

Biosketch of Andrea Becchetti.

Education / Post-doctoral work.

1988. Laurea in Biology. University of Milano

1989. Annual Training in Physiology and Pathology. University of Milano.

1990-1992. Triennial AIRC Fellowship. University of Florence (Dept. of General Pathology).

1993-1994. Post-doctoral fellowship. Emory University School of Medicine, Atlanta, USA (Dept. of Physiology).

1995-1996. Post-doctoral fellowship. University of Newcastle upon Tyne, UK (Dept. of Physiological Sciences).

1997-1999. Research Fellow at ISAS-SISSA (Biophysics Sector), Trieste.

Academic Career.

2000. Assistant Professor of Physiology. University of Milano-Bicocca (Dept. BTBS).

Since 2003. Faculty of the PhD School in Molecular and Translational Medicine.

2004-2006. Director of the *Telethon-Italy Research Service – Functional Test of Ion Channels*.

2005. Associate Professor of Physiology at Milano-Bicocca.

2006-2007. Scientific Coordinator of the MIUR Project: “Cerebral Nicotinic Receptors and Epileptic Pathologies”.

2007. Visiting Scientist at the *Microsoft Research – University of Trento Centre for Computational and Systems Biology*.

2014. Habilitation to Full Professorship in Physiology (renewed in 2019).

Editorial board: J Ion Channels (2008-2009); PeerJ (2014-2020); Guest associate editor for Front Physiol (since 2012).

Ad hoc reviewer for: *Am J Physiology-Cell Physiol, BBA-Gen Subjects, Bioelectricity, Biol Philos, BioMed Res. Int., Biophys Journal, Brain Research, Brain Sciences, Brit J Pharmacol, Cereb Cortex, Commun Biol, Current Biology, Curr Pharm Des, EBioMedicine, Exp Cell Research, Front Memb Physiol Biophys, Front Mol Neurosci, Front Pharmacol, Fut Med Chem, Human Mut, iScience, J Addict Res Ther, J Neurochem, J Physiol Biochem, J Theor Biol, Neuroscience, Neurosci Research, Oncotarget, Pflügers Archiv, Pharmacol Toxicol, PLoS ONE, Prog Neurobiol, Ref Mod Neurosci Biobehav Psychol, Rev Neurosci, Sci Rep, Stem Cells Int, Targeted Oncol, Trends Biotechnol, Alzheimer’s Society (UK), Danish Council for Independent Research, Epilepsy Research Foundation (UK), French National Cancer Institute, Italian MIUR, National Science Foundation (USA)*

Affiliations: Society for Neuroscience, Society of General Physiologists, Biophysical Society, Italian Physiological Society, American Physiological Society, Behavioural and Brain Sciences.

Research. A. Becchetti studies the cholinergic and peptidergic regulation of neuronal circuits in the mammalian prefrontal cortex. This modulates vigilance, cognition and the sleep-waking cycle, with pathological implications in sleep-related pathologies. He is also studying the regulatory interaction between ion channels and integrin receptors, implicated in neurite extension, cell migration, tumor growth and invasiveness. His research has been recently funded by MIUR, University of Milano-Bicocca, and the Telethon Foundation. He has published about 90 papers in peer-reviewed journals and edited two books.

Teaching. A. Becchetti teaches General Physiology and Neuroscience for students of Biology and Optics-Optometry.

Selection of publications in peer-reviewed journals (last 10 years).

Petroni G, Bagni G, Iorio J, Duranti C, Lottini T, Stefanini M, Kragol G, **Becchetti A***, Arcangeli A*. *Equally contributed. Clarithromycin inhibits autophagy in colorectal cancer by regulating the HERG1 potassium channel interaction with PI3K. *Cell Death Dis* **11**: 161, 2020.

Villa C*, Colombo G*, Meneghini S, Moretti M, Gotti C, Ferini-Strambi L, Chisci E, Giovannoni R, **Becchetti A**, Combi R. *CHRNA2* and nocturnal frontal lobe epilepsy: identification and characterization of a novel loss of function mutation. *Equally contributed. *Front Mol Neurosci* **12**: 17, 2019.

Becchetti A, Petroni G, Arcangeli A. Ion channel conformations regulate integrin-dependent signaling. *Trends Cell Biol* **29**: 298-307, 2019.

Amadeo A, Coatti A, Aracri P, Ascagni M, Iannantuoni D, Modena D, Carraresi L, Brusco S, Meneghini S, Arcangeli A, Pasini ME, **Becchetti A**. Postnatal changes in K⁺/Cl⁻ cotransporter-2 expression in the forebrain of mice bearing a mutant nicotinic subunit linked to sleep-related epilepsy. *Neuroscience* **386**: 91-107, 2018.

Pillozzi S, D'Amico M, Bartoli G, Gasparoli L, Petroni G, Crociani O, Marzo T, Guerriero A, Messori L, Severi M, Udisti R, Wulff H, Chandy KG, **Becchetti A**, Arcangeli A. The combined activation of K_{Ca}3.1 and inhibition of K_v11.1/hERG1 currents contribute to overcome Cisplatin resistance in colorectal cancer cells. *Brit J Cancer* **118**: 200-212, 2018.

Orlando A, Cazzaniga E, Tringali M, Gullo F, **Becchetti A**, Minniti S, Taraballi F, Tasciotti E, Re F. Mesoporous silica nanoparticles trigger mitophagy in endothelial cells and perturb neuronal network activity in a size- and time-dependent manner. *Int J Nanomedicine* **12**: 3547-3559, 2017.

Becchetti A, Crescioli S, Zanieri F, Petroni G, Mercatelli R, Coppola S, Gasparoli L, D'Amico M, Pillozzi S, Crociani O, Stefanini M, Fiore A, Carraresi L, Morello V, Manoli S, Brizzi MF, Ricci D, Rinaldi M, Masi A, Schmidt T, Quercioli F, Defilippi P, Arcangeli A. The conformational state of hERG1 channels determines integrin association, downstream signaling, and cancer progression. *Science Signaling* **10**: eaaf3236, 2017.

Arcangeli. A, **Becchetti A**. hERG channels: from antitargets to novel targets for cancer therapy. *Clinical Cancer Research* **23**: 3-5, 2017.

Aracri P, Meneghini S, Coatti A, Amadeo A, **Becchetti A**. $\alpha 4\beta 2^*$ nicotinic receptors stimulate GABA release onto fast-spiking cells in layer V of mouse prefrontal (Fr2) cortex. *Neuroscience* **340**: 48-61, 2017.

Wanke E, Gullo F, Dossi E, Valenza G, **Becchetti A**. Neuron-glia cross talk revealed in reverberating networks by simultaneous extracellular recording of spikes and astrocytes' glutamate transporter and K⁺ currents. *J Neurophysiol* **116**: 2706-2719, 2016.

Becchetti A, Amadeo A. Why we forget our dreams: acetylcholine and norepinephrine in wakefulness and REM sleep. *Behavioural and Brain Sciences* **39**: e202, 2016.

Brusco S, Ambrosi P, Meneghini S, **Becchetti A**. Agonist and antagonist effects of tobacco-related nitrosamines on human $\alpha 4\beta 2$ nicotinic acetylcholine receptors. *Front Pharmacol* **6**: 201, 2015.

Arcangeli A, **Becchetti A**. Novel perspectives in cancer therapy: targeting ion channels. *Drug Resistance Updates* **21-22**: 11-19, 2015.

Conti V, Aracri P, Chiti L, Brusco S, Mari F, Marini C, Albanese M, Marchi A, Liguori C, Placidi F, Romigi A, **Becchetti A**, Guerrini R. Nocturnal frontal lobe epilepsy with paroxysmal arousals due to CHRNA2 loss of function. *Neurology* **84**: 1520-1528, 2015.

Becchetti A, Aracri P, Meneghini S, Brusco S, Amadeo A. The role of nicotinic acetylcholine receptors in autosomal dominant nocturnal frontal lobe epilepsy. *Front Physiol* **6**: 22, 2015.

Gasparoli L, D'Amico M, Masselli M, Pillozzi S, Caves R, Khuwaileh R, Tiedke W, Mugridge K, Mitcheson JS, Basso G, **Becchetti A**, Arcangeli A. Inhibiting K_v11.1B channels with CD-160130 has antileukemic effects without cardio-toxicity. *Mol Pharmacol* **87**: 183-196, 2015.

Becchetti A. Empirically founded genotype-phenotype maps from mammalian cyclic nucleotide-gated ion channels. *J Theor Biol* **363**: 205-215, 2014.

Gullo F, Manfredi I, Lecchi M, Casari G, Wanke E, **Becchetti A**. Multi-electrode array study of neuronal cultures expressing nicotinic β 2-V287L subunits, linked to autosomal dominant nocturnal frontal lobe epilepsy. An *in vitro* model of spontaneous epilepsy. *Front Neural Circuits* **8**: 87, 2014.

Aracri P, Banfi D, Pasini ME, Amadeo A, **Becchetti A**. Orexin (hypocretin) regulates glutamate input to fast-spiking interneurons in layer V of the Fr2 region of the murine prefrontal cortex. *Cerebral Cortex* **25**: 1330-1347, 2015.

Crociani O, Zanieri F, Pillozzi S, Lastraioli E, Stefanini M, Fiore A, Fortunato A, D'Amico M, Masselli M, De Lorenzo E, Gasparoli L, Chiu M, Bussolati O, **Becchetti A**, Arcangeli A. HERG1 channels modulate integrin signaling to trigger angiogenesis and tumor progression in colorectal cancer. *Sci Reports* **3**: 3308, 2013.

Aracri P, Amadeo A, Pasini ME, Fascio U, **Becchetti A**. Regulation of glutamate release by heteromeric nicotinic receptors in layer V of the secondary motor region (Fr2) in the dorsomedial shoulder of prefrontal cortex in mouse. *Synapse* **67**: 338-357, 2013.

Ambrosi P, **Becchetti A**. Targeting neuronal nicotinic receptors in cancer: new ligands and potential side-effects. *Recent Pat Anticancer Drug Discov* **8**: 38-52, 2013.

Becchetti A, Gullo F, Bruno G, Dossi E, Lecchi M, Wanke E. Exact distinction of excitatory and inhibitory neurons in neural networks: a study with GFP-GAD67 neurons optically and electrophysiologically recognized on multielectrode arrays. *Front Neural Circuits*, **6**: 63, 2012.

Pillozzi S, **Becchetti A**. Ion channels in hematopoietic and mesenchymal stem cells. *Stem Cells International* **2012**: 217910, 2012.

Masselli M, Laise P, Tonini G, Fanelli D, Pillozzi S, Cetica V, Da Ros M, Sardi I, Buccoliero AM, Aricò M, Genitori L, **Becchetti A**, Arcangeli A. Deregulation of ion channel and transporter encoding genes in pediatric gliomas. *Front Oncology*, **2**: 53, 2012.

Arcangeli A, Pillozzi S, **Becchetti A**. Targeting ion channels in leukemias: a new challenge for treatment. *Curr Med Chem* **19**: 683-696, 2012.

Becchetti A. Ion channels and transporters in cancer. 1. Ion channels and cell proliferation in cancer. *Am J Physiol Cell Physiol* **301**: C255-C265, 2011.

Pillozzi S, Masselli M, De Lorenzo E, Accordi B, Cilia E, Crociani O, Amedei A, Veltroni M, D'Amico M, Basso G, **Becchetti A**, Campana D, Arcangeli A. Chemotherapy resistance in acute lymphoblastic leukemia requires hERG1 channels and is overcome by hERG1 blockers. *Blood* **117**: 902-914, 2011.

Di Resta C, Ambrosi P, Curia G, **Becchetti A**. Effect of carbamazepine and oxcarbazepine on wild type and mutant neuronal nicotinic receptors linked to nocturnal frontal lobe epilepsy. *Eur J Pharmacol* **643**: 13-20, 2010.

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Becchetti A, Pillozzi S, Morini R, Nesti E, Arcangeli A. New insights into the regulation of ion channels by integrins. *Int Rev Cell Mol Biol* **279**: 135-190, 2010.

Aracri P, Consonni S, Morini R, Perrella M, Rodighiero S, Amadeo A, **Becchetti A**. Tonic modulation of GABA release by nicotinic acetylcholine receptors in layer V of the murine prefrontal cortex. *Cerebral Cortex* **20**: 1539-1555, 2010.