-624. 60 citations

Vagnerová K, Vodička M, Hermanová P, Ergang P, Šrůtková D, Klusoňová P, Balounová K, Hudcovic T, Pácha J. Interactions between gut microbiota and acute restraint stress in peripheral structures of the hypothalamic-pituitary-adrenal axis and the intestine of male mice. *Front Immunol* 2019;10:2655. 36 citations

Horakova O, Kroupova P, Bardova K, Buresova J, Janovska P, Kopecky J, Rossmeisl M. Metformin acutely lowers blood glucose levels by inhibition of intestinal glucose transport. *Sci Rep* 2019;9:6156. 67 citations

**Ion and nutrient transport in eukaryotic cells (1985-2024) Kotyk, Horák, Sychrová, Zimmermannová**

Sychrová H, Kotyk A. Conditions of activation of yeast plasma membrane ATPase. *FEBS Lett* 1985;183:21-24. 49 citations

Horák J. Yeast nutrient transporters. *Biochim Biophys Acta Rev Biomembr* 1997; 1331:41-79. 89 citations

Prior C, Potier S, Souciet JL, Sychrova H. Characterization of the NHA1 gene encoding a Na+/H+-antiporter of the yeast Saccharomyces cerevisiae. *FEBS Lett* 1996;387:89-93. 148 citations

Kinclová O, Ramos J, Potier S, Sychrová H. Functional study of the Saccharomyces cerevisiae Nha1p C-terminus. *Mol Microbiol* 2001;40:656-668. 102 citations

Kodedová M, Sychrova H. Changes in the sterol composition of the plasma membrane affect membrane potential, salt tolerance and the activity of multidrug resistance pumps in Saccharomyces cerevisiae. *PLoS One* 2015;10:e0139306. 114 citations

Ariño J, Ramos J, Sychrova H. Monovalent cation transporters at the plasma membrane in yeasts. *Yeast* 2019;36:177-193. 43 citations

Velázquez D, Průša V, Masrati G, Yariv E, Sychrová H, Ben-Tal N, Zimmermannová O. Allosteric links between the hydrophilic N-terminus and transmembrane core of human Na+/H+ antiporter NHA2. *Protein Sci* 2022;31:E4460.

Masaryk J, Kale D, Pohl P, Ruiz-Castilla FJ, Zimmermannová O, Obšilová V, Ramos J, Sychrová H. The second intracellular loop of the yeast Trk1 potassium transporter is involved in regulation of activity, and interaction with 14–3-3 proteins. *Comput Struct Biotechnol J* 2023; 21: 2705-2716.

Zimmermannová O, Velázquez D, Papoušková K, Průša V, Radová V, Falson P, Sychrová H. The hydrophilic C-terminus of yeast plasma-membrane Na+ /H+ antiporters impacts their ability to transport K+. *J Mol Biol* 2024; 436:168443.

**Melatonin receptors and intracellular signaling (1988-2008) Vaněček, Zemková, Balík, Svobodová**

Vanĕček J. Melatonin binding sites. *J Neurochem* 1988;51:1436-1440. 174 citations

Vanĕček J. The melatonin receptors in rat ontogenesis. *Neuroendocrinology* 1988;48:201-203. 105 citations

\*Vaněček J, Klein DC. Melatonin inhibits gonadotropin-releasing hormone-induced elevation of intracellular Ca2+ in neonatal rat pituitary cells. *Endocrinology* 1992;130:701-707. 86 citations

Zemková H, Vaněček J. Inhibitory effect of melatonin on gonadotropin-releasing hormone-induced Ca2+ oscillations in pituitary cells of newborn rats. *Neuroendocrinology* 1997 ;65:276-283.24 citations

Vaněček J. Cellular mechanisms of melatonin action. *Physiol Rev* 1998;78:687-721. 484 citations

Zemková H, Vaněček J. Differences in gonadotropin-releasing hormone-induced calcium signaling between melatonin-sensitive and melatonin-insensitive neonatal rat gonadotrophs. *Endocrinology* 2000;141: 1017-1026. 24 citations

Balík A, Kretschmannová K, Mazna P, Svobodová I, Zemková H. Melatonin action in neonatal gonadotrophs. *Physiol Res* 2004;53 (Suppl. 1):S153-S166. 45 citations

Stojilkovic SS, Zemkova H, Van Goor F: Biophysical basis of pituitary cell type-specific Ca2+ signaling-secretion coupling. *Trends Endocrinol Metab* 2005;16:152-159. 86 citations

Mazna P, Grycova L, Balik A, Zemkova H, Friedlova E, Obsilova V, Obsil T, Teisinger J:[The role of proline residues in the structure and function of human MT2 melatonin receptor.](http://www.ncbi.nlm.nih.gov/pubmed/18544139?ordinalpos=1&itool=EntrezSystem2.PEntrez.Pubmed.Pubmed_ResultsPanel.Pubmed_DefaultReportPanel.Pubmed_RVDocSum) *J Pineal Res* 2008 ;45:361-372. 20 citations

**Excitatory synaptic transmission (1989-2024)** **Vyklický, Vlachová, Krůšek, Smejkalová, Hrčka Krausová, Kořínek**

Vlachová V, Vyklický L, Vyklický L Jr, Vyskočil F. The action of excitatory amino acids on chick spinal cord neurones in culture. *J Physiol* 1987;386:425-438. 63 citations

\*Mayer ML, Vyklicky L Jr. Concanavalin A selectively reduces desensitization of mammalian neuronal quisqualate receptors. *Proc Natl Acad Sci U S A* 1989;86:1411-1415. 229 citations

\*Vyklicky L Jr., Benveniste M, Mayer ML. Modulation of N-methyl-D-aspartic acid receptor desensitization by glycine in mouse cultured hippocampal neurones. *J Physiol* 1990;428:313-331. 198 citations

Vyklicky L Jr, Patneau DK, Mayer ML. Modulation of excitatory synaptic transmission by drugs that reduce desensitization at AMPA/kainate receptors. *Neuron* 1991 ;7:971-984. 222 citations

Rambousek L, Bubenikova-Valesova V, Kacer P, Syslova K, Kenney J, Holubova K, Najmanova V, Zach P, Svoboda J, Stuchlik A, Chodounska H, Kapras V, Adamusova E, Borovska J, Vyklicky L, Vales K. Cellular and behavioural effects of a new steroidal inhibitor of the N-methyl-d-aspartate receptor 3alpha5beta-pregnanolone glutamate. *Neuropharmacology* 2011;61:61-68. 35 citations

Vyklicky V, Smejkalova T, Krausova B, Balik A, Korinek M, Borovska J, Horak M, Chvojkova M, Kleteckova L, Vales K, Cerny J, Nekardova M, Chodounska H, Kudova E, Vyklicky L. preferential inhibition of tonically over phasically activated NMDA receptors by pregnane derivatives. *J Neurosci* 2016;36:2161-2175. 41 citations

Petrovic MM, Viana da Silva S, Clement JP, Vyklicky L, Mulle C, Gonzalez-Gonzalez IM, Henley JM. Metabotropic action of postsynaptic kainate receptors triggers hippocampal long-term potentiation. *Nat Neurosci* 2017;20:529-539. 40 citations

Korinek M, Gonzalez-Gonzalez IM, Smejkalova T, Hajdukovic D, Skrenkova K, Krusek J, Horak M, Vyklicky L. Cholesterol modulates presynaptic and postsynaptic properties of excitatory synaptic transmission. *Sci Rep* 2020;10:12651. 31 citations

Smejkalova T, Korinek M, Krusek J, Hrcka Krausova B, Candelas Serra M, Hajdukovic D, Kudova E, Chodounska H, Vyklicky L. Endogenous neurosteroids pregnanolone and pregnanolone sulfate potentiate presynaptic glutamate release through distinct mechanisms. *Br J Pharmacol* 2021;178:3888-3904.

**Genetics of spontaneous hypertension (1989-2024) Pravenec**

Pravenec M, Klír P, Křen V, Zicha J, Kuneš J. An analysis of spontaneous hypertension in spontaneously hypertensive rats by means of new recombinant inbred strains. *J Hypertens* 1989;7:217-221. 189 citations

Pravenec M, Gauguier D, Schott JJ, Buard J, Kren V, Bila V, Szpirer C, Szpirer J, Wang JM, Huang H, et al. Mapping of quantitative trait loci for blood pressure and cardiac mass in the rat by genome scanning of recombinant inbred strains. *J Clin Invest* 1995;96:1973-1978. 161 citations

Pravenec M, Landa V, Zidek V, Musilova A, Kren V, Kazdova L, Aitman TJ, Glazier AM, Ibrahimi A, Abumrad NA, Qi N, Wang JM, St Lezin EM, Kurtz TW. Transgenic rescue of defective Cd36 ameliorates insulin resistance in spontaneously hypertensive rats. *Nat Genet* 2001;27:156-158. 167 citations

Hubner N, Wallace CA, Zimdahl H, Petretto E, Schulz H, Maciver F, Mueller M, Hummel O, Monti J, Zidek V, Musilova A, Kren V, Causton H, Game L, Born G, Schmidt S, Müller A, Cook SA, Kurtz TW, Whittaker J, Pravenec M, Aitman TJ. Integrated transcriptional profiling and linkage analysis for identification of genes underlying disease. *Nat Genet* 2005;37:243-253. 422 citations

Pravenec M, Churchill PC, Churchill MC, Viklicky O, Kazdova L, Aitman TJ, Petretto E, Hubner N, Wallace CA, Zimdahl H, Zidek V, Landa V, Dunbar J, Bidani A, Griffin K, Qi N, Maxova M, Kren V, Mlejnek P, Wang J, Kurtz TW. Identification of renal Cd36 as a determinant of blood pressure and risk for hypertension. *Nat Genet* 2008;40:952-954. 81 citations

Kurtz TW, Pravenec M, DiCarlo SE. Mechanism-based strategies to prevent salt sensitivity and salt-induced hypertension. *Clin Sci (Lond)* 2022;136:599-620.

Kurtz TW, Morris RC Jr, Pravenec M, Lujan HL, DiCarlo SE. Hypertension in primary aldosteronism is initiated by salt-induced increases in vascular resistance with reductions in cardiac output. *Hypertension* 2023;80:1077-1091.

**Circadian rhythms in humans (1993-2024) Illnerová, Sumová**

Illnerová H, Burešová M, Presl J. [Melatonin rhythm in human milk.](https://pubmed-ncbi-nlm-nih-gov.d360prx.biomed.cas.cz/8370707/) *J Clin Endocrinol Metab* 1993;77:838-841. 150 citations

Illnerová H, Zvolsky P, Vanĕček J. The circadian rhythm in plasma melatonin concentration of the urbanized man: the effect of summer and winter time. *Brain Res* 1985;328:186-189. 105 citations

[Vondrášová-Jelínková D, Hájek I, Illnerová H. Adjustment of the human melatonin and cortisol rhythms to shortening of the natural summer photoperiod.](https://pubmed-ncbi-nlm-nih-gov.d360prx.biomed.cas.cz/9878767/) *Brain Res* 1999;816:249-253. 41 citations

Nováková M, Paclt I, PtáčekR, Kuželová H, Hájek I, Sumová A. Salivary melatonin rhythm as a marker of the circadian system in healthy children and those with attention-deficit/hyperactivity disorder. *Chronobiol Int* 2011;28:630-637. 46 citations

Nováková M, Nevšímalová S, Příhodová I, Sládek M, Sumová A. Alteration of the circadian clock in children with Smith-Magenis syndrome. *J Clin Endocrinol Metab* 2012;97:E312-E318. 32 citations

Nováková M, Sládek M, Sumová A. Human chronotype is determined in bodily cells under real life conditions. *Chronobiol Int* 2013;30: 607-617. 36 citations

Nováková M, Praško J, Látalová K SládekM, Sumová A. The circadian system of patients with bipolar disorder differs in episodes of mania and depression. *Bipolar Disord* 2015;17:303-314. 78 citations

Weissová K, Bartoš A, Sládek M, Nováková M, SumováA. Moderate changes in the circadian system of Alzheimer’s disease patients detected in their home environment. *PLoS One* 2016;11:e0146200. 53 citations

**GABAA receptors and synaptic transmission** **(1994-2014) Zemková, Krůšek**

Krůšek J, Zemková H. Effect of ivermectin on gamma‑aminobutyric‑acid-induced chloride currents in mouse hippocampal embryonic neurones. *Eur J Pharmacol* 1994;259:121‑128. 67 citations

Zemkova H, Tvrdonova V, Bhattacharya A, Jindrichova M. Allosteric modulation of ligand gated ion channels by ivermectin. *Physiol Res* 2014;63 (Suppl. 1):S215-S224. 39 citations

Kretschmannova K, Svobodova I, Balik A, Mazna P, Zemkova H. Circadian rhythmicity in AVP secretion and GABAergic synaptic transmission in the rat suprachiasmatic nucleus. *Ann N Y Acad Sci* 2005;1048:103-115. 13 citations

**Muscarinic receptors, allosteric modulators and signalling bias (1994-2024) Tuček, Doležal, Jakubik, Randáková**

Jakubík J, Bačáková L, Lisá V, El-Fakahany E E, Tuček S. Activation of muscarinic acetylcholine receptors via their allosteric binding sites. *Proc Natl Acad Sci U S A* 1996;93, 8705-8709. 91 citations

Jakubik J, Bačáková L, El-Fakahany EE, Tuček S. Positive cooperativity of acetylcholine and other agonists with allosteric ligands on muscarinic acetylcholine receptors. *Mol Pharmacol* 1997;52:172-179. 169 citations

Randáková A, Jakubiík J. Functionally selective and biased agonists of muscarinic receptors. *Pharmacol Res* 2021;169:105641. 11 citations

Randáková A, Nelic D, Ungerová D, Nwokoye P, Su Q, Doležzal V, El-Fakahany EE, Boulos J, Jakubik J. Novel M2-selective, Gi-biased agonists of muscarinic acetylcholine receptors. *Br J Pharmacol* 2020;177, 2073-2089.

**Age-related mechanisms of epileptic seizures and epileptogenesis (1995-2024) Kubová, Jiruška**

Kubová H, Druga R, Lukasiuk K, Suchomelová L, Haugvicová R, Jirmanová I, Pitkänen A. Status epilepticus causes necrotic damage in the mediodorsal nucleus of the thalamus in immature rats*. J Neurosci* 2001;21:3593-3599. 140 citations

Kubová H, Mareš P, Suchomelová L, Brožek G, Druga R, Pitkänen A. Status epilepticus in immature rats leads to behavioural and cognitive impairment and epileptogenesis. *Eur J Neurosci* 2004;19:3255-3265. 127 citations

Suchomelová L, Baldwin RA, Kubová H, Thompson KW, Sankar R, Wasterlain CG. Treatment of experimental status epilepticus in immature rats: dissociation between anticonvulsant and antiepileptogenic effects. *Pediatr Res* 2006;59:237-243. 72 citations

Nairismägi J, Pitkänen A, Kettunen MI, Kauppinen RA, Kubova H. Status epilepticus in 12-day-old rats leads to temporal lobe neurodegeneration and volume reduction: a histologic and MRI study. *Epilepsia* 2006;47:479-88. 67 citations

Chang WC, Kudlacek J, Hlinka J, Chvojka J, Hadrava M, Kumpost V, Powell AD, Janca R, Maturana MI, Karoly PJ, Freestone DR, Cook MJ, Palus M, Otahal J, Jefferys JGR, Jiruska P. Loss of neuronal network resilience precedes seizures and determines the ictogenic nature of interictal synaptic perturbations. *Nat Neurosci* 2018;21:1742-1752. 62 citations

Bencurova P, Baloun J, Hynst J, Oppelt J, Kubova H, Pospisilova S, Brazdil M. Dynamic miRNA changes during the process of epileptogenesis in an infantile and adult-onset model. *Sci Rep* 2021;11:9649. 10 citations

Kudlacek J, Chvojka J, Kumpost V, Hermanovska B, Posusta A, Jefferys JGR, Maturana MI, Novak O, Cook MJ, Otahal J, Hlinka J, Jiruska P. Long-term seizure dynamics are determined by the nature of seizures and the mutual interactions between them. *Neurobiol Dis* 2021;154:105347. 10 citations

**Mitochondrial diseases - ATP synthase (1995-2024) Houštěk, Mráček, Klement, Ješina**

Houštěk J, Klement P, Heřmanská J, Houšťková H, Hansíková H, Van den Bogert C, Zeman J: Altered Properties of Mitochondrial ATP-synthase in Patients with a T->G Mutation in the ATPase 6 (Subunit a) Gene at Position 8993 of mtDNA. *Biochim Biophys Acta* 1995;1271:349-357. 87 citations

Ješina P, Tesařová M, Fornůsková D, Vojtíšková A, Pecina P, Hansíková H, Kaplanová V, Zeman J, Houštěk J: Diminished synthesis of subunit a and altered function of ATP synthase due to mtDNA 2bp microdeletion TA at position 9205, 9206. *Biochem J* 2004;383:561-571. 53 citations

Čížková A, Stránecký V, Mayr JA, Tesařová M, Havlíčková V, Paul J, Ivánek R, Kuss AW, Hansíková H, Kaplanová V, Vrbacký M, Hartmannová H, Nosková L, Honzík T, Drahota Z, Magner M, Hejzlarová K, Sperl W, Zeman J, Houštěk J, Kmoch S: TMEM70 is a novel factor of ATP synthase biogenesis and its mutations cause isolated enzyme deficiency and neonatal mitochondrial encephalo-cardiomyopathy. *Nat Genet* 2008;40:1288-1290. 157 citations

Mayr JA, Havlíčková V, Zimmermann F, Magler I, Kaplanová V, Ješina P, Pecinová A, Nůsková H, Koch J, Sperl W, Houštĕk J. Mitochondrial ATP synthase deficiency due to a mutation in the ATP5E gene for the F1 epsilon subunit. *Hum Mol Genet* 2010;19:33430-3439. 99 citations

**Nitric oxide and glutamate at neuromuscular junction (1995-2011) Vyskočil**

Urazaev AK, Magsumov ST, Poletayev GI, Nikolsky EE, Vyskočil F. Muscle NMDA receptors regulate the resting membrane potential through NO-synthase. *Physiol Res* 1995;44:205-208. 44 citations

Urazaev AK, Naumenko NV, Poletayev GI, Nikolsky EE, Vyskočil F. Acetylcholine and carbachol prevent muscle depolarization in denervated rat diaphragm. *Neuroreport* 1997;8:403-406. 30 citations

Mukhtarov MR, Urazaev AK, Nikolsky EE, Vyskočil F. Effect of nitric oxide and NO synthase inhibition on nonquantal acetylcholine release in the rat diaphragm. *Eur J Neurosci* 2000;12:980-986. 26 citations

Malomouzh AI, Mukhtarov MR, Nikolsky EE, Vyskočil F, Lieberman EM, Urazaev AK. Glutamate regulation of non-quantal release of acetylcholine in the rat neuromuscular junction. *J Neurochem* 2003;85:206-213. 45 citations

**Systemic effects of white adipose tissue metabolism, reduction of obesity (1995-2024) Kopecký, Flachs, Rossmeisl, Janovská, Bardová**

\*Kopecky J, Clarke G, Enerback S, Spiegelman B, Kozak LP. Expression of the mitochondrial uncoupling protein gene from the aP2 gene promoter prevents genetic obesity. *J Clin Invest* 1995;96:2914-2923. 471 citations

Kopecký J, Hodný Z, Rossmeisl M, Syrový I, Kozak LP. Reduction of dietary obesity in the aP2-Ucp transgenic mice: physiology and adipose tissue distribution. *Am J Physiol* 1996;270:E768-E775. 132 citations

Rossmeisl M, Syrový I, Baumruk F, Flachs P, Janovská P, Kopecký J. Decreased fatty acid synthesis due to mitochondrial uncoupling in adipose tissue. *FASEB J* 2000;14:1793-1800. 72 citations

\*Liu X, Rossmeisl M, McClaine J, Riachi M, Harper ME, Kozak LP. Paradoxical resistance to diet-induced obesity in UCP1-deficient mice. *J Clin Invest* 2003;111:399-407. 235 citations

Matejkova O, Mustard KJ, Sponarova J, Flachs P, Rossmeisl M, Miksik I, Thomason-Hughes M, Hardie DG, Kopecky J. Possible involvement of AMP-activated protein kinase in obesity resistance induced by respiratory uncoupling in white fat. *FEBS Lett* 2004;569:245-248. 58 citations

Sponarova J, Mustard KJ, Horakova O, Flachs P, Rossmeisl M, Brauner P, Bardova K, Thomason-Hughes M, Braunerova R, Janovska P, Hardie GD, Kopecky J. Involvement of AMP-activated protein kinase in fat depot-specific metabolic changes during starvation. *FEBS Lett* 2005;579:6105-6110. 39 citations

Medrikova D, Macek Jilkova Z, Bardova K, Janovska P, Rossmeisl M, Kopecky J. Sex differences during the course of diet-induced obesity in mice: adipose tissue expandability and glycemic control. *Int J Obes* 2012;36:262-272. 118 citations

Rohm M, Schafer M, Laurent V, Ustunel BE, Niopek K, Algire C, Hautzinger O, Sijmonsma TP, Zota A, Medrikova D, Pellegata NS, Ryden M, Kulyte A, Dahlman I, Arner P, Petrovic N, Cannon B, Amri EZ, Kemp BE, Steinberg GR, Janovska P, Kopecky J, Wolfum C, Bluher M, Diaz MB, Herzig S. An AMP-activated protein kinase-stabilizing peptide ameliorates adipose tissue wasting in cancer cachexia in mice. *Nat Med* 2016;22:1120-1130. 87 citations

Flachs P, Adamcova K, Zouhar P, Marques C, Janovska P, Viegas I, Jones JG, Bardova K, Svobodova M, Hansikova J, Kuda O, Rossmeisl O, Liisberg U, Borkowska AG, Kristiansen K, Madsen L, Kopecky J. Induction of lipogenesis in white fat during cold exposure in mice: link to lean phenotype. *Int J Obes* 2017;41:372-380. 37 citations

Janovska P, Melenovsky V, Svobodova M, Havlenova T, Kratochvilova H, Haluzik M, Hoskova E, Pelikanova T, Kautzner J, Monzo L, Jurcova I, Adamcova K, Lenkova L, Buresova J, Rossmeisl M, Kuda O, Cajka T, Kopecky J. Dysregulation of epicardial adipose tissue in cachexia due to heart failure: the role of natriuretic peptides and cardiolipin*. J Cachexia Sarcopenia Muscle* 2020;11:1614-1627. 21 citations

**Agonist-induced redistribution of trimeric G proteins (1996-2011) Svoboda, Novotný, Bouřová-Roubalová, Brejchová, Vošahlíková**

Svoboda P, Kim GD, Grassie MA, Eidne KA, Milligan G. Thyrotropin-releasing hormone-induced subcellular redistribution and down-regulation of G11alpha: analysis of agonist regulation of coexpressed G11alpha species variants. *Mol Pharmacol* 1996;49, 646-655. 40 citations

Svoboda P, Milligan G. Agonist-induced transfer of the alpha subunits of the guanine-nucleotide-binding regulatory proteins Gq and G11 and of muscarinic m1 acetylcholine receptors from plasma membranes to a light-vesicular membrane fraction. *Eur J Biochem* 1994;224:455-462. 40 citations

Drmota T, Novotny J, Kim GD, Eidne KA, Milligan G, Svoboda P. Agonist-induced internalization of the G protein G11alpha and thyrotropin-releasing hormone (TRH) receptors proceed on different time-scales.
*J Biol Chem* 1998;273:21699-21707. 43 citations

Drmota T, Novotný J, Gold GW, Svoboda P, Milligan G. Visualization of distinct patterns of subcellular redistribution of the thyrotropin-releasing hormone receptor and Gq/G11 induced by agonist stimulation. *Biochem J* 1999;340:529-538 35 citations

Novotný J, Bouřová L, Málková O, Svoboda P, Kolář F. G proteins, beta-adrenoreceptors and beta-adrenergic responsiveness in immature and adult rat ventricular myocardium: influence of neonatal hypo- and hyperthyroidism. *J Mol Cell Cardiol* 1999;31:761-772. 37 citations

Pešanová Z, Novotný J, Černý J, Milligan G, Svoboda P. Thyrotropin-releasing hormone-induced depletion of Gq/G11alpha proteins from detergent-insensitive membrane domains. *FEBS Lett* 1999;464:35-40. 23 citations

Ihnatovych I, Hejnová L, Koštrnová A, Mareš P, Svoboda P, Novotný J. Maturation of rat brain is accompanied differential expression of the long and short splice variants of Gs alpha protein. Identification of cytosolic (soluble) forms of Gs alpha. *J Neurochem* 2001;79:1-11. 21 citations

Svoboda P, Novotný J. Hormone-induced subcellular redistribution of trimeric G proteins. *Cell Mol Life Sci* 2002;59:501-512. 21 citations

Brejchová J, Sykora J, Dlouhá K, Roubalová L, Ostašov P, Vošahlíková M, Hof M, Svoboda P. Fluorescence spectroscopy studies of HEK293 cells expressing DOR-Gi1α fusion protein*;* the effect of cholesterol depletion*.* *Biochim Biophys Acta Biomembr* 2011;1808:2819-2829. 23 citations

**Biomathematics – Image analysis (1996-2024) Kubínová, Janáček, Hadraba**

Kubínová L, Janáček J. Confocal microscopy and stereology: estimating volume, number, surface area and length by virtual test probes applied to three-dimensional images. *Microsc Res Tech* 2001; 53:425-435. 47 citations

Janáček J, Cvetko E, Kubínová L, Travnik L, Eržen I. A novel method for evaluation of capillarity in human skeletal muscles from confocal 3D images. *Microvasc Res* 2011; 81: 231-238. 21 citations

Kolesová H, Čapek M, Radochová B, Janáček J, Sedmera D. Comparison of different tissue clearing methods and 3D imaging techniques for visualization of GFP-expressing mouse embryos and embryonic hearts. *Histochem Cell Biol* 2016; 146: 141-152. 64 citations

Čapek M, Janáček J, Kubínová L. Methods for compensation of the light attenuation with depth of images captured by confocal microscopy. *Microsc Res Tech* 2006; 69: 624-635. 42 citations

**Vascular tissue engineering (1996-2024) Bačáková, Fillová**

Bačáková L, Mareš V, Lisá V, Švorčík V. Molecular mechanisms of improved adhesion and growth of an endothelial cell line cultured on polystyrene implanted with fluorine ions. *Biomaterials* 2000;21:1173-1179. 72 citations

Bacakova L, Filova E, Parizek M, Ruml T, Svorcik V. Modulation of cell adhesion, proliferation and differentiation on materials designed for body implants. *Biotechnol Adv* 2011;29:739-767. 722 citations

Bacakova L, Vandrovcova M, Kopova I, Jirka I. Applications of zeolites in biotechnology and medicine - a review. *Biomater Sci* 2018;6:974-989. 175 citations

Bacakova L, Zarubova J, Travnickova M, Musilkova J, Pajorova J, Slepicka P, Kasalkova NS, Svorcik V, Kolska Z, Motarjemi H, Molitor M. Stem cells: their source, potency and use in regenerative therapies with focus on adipose-derived stem cells - a review. *Biotechnol Adv* 2018;36:1111-1126. 284 citations

Bacakova L, Pajorova J, Bacakova M, Skogberg A, Kallio P, Kolarova K, Svorcik V. Versatile application of nanocellulose: from industry to skin tissue engineering and wound healing. *Nanomaterials (Basel)* 2019;9:164. 187 citations

Filova E, Steinerova M, Travnickova M, Knitlova J, Musilkova J, Eckhardt A, Hadraba D, Matejka R, Prazak S, Stepanovska J, Kucerova J, Riedel T, Brynda E, Lodererova A, Honsova E, Pirk J, Konarik M, Bacakova L. Accelerated in vitro recellularization of decellularized porcine pericardium for cardiovascular grafts. *Biomed Mater* 2021;16:025024. 11 citations

Flis A, Trávníčková M, Koper F, Knap K, Kasprzyk W, Bačáková L, Pamuła E. Poly(octamethylene citrate) modified with glutathione as a promising material for vascular tissue engineering. *Polymers (Basel)* 2023;15:1322. 37 citations

**Structure and function of transient receptor potential channels (1999-2024) Vlachova, Vyklicky Sr., Teisinger**

Vyklický L Sr., Vlachová V, Vitásková Z, Dittert I, Kabát M, Orkand RK. Temperature coefficient of membrane currents induced by noxious heat in sensory neurones in the rat. *J Physiol* 1999;517:181-192. 89 citations

Vlachova V, Teisinger J, Sušánková K, Lyfenko A, Ettrich R, Vyklický L Sr. Functional role of C-terminal cytoplasmic tail of rat vanilloid receptor 1. *J Neurosci* 2003;23:1340-1350. 152 citations

Susankova K, Tousova K, Vyklicky L, Teisinger J, Vlachova V. Reducing and oxidizing agents sensitize heat-activated vanilloid receptor (TRPV1) current. *Mol Pharmacol* 2006;70:383-394. 92 citations

Benedikt J, Teisinger J, Vyklicky L, Vlachova V. Ethanol inhibits cold-menthol receptor TRPM8 by modulating its interaction with membrane phosphatidylinositol 4,5-bisphosphate. *J Neurochem* 2007;100:211-224. 51 citations

Susankova K, Ettrich R, Vyklicky L, Teisinger J, Vlachova V. Contribution of the putative inner-pore region to the gating of the transient receptor potential vanilloid subtype 1 channel (TRPV1). *J Neurosci* 2007;27:7578-7585. 50 citations

Boukalova S, Marsakova L, Teisinger J, Vlachova V. Conserved residues within the putative S4-S5 region serve distinct functions among thermosensitive vanilloid transient receptor potential (TRPV) channels. *J Biol Chem* 2010;285:41455-41462. 59 citations

Marsakova L, Touska F, Krusek J, Vlachova V. Pore helix domain is critical to camphor sensitivity of transient receptor potential vanilloid 1 channel. *Anesthesiology* 2012;116:903-917. 15 citations

Zimova L, Sinica V, Kadkova A, Vyklicka L, Zima V, Barvik I, Vlachova V. Intracellular cavity of sensor domain controls allosteric gating of TRPA1 channel. *Sci Signal* 2018;11:eaan8621. 21 citations

Ptakova A, Mitro M, Zimova L, Vlachova V. Cellular context determines primary characteristics of human TRPC5 as a cold-activated channel. *J Cell Physiol* 2022;237:3614-3626.

**Bone and skin tissue engineering (2000-2024) Bačáková, Brož**

Pamula E, Filová E, Bačáková L, Lisá V, Adamczyk D. Resorbable polymeric scaffolds for bone tissue engineering: the influence of their microstructure on the growth of human osteoblast-like MG 63 cells. *J Biomed Mater Res* *A* 2009;89:432-443. 54 citations

Kopova I, Stráský J, Harcuba P, Landa M, Janeček M, Bačáková L. Newly developed Ti-Nb-Zr-Ta-Si-Fe biomedical beta titanium alloys with increased strength and enhanced biocompatibility. *Mater Sci Eng C Mater Biol Appl* 2016;60:230-238. 119 citations

Bacakova M, Pajorova J, Broz A, Hadraba D, Lopot F, Zavadakova A, Vistejnova L, Beno M, Kostic I, Jencova V, Bacakova L. A two-layer skin construct consisting of a collagen hydrogel reinforced by a fibrin-coated polylactide nanofibrous membrane. *Int J Nanomedicine* 2019;14:5033-5050. 26 citations

Pajorova J, Skogberg A, Hadraba D, Broz A, Travnickova M, Zikmundova M, Honkanen M, Hannula M, Lahtinen P, Tomkova M, Bacakova L, Kallio P. Cellulose mesh with charged nanocellulose coatings as a promising carrier of skin and stem cells for regenerative applications. *Biomacromolecules* 2020;21:4857-4870. 11 citations

## Dodda JM, Azar MG, Bělský P, Šlouf M, Brož A, Bačáková L, Kadlec J, Remiš T. Biocompatible hydrogels based on chitosan, cellulose/starch, PVA and PEDOT:PSS with high flexibility and high mechanical strength. *Cellulose* 2022;29: 6697-6717. 11 citations

**Animal models of neuropsychiatric disorders (2002-2024) Valeš, Stuchlík**

Stuchlik A, Rezacova L, Vales K, Bubenikova V, Kubik S. Application of a novel Active Allothetic Place Avoidance task (AAPA) in testing a pharmacological model of psychosis in rats: comparison with the Morris water maze. *Neurosci Lett* 2004;366:162-166. 49 citations

Bubenikova-Valesova V, Stuchlik A, Svoboda J, Bures J, Vales K. Risperidone and ritanserin but not haloperidol block effect of dizocilpine on the active allothetic place avoidance task. *Proc Natl Acad Sci U S A* 2008;105:1061-1066. 35 citations

Vales K, Svoboda J, Benkovicova K, Bubenikova-Valesova V, Stuchlik A. The difference in effect of mGlu2/3 and mGlu5 receptor agonists on cognitive impairment induced by MK-801. *Eur J Pharmacol* 2010;639:91-98. 34 citations

Vojtechova I, Machacek T, Kristofikova Z, Stuchlik A, Petrasek T. Infectious origin of Alzheimer's disease: Amyloid beta as a component of brain antimicrobial immunity. *PLoS Pathog* 2022;18:e1010929. 17 citations

Patrono E, Hrůzova K, Svoboda J, Stuchlík A. The role of optogenetic stimulations of parvalbumin-positive interneurons in the prefrontal cortex and the ventral hippocampus on an acute MK-801 model of schizophrenia-like cognitive inflexibility. *Schizophr Res* 2023;252:198-205.

## Influence of lipid-based diets on the progression of Alzheimer's disease (2002-2015) Doležal, Jakubik, Janíčková

Machová E, Jakubík J, Michal P, Oksman M, Iivonen H, Tanila H, Doležal V. Impairment of muscarinic transmission in transgenic APPswe/PS1dE9 mice. *Neurobiol Aging* 2008;29:368-378. 47 citations

Machová E, Rudajev V, Smyčková H, Koivisto H, Tanila H, Doležal V. Functional cholinergic damage develops with amyloid accumulation in young adult APPswe/PS1dE9 transgenic mice. *Neurobiol Dis* 2010;38:27-35. 38 citations

Janickova H, Rudajev V, Dolejsi E, Koivisto H, Jakubik J, Tanila H, El-Fakahany EE, Dolezal V. Lipid-based diets improve muscarinic neurotransmission in the hippocampus of transgenic APPswe/PS1dE9 mice. *Curr Alzheimer Res* 2015;12:923-931. 15 citations

**Neuropathic pain and neuroinflammation (2002-2024) Paleček, Špicarová**

Spicarova D, Palecek J. Tumor necrosis factor alpha sensitizes spinal cord TRPV1 receptors to the endogenous agonist N-oleoyldopamine. *J Neuroinflammation* 2010;7:49. 31 citations

Spicarova D, Nerandzic V, Palecek J. Modulation of spinal cord synaptic activity by tumor necrosis factor alpha in a model of peripheral neuropathy. *J Neuroinflammation* 2011;8:177. 38 citations

Li Y, Adamek P, Zhang H, Tatsui CE, Rhines LD, Mrozkova P, Li Q, Kosturakis AK, Cassidy RM, Harrison DS, Cata JP, Sapire K, Zhang H, Kennamer-Chapman RM, Jawad AB, Ghetti A, Yan J, Palecek J, Dougherty PM. the cancer chemotherapeutic paclitaxel increases human and rodent sensory neuron responses to TRPV1 by activation of TLR4*. J Neurosci* 2015;35:13487-500. 160 citations

Adamek P, Heles M, Palecek J, Mechanical allodynia and enhanced responses to capsaicin are mediated by PI3K in a paclitaxel model of peripheral neuropathy. *Neuropharmacology* 2019;146:163-174. 19 citations

Kalynovska N, Diallo M, Sotakova-Kasparova D, Palecek J. Losartan attenuates neuroinflammation and neuropathic pain in paclitaxel-induced peripheral neuropathy. *J Cell Mol Med* 2020;24:7949-7958. 29 citations

Adamek P, Heles M, Bhattacharyya A, Pontearso M, Slepicka J, Palecek J. Dual PI3K-δ/γ Inhibitor duvelisib prevents development of neuropathic pain in model of paclitaxel-induced peripheral neuropathy. *J Neurosci* 2022; 42:1864-1881.

**Structural biology of signal proteins (2002-2024) Obšilová, Obšil, Košek**

\*Obsil T, Ghirlando R, Klein DC, Ganguly S, Dyda F. Crystal structure of the 14-3-3zeta:serotonin
N-acetyltransferase complex. a role for scaffolding in enzyme regulation. *Cell* 2001;105:257-267. 327 citations

Obsilova V, Herman P, Vecer J, Sulc M, Teisinger J, Obsil T. 14-3-3zeta C-terminal stretch changes its conformation upon ligand binding and phosphorylation at Thr232. *J Biol Chem* 2004;279:4531-4540. 69 citations

Obsilova V, Vecer J, Herman P, Pabianova A, Sulc M, Teisinger J, Boura E, Obsil T. 14-3-3 Protein interacts with nuclear localization sequence of forkhead transcription factor FoxO4. *Biochemistry* 2005;44:11608-11617. 92 citations

Obsil T, Obsilova V. Structural basis of 14-3-3 protein functions. *Seminars Cell Dev Biol* 2011; 22:663-672. 214 citations

Kosek D, Kylarova S, Psenakova K, Rezabkova L, Herman P, Vecer J, Obsilova V, Obsil T. Biophysical and structural characterization of the thioredoxin-binding domain of protein kinase ASK1 and its interaction with reduced thioredoxin. *J Biol Chem* 2014;289:24463-24474. 31 citations

Alblova M, Smidova A, Docekal V, Vesely J, Herman P, Obsilova V, Obsil T. Molecular basis of the 14-3-3 protein-dependent activation of yeast neutral trehalase Nth1. *Proc Natl Acad Sci U S A* 2017;114:E9811-E9820. 46 citations

Pohl P, Joshi R, Petrvalska O, Obsil T, Obsilova V. 14-3-3-protein regulates Nedd4-2 by modulating interactions between HECT and WW domains. *Commun Biol* 2021;4:899. 25 citations

**Mitochondrial diseases - Cytochrome *c* oxidase (2003-2024) Houštěk, Pecina**

Pecina P, Čapková M, Chowdhury SKR, Drahota Z, Dubot A, Vojtíšková A, Hansíková H, Houšťková H, Zeman J, Godinot C,Houštěk J. Functional alteration of cytochrome *c* oxidase by *SURF1* mutations in Leigh syndrome. *Biochim Biophys Acta* 2003;1639:53-63. 43 citations

Stiburek L, Vesela K, Hansikova H, Pecina P, Tesarova M, Cerna L, Houstek J, Zeman J. Tissue-specific defects in cytochrome *c* oxidase assembly due to mutations in *SCO2* and *SURF1. Biochem J* 2005;392:625-632. 87 citations

Böhm M, Pronicka E, Karczmarewicz E, Pronicki M, Piekutowska-Abramczuk D, Popowska E, Sykut-Cegielska J, Mierzewska H, Hansikova H, Vesela K, Tesařova M, Houstkova H, Houstek J, Zeman J. Clinical biochemical and molecular analyses in 178 children with COX deficiency. *Pediatr Res* 2006;59:21-26. 86 citations

**Morphine-induced alteration of opioid- and TRH-receptors in rat brain (2003-2024) Ujčíková, Bouřová-Roubalová, Svoboda**

Bourova L, Kostrnova A, Hejnova L, Moravcova Z, Moon HE, Novotny J, Milligan G, Svoboda P. delta-Opioid receptors exhibit high efficiency when activating trimeric G proteins in membrane domains. *J Neurochem* 2003;85:34-49. 24 citations

Bourova L, Vosahlikova M, Kagan D, Dlouha K, Novotny J, Svoboda P. Long-term adaptation to high doses of morphine causes desensitization of mu-OR- and delta-OR-stimulated G-protein response in forebrain cortex but does not decrease the amount of G-protein alpha subunits. *Med Sci Monit* 2010;16:BR260-BR270. 23 citations

Ujcikova H, Dlouha K, Bourova L, Vosahlikova M, Kagan D, Svoboda P. Up-regulation of adenylylcyclase I and II induced by long-term adaptation of rats to morphine fades away 20 days after morphine withdrawal. *Biochim Biophys Acta Gen Subj* 2011;1810, 1220-1229. 16 citations

Ujcikova H, Eckhardt A, Kagan D, Roubalova L, Svoboda P. Proteomic analysis of post-nuclear supernatant fraction and percoll-purified membranes prepared from brain cortex of rats exposed to increasing doses of morphine. *Proteome Sci* 2014;12:11. 19 citations

Brejchová, J, Sykora J, Ostašov P, Merta L, Roubalová L, Janáček J, Hof M, SvobodaP.TRH-receptor mobility and function in control and cholesterol-depleted plasma membrane of HEK293 cells stably expressing TRH-R-eGFP. *Biochim Biophys Acta Biomembr* 2015;1848:781-796. 16 citations

Ujcikova H, Vosahlikova M, Roubalova L,Svoboda P. Proteomic analysis of protein composition of rat forebrain cortex exposed to morphine for 10 days; comparison with animals after 20 days of morphine withdrawal. *J Proteomics* 2016;145:11-23. 19 citations

**P2X receptors, structure and function (2003-2024) Zemková, Vávra, Bhattacharya**

Jelínková I, Yan Z, Liang Z, Moonat S, Teisinger J, Stojilkovic SS, Zemková H. Identification of P2X4 receptor-specific residues contributing to the ivermectin effects on channel deactivation. *Biochem Biophys Res Commun* 2006;349:619-625. 51 citations

Zemkova H, Yan Z, Liang Z, Jelinkova I, Tomic M, Stojilkovic SS. Role of aromatic and charged ectodomain residues in the P2X4 receptor functions*. J Neurochem* 2007;102:1139-1150. 46 citations

Jelinkova I, VavraV, Jindrichova M, Obsil T, Zemkova HW, Zemkova H, Stojilkovic SS. Identification of P2X4 receptor transmembrane residues contributing to channel gating and interaction with ivermectin. *Pflügers Arch* 2008;456: 939-950. 53 citations

Vavra V, Bhattacharya A, Zemkova H. Facilitation of glutamate and GABA release by P2X receptor activation in supraoptic neurons from freshly isolated rat brain slices. *Neuroscience* 2011;188:1-12. 46 citations

Bhattacharya A, Vavra V, Svobodova I, Bendova Z, Vereb G, Zemkova H: Potentiation of inhibitory synaptic transmission by extracellular ATP in rat suprachiasmatic nuclei. *J Neurosci* 2013;33:8035-8044. 36 citations

Khadra A, Tomic M, Yan Z, Zemkova H, Sherman A, Stojilkovic SS. Dual gating mechanism and function of P2X7 receptor channels. *Biophys J* 2013;104:2612-2621, 45 citations

Svobodova I, Bhattaracharya A, Ivetic M, Bendova Z, Zemkova H. Circadian ATP release in organotypic cultures of the rat suprachiasmatic nucleus is dependent on P2X7 and P2Y receptors. *Front Pharmacol* 2018;9:192. 30 citations

Sivcev S, Slavikova B, Rupert M, Ivetic M, Nekardova M, Kudova E, Zemkova H. Synthetic testosterone derivatives modulate rat P2X2 and P2X4 receptor channel gating. *J Neurochem* 2019;150:28-43. 10 citations

**Nitric oxide-deficient or angiotensin-dependent hypertension (2003-2024) Kuneš, Vaněčková, Zicha**

Pecháňová O, Dobešová Z, Čejka J, Kuneš J, Zicha J. Vasoactive systems in L-NAME hypertension: the role of inducible nitric oxide synthase. *J Hypertens* 2004;22:167-173. 59 citations

Zicha J, Dobešová Z, Kuneš J. Antihypertensive mechanisms of chronic captopril or N-acetylcysteine treatment in L-NAME hypertensive rats. *Hypertens Res* 2006;29:1021-1027. 56 citations

Paulis L, Zicha J, Kunes J, Hojna S, Behuliak M, Celec P, Kojsova S, Pechanova O, Simko F. Regression of
L-NAME-induced hypertension: the role of nitric oxide and endothelium-derived constricting factor. *Hypertens Res* 2008;31:793-803. 77 citations

Rakušan D, Kujal P, Kramer HJ, Husková Z, Vaňourková Z, Vernerová Z, Mrázová I, Thumová M, Červenka L, Vaněčková I. Persistent antihypertensive effect of aliskiren is accompanied by reduced proteinuria and normalization of glomerular area in Ren-2 transgenic rats. *Am J Physiol Renal Physio*l 2010;299:F758-F766. 24 citations

Vaněčková I, Dobešová Z, Kuneš J, Zicha J. The effects of repeated delivery of angiotensin II AT1 receptor antisense on distinct vasoactive systems in Ren-2 transgenic rats: young vs. adult animals. *Hypertens Res* 2012;35:761-768. 17 citations

Čertíková Chábová V, Vernerová Z, Kujal P, Husková Z, Škaroupková P, Tesař V, Kramer HJ, Kompanowska-Jezierska E, Walkowska A, Sadowski J, Červenka L, Vaněčková I. Addition of ETA receptor blockade increases renoprotection provided by renin-angiotensin system blockade in 5/6 nephrectomized Ren-2 transgenic rats. *Life Sci* 2014;118:297-305. 22 citations

Hojná S, Rauchová H, Malínská H, Marková I, Hüttl M, Papoušek F, Behuliak M, Miklánková D, Vaňourková Z, Neckář J, Kadlecová M, Kujal P, Zicha J, Vaněčková I. Antihypertensive and metabolic effects of empagliflozin in Ren-2 transgenic rats, an experimental non-diabetic model of hypertension. *Biomed Pharmacother* 2021;144:112246. 11 citations

**Effects of omega 3 fatty acids on health (2004-2024) Kopecký, Flachs, Rossmeisl, Kuda, Janovská, Bardová, Horáková, Zouhar**

Ruzickova J, Rossmeisl M, Prazak T, Flachs P, Sponarova J, Vecka M, Tvrzicka E, Bryhn M, Kopecky J. Omega-3 polyunsaturated fatty acids of marine origin limit diet-induced obesity in mice by reducing cellularity of adipose tissue. *Lipids* 2004;39:1177-1185. 242 citations

Flachs P, Horakova O, Brauner P, Rossmeisl M, Pecina P, Franssen-van Hal NL, Ruzickova J, Sponarova J, Drahota Z, Vlcek C, Keijer J, Houstek J, Kopecky J. Polyunsaturated fatty acids of marine origin upregulate mitochondrial biogenesis and induce beta-oxidation in white fat. *Diabetologia* 2005;48:2365-2375. 292 citations

Flachs P, Mohamed-Ali V, Horakova O, Rossmeisl M, Hosseinzadeh-Attar MJ, Hensler M, Ruzickova J, Kopecky J. Polyunsaturated fatty acids of marine origin induce adiponectin in mice fed high-fat diet. *Diabetologia* 2006;49:394-397. 274 citations

Kuda O, Jelenik T, Jilkova Z, Flachs P, Rossmeisl M, Hensler M, Kazdova L, Ogston N, Baranowski M, Gorski J, Janovska P, Kus V, Polak J, Mohamed-Ali V, Burcelin R, Cinti S, Bryhn M, Kopecky J. n-3 fatty acids and rosiglitazone improve insulin sensitivity through additive stimulatory effects on muscle glycogen synthesis in mice fed a high-fat diet. *Diabetologia* 2009; 52:941-951. 121 citations

Jelenik T, Rossmeisl M, Kuda O, Macek Jilkova Z, Medrikova D, Kus V, Hensler M, Janovska P, Miksik I, Baranowski M, Gorski J, Hébrard S, Jensen TE, Flachs P, Hawley S, Viollet B, Kopecky J. AMP-activated protein kinase alpha 2 subunit is required for the preservation of hepatic insulin sensitivity by n-3 polyunsaturated fatty acids. *Diabetes* 2010;59:2737-2746. 75 citations

Flachs P, Rühl R, Hensler M, Janovska P, Zouhar P, Kus V, Macek Jilkova Z, Papp E, Kuda O, Svobodova M, Rossmeisl M, Tsenov G, Mohamed-Ali V, Kopecky J. Synergistic induction of lipid catabolism and anti-inflammatory lipids in white fat of dietary obese mice in response to calorie restriction and n-3 fatty acids. *Diabetologia* 2011;54:2626-2683. 83 citations

Rossmeisl M, Macek Jilkova Z, Kuda O, Jelenik T, Medrikova D, Stankova B, Kristinsson B, Haraldsson GG, Svensen H, Stoknes I, Sjövall P, Magnusson Y, Balvers MGJ, Verhoeckx KCM, Tvrzicka E, Bryhn B, Kopecky J. Metabolic effects of n-3 PUFA as phospholipids are superior to triglycerides in mice fed a high-fat diet: Possible role of endocannabinoids. *PLoS One* 2012;7:e38834. 181 citations

Rossmeisl M, Pavlisova J, Janovska P, Kuda O, Bardova K, Hansikova J, Svobodova M, Oseeva M, Veleba J, Kopecky J Jr, Zacek P, Fiserova E, Pelikanova T, Kopecky J. Differential modulation of white adipose tissue endocannabinoid levels by n-3 fatty acids in obese mice and type 2 diabetic patients. *Biochim Biophys Acta Mol Cell Biol Lipids* 2018;1863:712-725. 21 citations

**Redox signalling and mitochondrial phospholipase (2004-2024) Ježek, Plecitá-Hlavatá, Jabůrek**

Ježek J, Dlasková A, Zelenka J, Jabůrek M, Ježek P. H2O2-activated mitochondrial phospholipase iPLA2γ prevents lipotoxic oxidative stress in synergy with UCP2, amplifies signaling via G-protein-coupled receptor GPR40, and regulates insulin secretion in pancreatic β-cells. *Antioxid Redox Signal* 2015;23:958-972. 50 citations

Plecitá-Hlavatá L, Jabůrek M, Holendová B, Tauber J, Pavluch V, Berková Z, Cahová M, Schröder K, Brandes RP, Siemen D, Ježek P. Glucose-stimulated insulin secretion fundamentally requires H2O2 signaling by NADPH oxidase 4. *Diabetes* 2020;69:1341-1354. 52 citations

Plecitá-Hlavatá L, Engstová H, Holendová B, Tauber J, Špaček T, Petrásková L, Křen V, Špačková J, Gotvaldová K, Ježek J, Dlasková A, Smolková K, Ježek P. Mitochondrial superoxide production decreases on glucose-stimulated insulin secretion in pancreatic β cells due to decreasing mitochondrial matrix NADH/NAD+ ratio. *Antioxid Redox Signal* 2020;33:789-815. 19 citations

Průchová P, Gotvaldová K, Smolková K, Alán L, Holendová B, Tauber J, Galkin A, Ježek P, Jabůrek M. Antioxidant role and cardiolipin remodeling by redox-activated mitochondrial Ca2+-independent phospholipase A2γ in the brain. *Antioxidants (Basel)* 2022;11:198.

Holendová B, Benáková Š, Křivonosková M, Pavluch V, Tauber J, Gabrielová E, Ježek P, Plecitá-Hlavatá L. NADPH oxidase 4 in mouse β cells participates in inflammation on chronic nutrient overload. *Obesity (Silver Spring)* 2023;32:339-351.

Chiang ACY, Ježek J, Mu P, Di Y, Klucnika A, Jabůrek M, Ježek P, Ma H. Two mitochondrial DNA polymorphisms modulate cardiolipin binding and lead to synthetic lethality. *Nat Commun* 2024;15:611.

**Circadian rhythms in physiological functions (2007-2024) Sumová, Sládek**

Sládek M, Rybová M, Jindráková Z, Zemanová Z, Polidarová L, Mrnka L, O‘Neil J, Pácha J, Sumová A. Insight into circadian clock within the rat colonic epithelial cells. *Gastroenterology* 133: 1240-1249, 2007. 119 citations

Polidarová L, Sládek M, Soták M, Pácha J, Sumová A. Hepatic, duodenal, and colonic circadian clocks differ in their persistence under conditions of constant light and in their entrainment by restricted feeding. *Chronobiol Int* 2011;28:204-215. 66 citations

Novosadová Z, Polidarová L, Sládek M, Sumová A. Alteration in glucose homeostasis and persistence of the pancreatic clock in aged *mPer2Luc* mice. *Sci Rep* 2018;8:11668. 14 citations

Honzlová P, Novosadová Z, Houdek P, Sládek M, Sumová A. Misaligned feeding schedule elicits divergent circadian reorganizations in endo- and exocrine pancreas clocks. *Cell Mol Life Sci* 2022;79:318.

**3D superresolution microscopy of mitochondria and mtDNA nucleoids (2008-2024) Ježek, Dlasková**

Dlasková A, Špaček T, Šantorová J, Plecitá-Hlavatá L, Berková Z, Saudek F, Lessard M, Bewersdorf J, Ježek P. 4Pi microscopy reveals an impaired three-dimensional mitochondrial network of pancreatic islet beta-cells in an experimental model of type-2 diabetes. *Biochim Biophys Acta Bioenergs* 2010;1797:1327-1341. 54 citations

Mlodzianoski MJ, Schreiner JM, Callahan SP, Smolková K, Dlasková A, Šantorová J, Ježek P, Bewersdorf J. Sample drift correction in 3D fluorescence photoactivation localization microscopy. *Opt Express* 2011;19:15009-15019. 148 citations

Plecitá-Hlavatá L, Engstová H, Alán L, Špaček T, Dlasková A, Smolková K, Špačková J, Tauber J, Strádalová V, Malínský J, Lessard M, Bewersdorf J, Ježek P. Hypoxic HepG2 cell adaptation decreases ATP synthase dimers and ATP production in inflated cristae by mitofilin down-regulation concomitant to MICOS clustering. *FASEB J* 2016;30:1941-1957. 34 citations

**Cardiac ischemic tolerance, systemic hypertension and heart failure (2012-2024) Neckář, Kolář, Hlaváčková**

Neckář J, Kopkan L, Husková Z, Kolář F, Papoušek F, Kramer HJ, Hwang SH, Hammock BD, Imig JD, Malý J, Netuka I, Ošťádal B, Červenka L. Inhibition of soluble epoxide hydrolase by cis-4-[4-(3-adamantan-1-ylureido)cyclohexyl-oxy]benzoic acid exhibits antihypertensive and cardioprotective actions in transgenic rats with angiotensin II-dependent hypertension*. Clin Sci (Lond)* 2012;122:513-525. 58 citations

Neckář J, Šilhavy J, Zídek V, Landa V, Mlejnek P, Šimáková M, Seidman JG, Seidman C, Kazdová L, Klevstig M, Novák F, Vecka M, Papoušek F, Houštěk J, Drahota Z, Kurtz TW, Kolář F, Pravenec M. CD36 overexpression predisposes to arrhythmias but reduces infarct size in spontaneously hypertensive rats: gene expression profile analysis. *Physiol Genomics* 2012;44:173-182. 20 citations

Neckář J, Svatoňová A, Weissová R, Drahota Z, Zajíčková P, Brabcová I, Kolář D, Alánová P, Vašinová J, Šilhavý J, Hlaváčková M, Tauchmannová K, Milerová M, Ošťádal B, Červenka L, Žurmanová J, Kalous M, Nováková O, Novotný J, Pravenec M, Kolář F. Selective replacement of mitochondrial DNA increases the cardioprotective effect of chronic continuous hypoxia in spontaneously hypertensive rats. *Clin Sci (Lond)* 2017;131:865-881. 18 citations

Červenka L, Husková Z, Kopkan L, Kikerlová S, Sedláková L, Vaňourková Z, Alánová P, Kolář F, Hammock BD, Hwang SH, Imig JD, Falck JR, Sadowski J, Kompanowska-Jezierska E, Neckář J. Two pharmacological epoxyeicosatrienoic acid-enhancing therapies are effectively antihypertensive and reduce the severity of ischemic arrhythmias in rats with angiotensin II-dependent hypertension. *J Hypertens* 2018;36:1326-1341. 26 citations

Benák D, Kolář F, Zhang L, Devaux Y, Hlaváčková M. RNA modification m6Am: the role in cardiac biology. *Epigenetics* 2023;18:2218771.

Benák D, Benáková S, Plecitá-Hlavatá L, Hlaváčková M. The role of m6A and m6Am RNA modifications in the pathogenesis of diabetes mellitus. *Front Endocrinol (Lausanne)* 2023;14:1223583.

**Unique drugs for obesity, type 2 diabetes and neurodegeneration (2014-2024) Kuneš**

Maletínská L, Nagelová V, Tichá A, Zemenová J, Pirník Z, Holubová M, Špolcová A, Mikulášková B, Blechová M, Sýkora D, Lacinová Z, Haluzík M, Železná B, Kuneš J. Novel lipidized analogs of prolactin-releasing peptide have prolonged half-lives and exert anti-obesity effects after peripheral administration. *Int J Obes (Lond)* 2015;39:986-993. 51 citations

Kuneš J, Pražienková V, Popelová A, Mikulášková B, Zemenová J, Maletínská L. Prolactin-releasing peptide: a new tool for obesity treatment. *J Endocrinol* 2016;230:R51-R58. 32 citations

Holubová M, Hrubá L, Popelová A, Bencze M, Pražienková V, Gengler S, Kratochvílová H, Haluzík M, Železná B, Kuneš J, Hölscher C, Maletínská L. Liraglutide and a lipidized analog of prolactin-releasing peptide show neuroprotective effects in a mouse model of β-amyloid pathology. *Neuropharmacology* 2019;144:377-387. 48 citations

Karnošová A, Strnadová V, Železná B, Kuneš J, Kašpárek P, Maletínská L. NPFFR2-deficient mice fed a high-fat diet develop strong intolerance to glucose. *Clin Sci (Lond)* 2023;137:847-862. 47 citations

**Molecular neurobiology (2014-2024) Balaštík**

Balastik M, Zhou XZ, Alberich-Jorda M, Weissova R, Žiak J, Pazyra-Murphy MF, Cosker KE, Machonova O, Kozmikova I, Chen CH, Pastorino L, Asara JM, Cole A, Sutherland C, Segal RA, Lu KP. Prolyl isomerase Pin1 regulates axon guidance by stabilizing CRMP2A selectively in distal axons. *Cell Rep* 2015;13:812-828. 30 citations

Magiera MM, Bodakuntla S, Žiak J, Lacomme S, Marques Sousa P, Leboucher S, Hausrat TJ, Bosc C, Andrieux A, Kneussel M, Landry M, Calas A, Balastik M, Janke C. Excessive tubulin olyglutamylation causes neurodegeneration and perturbs neuronal transport. *EMBO J* 2018;37:e100440. 86 citations

Ziak J, Weissova R, Jeřábková K, Janikova M, Maimon R, Petrasek T, Pukajova B, Kleisnerova M, Wang M, Brill MS, Kasparek P, Zhou X, Alvarez-Bolado G, Sedlacek R, Misgeld T, Stuchlik A, Perlson E, Balastik M. CRMP2 mediates Sema3F-dependent axon pruning and dendritic spine remodeling. *EMBO Rep* 2020;21:e48512. 24 citations

**Metabolism of bioactive lipids (2015-2024) Kuda**

Kuda O, Brezinova M, Rombaldova M, Slavikova B, Posta M, Beier P, Janovska P, Veleba J, Kopecky J Jr, Kudova E, Pelikanova T, Kopecky J. Docosahexaenoic acid-derived fatty acid esters of hydroxy fatty acids (FAHFAs) with anti-inflammatory properties.*Diabetes* 2016;65:2580-2590. 120 citations

Brezinova M, Cajka T, Oseeva M, Stepan M, Dadova K, Rossmeislova L, Matous M, Siklova M, Rossmeisl M, Kuda O. Exercise training induces insulin-sensitizing PAHSAs in adipose tissue of elderly women. *Biochim Biophys Acta Mol Cell Biol Lipids* 2020;1865:158576. 31 citations

Brejchova K, Radner FPW, Balas L, Paluchova V, Cajka T, Chodounska H, Kudova E, Schratter M, Schreiber R, Durand T, Zechner R, Kuda O. Distinct roles of adipose triglyceride lipase and hormone-sensitive lipase in the catabolism of triacylglycerol estolides.*Proc Natl Acad Sci U S A* 2021;118:e2020999118. 34 citations

Brejchova K, Paluchova V, Brezinova M, Cajka T, Balas L, Durand T, Krizova M, Stranak Z, Kuda O. [Triacylglycerols containing branched palmitic acid ester of hydroxystearic acid (PAHSA) are present in the breast milk and hydrolyzed by carboxyl ester lipase.](https://pubmed-ncbi-nlm-nih-gov.d360prx.biomed.cas.cz/35486985/) *Food Chem* 2022;388:132983.

**Therapeutic lithium-induced alteration of rat brain (2017-2021) Vošahlíková, Roubalová, Brejchová, Svoboda**

Vosahlikova M, Svoboda P. Lithium - therapeutic tool endowed with multiple beneficiary effects caused by multiple mechanisms. *Acta Neurobiol Exp (Wars)* 2016;76:1-19. 30 citations

Vosahlikova M, Roubalova L, Cechova K, Kaufman J, Musil S, Miksik I, Alda M, Svoboda P. Na+/K+-ATPase and lipid peroxidation in forebrain cortex and hippocampus of rats treated with therapeutic lithium concentration for different periods of time; sleep-deprived rats as an animal model of mania. *Prog Neuropsychopharmacol Biol Psychiatry* 2020;102:109953. 13 citations

Brejchova J, Holan V, SvobodaP. Expression of opioid receptors in cells of the immune system. *Int J Mol Sci* 2020;22:315. 24 citations

**Molecular physiology of the bone (2018-2024) Tencerová**

\*Tencerova M, Figeac F, Ditzel N, Taipaleenmäki H, Nielsen TK, Kassem M. High-fat diet-induced obesity promotes expansion of bone marrow adipose tissue and impairs skeletal stem cell functions in mice. *J Bone Miner Res* 2018;33:1154-1165. 139 citations

\*Tencerova M, Frost M, Figeac F, Nielsen TK, Ali D, Lauterlein JL, Andersen TL, Haakonsson AK, Rauch A, Madsen JS, Ejersted C, Højlund K, Kassem M. Obesity-associated hypermetabolism and accelerated senescence of bone marrow stromal stem cells suggest a potential mechanism for bone fragility. *Cell Rep* 2019;27:2050-2062.e6. 72 citations

Benová A, Tencerová M. Obesity-induced changes in bone marrow homeostasis. *Front Endocrinol (Lausanne)* 2020;11:294. 39 citations

Tencerová M, Ferenčáková M, Kassem M. Bone marrow adipose tissue: Role in bone remodeling and energy metabolism*.* ***Best Pract Res Clin Endocrinol Metab* 2021; 35; 101545**. 14 citations

Benova A, Ferencakova M, Bardova K, Funda J, Prochazka J, Spoutil F, Cajka T, Dzubanova M, Balcaen T, Kerckhofs G, Willekens W, van Lenthe GH, Alquicer G, Pecinova A, Mracek T, Horakova O, Rossmeisl M, Kopecky J, Tencerova M. Novel thiazolidinedione analog reduces a negative impact on bone and mesenchymal stem cell properties in obese mice compared to classical thiazolidinediones. *Mol Metab* 2022;65:101598.

Ferencakova M, Benova A, Raska I Jr, Abaffy P, Sindelka R, Dzubanova M, Pospisilova E, Kolostova K, Cajka T, Paclik A, Zikan V, Tencerova M. Human bone marrow stromal cells: the impact of anticoagulants on stem cell properties. *Front Cell Dev Biol* 2023;11:1255823.

Benova A, Ferencakova M, Bardova K, Funda J, Prochazka J, Spoutil F, Cajka T, Dzubanova M, Balcaen T, Kerckhofs G, Willekens W, van Lenthe GH, Charyyeva A, Alquicer G, Pecinova A, Mracek T, Horakova O, Coupeau R, Hansen MS, Rossmeisl M, Kopecky J, Tencerova M. Omega-3 PUFAs prevent bone impairment and bone marrow adiposity in mouse model of obesity. *Commun Biol* 2023;6:1043.

**Metabolomics, proteomics and bioinformatics (2019-2024) Čajka, Vrbacký, Kuda, Kobets**

Rakušanová S, Čajka T. Current analytical methods to monitor type 2 diabetes medication in biological samples. *TrAC-Trends Anal Chem* 2023;158:116831.

Rakušanová S, Fiehn O, Čajka T. Toward building mass spectrometry-based metabolomics and lipidomics atlases for biological and clinical research. *TrAC-Trends Anal Chem* 2023;158:116825. 16 citations

Hricko J, Rudl Kulhavá L, Paučová M, Nováková M, Kuda O, Fiehn O, Čajka T . Short-term stability of serum and liver extracts for untargeted metabolomics and lipidomics. *Antioxidants* 2023; 12: 986.