CURRICULUM VITAE

Surname: Babes
First name: Alexandru
Title: Professor
Date and place of birth: January 27-th, 1971, Bucharest
Marital status: married, two children
Work address: Department of Anatomy, Physiology and Biophysics, Faculty of Biology, University of Bucharest, Splaiul Independentei 91-95, 050095 Bucharest, Romania
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Education and degrees:
1995, Faculty of Physics, University of Bucharest, BSc in Physics
1997, Faculty of Biology, University of Bucharest, MSc in Neurobiology
2002, University of Bucharest, Ph.D. in Biology "Summa cum laude"

Past appointments:
1. 1996–2008 junior teaching assistant, teaching assistant, lecturer and reader at the Department of Animal Physiology and Biophysics, Faculty of Biology, University of Bucharest
2. May-July, September-December, 2002, post-doctoral research associate at the Department of Pharmacology, Cambridge University, UK
3. Since October 2008 Professor in Neurobiology at the Department of Animal Physiology and Biophysics, Faculty of Biology, University of Bucharest

Fellowships & visiting professorships:
1. 1995, TEMPUS fellowship at INSERM, Unite 299, Hopital de Bicetre, Institut de Pathologie Cellulaire, Paris, France
2. 1997, TEMPUS fellowship at the Max-Planck-Institut fuer Biophysik, Frankfurt am Main, Germany
1998-1999-2000, Max-Planck and DAAD fellowships at the Max-Planck-Institut fuer Biophysik, Frankfurt am Main, Germany
3. 2000, 2001, research-assistant at the Sobell Department, Institute of Neurology, University College, London, UK
4. 2001, NATO fellowship at the Institute of Physiology, Justus-Liebig-Universitaet Giessen, Germany
5. 2002, Junior Fellowship, Physiological Society, Department of Pharmacology, Cambridge University
6. 2003, 2005, visiting scientist and FEBS fellowship at the Instituto de Neurociencias, Universidad Miguel Hernandez, San Juan de Alicante, Spain.
7. 2006, 2009, 2016, Alexander von Humboldt fellowship at the Institut fuer Physiologie und Experimentelle Pathophysiologie, Friedrich-Alexander Universitaet Erlangen-Nuernberg, Erlangen, Germany
8. 2011, EMBO short-term fellowship, Institute de Pharmacologie Moleculaire et Cellulaire, Sophia Antipolis, France
9. 2017; 2018 – visiting professorships (1 month each) at the Friedrich-Alexander Universitaet Erlangen-Nuernberg, Erlangen, Germany

Awards:

1. 2019. The "Friedrich Wilhelm Bessel" Research Award from the Alexander von Humboldt Foundation.
2. 2018. The "Nicolae Simionescu" Award of the Romanian Academy of Sciences for the group of scientific articles on cellular and molecular mechanisms of nociception and thermoreception.
2. 2017. The Great Prize of the Senate of the University of Bucharest for the most prestigious scientific publication in 2017.
3. 2016 - IASP (International Association for the Study of Pain) Award for Excellence in Pain Research and Management in Developing Countries
4. 2009, The Luigi Galvani Prize for outstanding contributions to the field of bioelectrochemistry, The Bioelectrochemical Society
5. 2005, Award for an outstanding poster presentation, The International Workshop on Ion Channels, Physiological Society, Seville, Spain
6. 2002, Young Investigator Award, Romanian Research Council

Oral presentations at international conferences:

1. The Federation of European Neuroscience Societies (FENS) Regional Meeting, Pecs, Hungary, 2017.
2. The 95th Annual Meeting of the German Physiological Society, Lübeck, Germany, 2016
3. The 90th Annual Meeting of the German Physiological Society, Regensburg, Germany, 2011
4. The 20th International Symposium on Bioelectrochemistry and Bioenergetics, Sibiu, Romania, 2009
5. The 87th Annual Meeting of the German Physiological Society, Köln, Germany, 2008
6. The Joint Meeting of the Physiological Society, the Federation of European Physiological Society and the Slovak Physiological Society, Bratislava, Slovakia, 2007
7. The 86th Annual Meeting of the German Physiological Society, Hannover, Germany, 2007
8. The 2nd International Conference of the National Neuroscience Society of Romania, Bucharest, Romania, 2006
9. The Annual Physiological Society Meeting, Bristol University, Bristol, UK, 2005
10. The Physiological Society Meeting, Glasgow University, Glasgow, UK, 2004

Lecturer at International Schools

1. The international Autumn School "Biophysics & Bioelectrochemistry for Medicine: Basic Concepts, New Techniques and Application Perspective", October 1-6, 2010, Vulcan, Romania
2. The International Spring School in Biophysics & Bioelectrochemistry for Medicine, May 6-10, 2009, Cisnadioara, Romania

Organizer of international conferences and symposia:

1. Recent advances in nociceptive signaling: focus on temperature-, acid- and light-induced pain. Symposium at the FENS Regional Meeting, Pecs, Hungary, September 20-23, 2017.
2. PENS Workshop on "Mechano-transduction and nociception", University of Bucharest, August 25-30, 2007

3. International IBRO Course in Neuroscience: University of Bucharest, May 3-11, 2004, with Prof. Uel Jackson McMahan, Stanford University, USA

Member of scientific organizations:
The National Neuroscience Society of Romania (affiliate to FENS), the International Brain Research organization (IBRO), the International Association for the Study of Pain (IASP)
Reviewer for Neuroscience, Nature protocols, Journal of the Peripheral Nervous System, Molecular and Cellular Neuroscience, Journal of Neurophysiology, British Journal of Pharmacology, Molecular Pain, Pflüger's Archiv, the European Commission (Marie Curie Actions).

Science administration and policy activities
President of the Romanian National Research Council (CNCS) between 2011 and 2013, and also between December 2016 and January 2017. Current President of the Romanian National Research Council (CNCS), since March 2020. Since November 2019, Scientific Ambassador of the Alexander von Humboldt Foundation in Romania.

Scientometric data (according to Web of Science on 21.05.2021)
35 papers in ISI-indexed journals. Sum of Times Cited without self-citations: 1712; Citing Articles without self-citations: 1477; Average Citations per Item: 50.29
h-index: 18

Scientific interests:
My research is currently focused on the molecular mechanisms of sensory transduction in peripheral mammalian thermoreceptors and nociceptors. Using a combination of electrophysiological and imaging techniques, I have been involved in the characterization of cold-sensitive neurons in rodent dorsal root ganglia. We have shown that more than one neuronal population is involved in cold detection and we have described for the first time a novel type of cold-sensitive neuron with rapid adaptation to cooling stimuli. Recently, we have begun to investigate the modulation of the two ion channels most likely to be involved in cold-sensing: TRPM8 and TRPA1. We have shown that pro-inflammatory mediators such as bradykinin and prostaglandin E2 have an inhibitory effect on TRPM8 expressing neurons, which is mediated by activation of protein kinase C and protein kinase A, respectively. Pharmacological investigation of TRPA1 is work in progress: we have already shown that the anti-diabetic drug glibenclamide may exert some of its beneficial effects through activation of TRPA1. We also focused on voltage-gated sodium channels and have been involved in investigating the role of Nav1.8 in maintaining sensitivity to noxious cold and painful stimuli at low temperatures (work published in Nature). We also became interested in unraveling the cellular mechanisms involved in diabetic neuropathy, and, in a truly collaborative project, we uncovered a role for Nav1.8 as a target of advanced glycation in diabetes (published in Nature Medicine). In more recent years, our research activities were focused on light-induced pain and itch in various human genetic diseases, such as porphyrias and the Smith-Lemli-Opitz syndrome. We uncovered a role of pain-sensing ion channels TRPA1 and TRPV1 in the photosensitization of nociceptors and we propose these channels as pharmacological targets to be blocked in order to alleviate the sensory alterations experienced by these patients.

Publication list – Alexandru Babeş

1. Cojocaru, F., Şelescu, T., Domocoş, D., Măruţescu, L., Chiritoiu, G., Chelaru, N-R., Dima, S., Mihăilescu, D., **Babes, A.***, Cucu, D.* (2021) "Functional expression of the transient receptor potential ankyrin type 1 channel in pancreatic adenocarcinoma cells", Scientific Reports, 11(1):2018. IF = 3.99 (* corresponding authors)

2. **Babes, A.**, Kichko, T.I., Selescu, T., Manolache, A., Neacsu, C., Gebhardt, L., Reeh, P.W. (2020) "Psoralens activate and photosensitize Transient Receptor Potential channels Ankyrin type 1 (TRPA1) and Vanilloid type 1 (TRPV1)", *European Journal of Pain*, **25(1)**:122-135. IF = 3.19

3. Domocos, D., Selescu, T., Ceafalan, L.C., Iodi Carstens, M., Carstens, E., **Babes, A.** (2020) "Role of 5-HT1A and 5-HT3 receptors in serotonergic activation of sensory neurons in relation to itch and pain behavior in the rat" *Journal of Neuroscience Research*, **98(10)**:1999-2017. IF = 4.70

4. Paschou, M., Maier, L., Papazafiri, P., Selescu, T., Dedos, S.G., **Babes, A.**, Doxakis, E. (2020) "Neuronal microRNAs modulate TREK two-pore domain K+ channel expression and current density", *RNA Biology*, **17(5)**:651-662. IF = 5.21

5. Manolache, A., Selescu, T., Maier, G.L., Mentel, M., Ionescu, A.E., Neacsu, C., **Babes, A.***, Szedlacsek, S.E.* (2020) "Regulation of TRPM8 channel activity by Src-mediated tyrosine phosphorylation", *Journal of Cellular Physiology*, **235(6)**:5192-5203. IF = 4.52 (* corresponding authors)

6. Dux, M., **Babes, A.**, Manchen, J., Sertel-Nakajima, J., Vogler, B., Schramm, J., Messlinger, K. (2020) "High-dose phenylephrine increases meningeal blood flow through TRPV1 receptor activation and release of calcitonin gene-related peptide", *European Journal of Pain*, **24(2)**:383-397. IF = 3.18

7. Neacsu, C., Sauer, S.K., Reeh, P.W., **Babes, A.** (2020) "The phospholipase C inhibitor U73122 is a potent agonist of the polymodal transient receptor potential ankyrin type 1 (TRPA1) receptor channel", *Naunyn Schmiedeberg's Archives of Pharmacology*, **393(2)**:177-189. IF = 2.23

8. Babes, R.M., Selescu, T., Domocos, D., **Babes, A.** (2017) "The anthelminthic drug praziquantel is a selective agonist of the sensory transient receptor potential melastatin type 8 channel", *Toxicology and applied pharmacology*, **336**:55-65. IF = 3.79

9. **Babes, A.***, Ciotu, C.I.*, Hoffmann, T., Kichko, T.I., Selescu, T., Neacsu, C., Sauer, S.K., Reeh, P.W., Fischer, M.J.M. (2017) "Photosensitization of TRPA1 and TRPV1 by 7-dehydrocholesterol: implications for the Smith-Lemli-Opitz syndrome", *Pain*, **158(12)**:2475-86. IF = 5.45 (* equal contribution)

10. Kistner, K.*, Siklosi, N.*, **Babes, A.***, Khalil, M., Selescu, T., Zimmermann, K., Wirtz, S., Becker, C., Neurath, M.F., Reeh, P.W., Engel, M.A. (2016) "Systemic desensitization through TRPA1 channels by capsazepine and mustard oil - a novel strategy against inflammation and pain", *Scientific Reports*, **6**:28621. IF = 5.58 (* equal contribution)

11. **Babes, A.**, Sauer, S.K., Moparthi, L., Kichko, T.I., Neacsu, C., Namer, B., Filipovic, M., Zygmunt, P.M., Reeh, P.W., Fischer, M.J. (2016), "Photosensitization in Porphyrias and Photodynamic Therapy Involves TRPA1 and TRPV1", *Journal of Neuroscience*, **36(19)**:5264-78. IF = 6.34

12. Khalil, M., **Babes, A.**, Lakra, R., Försch, S., Reeh, P.W., Wirtz, S., Becker, C., Neurath, M.F., Engel, M.A. (2016), "Transient receptor potential melastatin 8 ion channel in macrophages modulates colitis through a balance-shift in TNF-alpha and interleukin-10 production", *Mucosal Immunology*, **9(6)**:1500-1513. IF = 7.37

13. Ciobanu, A.C., Selescu, T., Gasler, I., Soltuzu, L., **Babes, A.** (2016), "Glycolytic metabolite methylglyoxal inhibits cold and menthol activation of the transient receptor potential melastatin type 8 channel", *Journal of Neuroscience Research*, **94(3)**:282-94. IF = 2.59

14. Eberhardt, M., Dux, M., Namer, B., Miljkovic, J., Cordasic, N., Will, C., Kichko, T.I., de la Roche, J., Fischer, M., Suárez, S.A., Bikiel, D., Dorsch, K., Leffler, A., **Babes, A.**, Lampert, A., Lennerz, J.K., Jacobi, J., Martí, M.A., Doctorovich, F., Högestätt, E.D., Zygmunt, P.M., Ivanovic-Burmazovic, I., Messlinger, K., Reeh, P., Filipovic, M.R. (2014), "H2S and NO cooperatively regulate vascular tone by activating a neuroendocrine HNO-TRPA1-CGRP signalling pathway", *Nature Communications*, **5**: 4381. **FI**: 11.47

15. Cucu, D., Chiritoiu, G., Petrescu, S., **Babes, A.**, Stanica, L., Duda, D. G., Horii, A., Dima, S. O., Popescu, I. (2014), "Characterization of Functional Transient Receptor Potential Melastatin 8 Channels in Human Pancreatic Ductal Adenocarcinoma Cells", *Pancreas*, **43(5)**: 795-800. **FI**: 2.96

16. Selescu, T., Ciobanu, A. C., Dobre, C., Reid, G., **Babes, A.** (2013), "Camphor activates and sensitizes transient receptor potential melastatin 8 (TRPM8) to cooling and icilin", *Chemical Senses*, **38(7)**: 563-575. **FI**: 3.16

17. **Babes, A.**, Fischer, M. J., Filipovic, M., Engel, M. A., Flonta, M. L, Reeh, P. W. (2013), "The anti-diabetic drug glibenclamide is an agonist of the transient receptor potential Ankyrin 1 (TRPA1) ion channel", *European Journal of Pharmacology*, **704(1-3)**: 15-22. **FI**: 2.53

18. Bierhaus, A., Fleming, T., Stoyanov, S., Leffler, A., **Babes, A.**, Neacsu, C., Sauer, S. K., Eberhardt, M., Schnölzer, M., Lasischka, F., Neuhuber, W. L., Kichko, T. I., Konrade, I., Elvert, R., Mier, W., Pirags, V., Lukic, I. K., Morcos, M., Dehmer, T., Rabbani, N., Thornalley, P.J., Edelstein, D., Nau, C., Forbes, J., Humpert, P. M., Schwaninger, M., Ziegler, D., Stern, D. M., Cooper, M. E., Haberkorn, U., Brownlee, M., Reeh, P. W., Nawroth, P. P.

(2012), “Methylglyoxal modification of $Na_v1.8$ facilitates nociceptive neuron firing and causes hyperalgesia in diabetic neuropathy”, *Nature Medicine*, **18(6):** 926-933. **FI**: 27.36

19. Engel, M. A., Leffler, A., Niedermirtl, F., **Babes, A.**, Zimmermann, K., Filipović, M. R., Izydorczyk, I., Eberhardt, M., Kichko, T. I., Mueller-Tribbensee, S. M., Khalil, M., Siklosi, N., Nau, C., Ivanović-Burmazović, I., Neuhuber, W. L., Becker, C., Neurath, M. F., Reeh, P. W. (211), “TRPA1 and substance P mediate colitis in mice”, *Gastroenterology*, **141(4)**: 1346-1358. **FI**: 16.71

20. **Babes, A.**, Ciobanu, A. C., Neacsu, C., Babes, R. M. (2011), “TRPM8, a Sensor for Mild Cooling in Mammalian Sensory Nerve Endings”, *Current Pharmaceutical Biotechnology*, **12(1)**: 78-88. **FI**: 2.51

21. Neacsu, C., **Babes, A.** (2010), “The M-channel blocker linopirdine is an agonist of the capsaicin receptor TRPV1”, *Journal of Pharmacological Sciences*, **114(3)**: 332-340. **FI**: 2.36

22. **Babes, A.**, Fischer, M.J., Reid, G., Sauer, K., Zimmermann, K., Reeh, PW. (2010), “Electrophysiological and neurochemical techniques to investigate sensory neurons in analgesia research”, *Methods in Molecular Biology*, **617**:237-259.

23. Neacsu, C., Ciobanu, C., Barbu, I., Toader, O., Szegli, G., Kerek, F., **Babes, A**. (2010), “Substance MCS-18 isolated from Helleborus purpurascens is a potent antagonist of the capsaicin receptor, TRPV1, in rat cultured sensory neurons”, *Physiological Research*, **59**:289-298. **FI**: 1.29

24. Ciobanu, C., Reid, G., **Babes, A.** (2009), “Acute and chronic effects of neurotrophic factors BDNF and GDNF on responses mediated by thermo-sensitive TRP channels in cultured rat dorsal root ganglion neurons”, *Brain Research*, **1284**:54-67. **FI**: 2.84

25. Zimmermann, K., Leffler, A., **Babes, A.**, Cendan, C. M., Carr, R. W., Kobayashi, J., Nau, C., Wood, J. N., Reeh, P. (2007), “Sensory neuron sodium channel Nav1.8 is essential for pain at low temperatures”, *Nature*, **447**:855-859. **FI**: 41.46

26. Leffler, A., Linte, R., Nau, C., Reeh, P., **Babes, A.** (2007), “A high-threshold heat-activated channel in cultured rat dorsal rot ganglion neurons resembles TRPV2 and is blocked by gadolinium", *European Journal of Neuroscience*, **26**:12-22. **FI**: 3.81

27. Linte, R.M., Ciobanu, C., Reid, G., **Babes, A.** (2007), “Desensitization of cold- and menthol-sensitive rat dorsal root ganglion neurones by inflammatory mediators”, *Experimental Brain Research*, **178(1)**: 89-98. **FI**: 2.04

28. **Babes, A.**, Zorzon, D., Reid, G. (2006), "A novel type of cold-sensitive neurone in rat dorsal root ganglia with rapid adaptation to cooling stimuli", *European Journal of Neuroscience*, **24(3)**: 691-698. **FI**: 3.81

29. **Babes, A.**, Zorzon, D., Reid, G. (2004), "Two populations of cold sensitive neurones in rat dorsal root ganglia and their modulation by nerve growth factor", *European Journal of Neuroscience*, **20**: 2276-2282. **FI**: 3.81

30. Reid, G., **Babes, A.**, Pluteanu, F. (2002), "A cold- and menthol-activated current in rat dorsal root ganglion neurones: properties and role in cold transduction", *Journal of Physiology*, **545 (2)**: 595-614. **FI**: 5.04

31. Marden, M. C., Cabanes, M., **Babes, A**., Kiger, L., Griffon, N., Poyart, C., Boyiri, T., Safo, M. K., Abraham, D. J. (2002) "Control of the allosteric equilibrium of hemoglobin by crosslinking agents", *Protein Science*, **11**: 1376-1383. **FI**: 2.85

32. **Babes, A**., Amuzescu, B., Krause, U., Scholz, A., Flonta, M.-L., Reid, G., (2002), "Cooling inhibits capsaicin-induced currents in cultured rat dorsal root ganglion neurones", *Neuroscience Letters*, **317**(3): 131-134. **FI**: 2.03

33. **Babes, A**., Lorinczi, E., Ristoiu, V., Flonta, M.-L., Reid G., (2001), "Slowing of inactivation at positive potentials in a rat axonal K^+ channel is not due to preferential closed-state inactivation", *Physiological Research*, **50**: 557-565. **FI**: 1.29

34. **Babes, A.**, Fendler K., (2000), "Na^+ transport and the E_1P-E_2P conformational transition of the Na^+/K^+-ATPase", *Biophysical Journal*, **79**: 2557-2571. **FI**: 3.97

35. Ganea, C., **Babes, A.**, Lupfert, C., Grell, E., Fendler, K., Clarke, R. J., (1999), "Hofmeister effects of anions on the kinetics of partial reactions of the Na^+,K^+-ATPase", *Biophysical Journal*, **77**: 267-281. **FI**: 3.97