

Alexandrina Burlacu, Ph.D., Coordinator of Lab. of Stem Cell Biology, ICBP-NS

Date and place of birth: August 07, 1974, Zalau, Romania

Education: PhD in Biological Sciences (Distinction: Summa cum Laude) with the thesis: "Molecular and cellular alterations induced by oxidative stress in the myocardium; in vitro regeneration of cardiomyocytes using bone marrow stromal cells", Scientific Coordinator: Dr. Maya Simionescu (2005)

Training and Research Stages: Royal College of Surgeons, Dublin, Ireland (2003); Biomedical Scientific Park Rome, Italy (2005); Cold Spring Harbor, New York (2006); Huddinge Karolinska Hospital, Stockholm, Sweden (2006); University of Minnesota, USA (2007); University of York, UK (2007); University of Heidelberg, Germany (2011); Institute for Molecular Cardiovascular Research, Aachen, Germany (2012).

Positions and Employment:

- Current position: Coordinator of Dept of Regenerative Medicine (since 2017), Principal Investigator (since 2015), Coordinator of Lab of Stem Cell Biology (since 2013)
- Postdoctoral Fellow in Biomaterials for tissue engineering and implantology, Petru Poni Institute of Macromolecular Chemistry, Iasi, Romania (2010-2013)
- Long-term expert in the Biology domain-POSDRU/159/1.5/S/133391 (2-14-2015) (2014-2015)
- Expert of the Research Executive Agency of the European Commission (H2020-SC1-BHC-2018-2020);
- Member of Scientific Evaluation Board for ERA-Net on Cardiovascular Diseases 2019;
- Expert evaluator of Food and Health Bureau, Health and Medical Research Fund, Hong Kong (2013-2019).

Other Experience and Professional Memberships

- Habilitation in Biology, ICBP "Nicolae Simionescu" (since 2018)
- Graduate and master program advisor, scientific supervisor for PhD candidates
- Invited peer reviewer for PLoS One, Stem Cells, Cell & Tissue Res, Stem Cell Develop, J Cell Mol Med, Cardiovasc Drug Ther; Regen Med; JoVE; Scientific Reports; Diabetes Res Clin Pract; Scientific Reports, Microvascular Research, J Tissue Eng Regen Med, Cytotherapy, Nanomaterials, Int J Mol Sci, Cell Mol Biol Lett, etc
- Guest editor for a special issue in Curr Stem Cell Res Ther (2013)
- Member of the Editorial Board of World Journal of Biological Chemistry (since 2013)

Honours and awards

- 2014: Romanian Academy award in Biological Sciences
- 2013: Herbert Berler-Barbu Award - Nicolae Cajal Foundation & Romanian Academy of Medical Science
- 2002: Prize for Scientific Debut –Romanian Academy and National Science & Art Foundation

Publications

- Total number of publications: 37; Patent applications: 2.
- Main author in 25 scientific publications and one patent; two manuscripts as first author with more than 100 citations (2003; 2013); two manuscripts as first author with more than 50 citations (2011; 2008).
- Total no of citations: >950 (Scopus), h-index: 15 (Scopus).

Project management

- Coordinator of 15 research projects awarded by competitions (since 2000)
- Partner responsible of 2 international grants.

Original articles:

1. Liehn EA, Lupan AM, Diaconu R, Ioana M, Streata I, Manole C, [Burlacu A](#). Heart function assessment during aging in apolipoprotein E knock-out mice. *Discoveries (Craiova)*. 2021 Sep 28;9(3):e136. doi: 10.15190/d.2021.15. PMID: 34816004; PMCID: PMC8605688.
2. Neculachi CA, Neti LI, [Burlacu A](#), Preda MB. Inflammation and Hypoxia Negatively Impact the Survival and Immunosuppressive Properties of Mesenchymal Stromal Cells In Vitro. *Rom J Cardiol* 2021; 31 (3): 547. Doi:10.47803/rjc.2021.31.3.547.
3. Marinescu CI, Preda MB, Neculachi CA, Rusu EG, Popescu S, [Burlacu A](#). Identification of a Hematopoietic Cell Population Emerging From Mouse Bone Marrow With Proliferative Potential In Vitro and Immunomodulatory Capacity. *Front Immunol*. 2021 Aug 3;12:698070. doi: 10.3389/fimmu.2021.698070. PMID: 34413852; PMCID: PMC8368722.
4. Lupan AM, Rusu EG, Preda MB, Marinescu CI, Ivan C, [Burlacu A](#). miRNAs generated from Meg3-Mirg locus are downregulated during aging. *Aging (Albany NY)*. 2021 Jun 22;13(12):15875-15897. doi: 10.18632/aging.203208. Epub 2021 Jun 22. PMID: 34156971; PMCID: PMC8266327.
5. Marinescu CI, Preda MB, [Burlacu A](#). A procedure for in vitro evaluation of the immunosuppressive effect of mouse mesenchymal stem cells on activated T cell proliferation. *Stem Cell Res Ther*. 2021 Jun 5;12(1):319. doi: 10.1186/s13287-021-02344-3. PMID: 34090507; PMCID: PMC8178850.
6. Preda MB, Neculachi CA, Fenyó IM, Vacaru AM, Publik MA, Simionescu M, [Burlacu A](#). Short lifespan of syngeneic transplanted MSC is a consequence of in vivo apoptosis and immune cell recruitment in mice. *Cell Death Dis*. 2021 Jun 2;12(6):566. doi: 10.1038/s41419-021-03839-w. PMID: 34075029; PMCID: PMC8169682.
7. Popescu S, Preda MB, Marinescu CI, Simionescu M, [Burlacu A](#). Dual Stem Cell Therapy Improves the Myocardial Recovery Post-Infarction through Reciprocal Modulation of Cell Functions. *Int J Mol Sci*. 2021 May 26;22(11):5631. doi: 10.3390/ijms22115631. PMID: 34073327; PMCID: PMC8199446.
8. Preda MB, Lupan AM, Neculachi CA, Leti LI, Fenyó IM, Popescu S, Rusu EG, Marinescu CI, Simionescu M, [Burlacu A](#). Evidence of mesenchymal stromal cell adaptation to local microenvironment following subcutaneous transplantation. *J Cell Mol Med*. 2020 Sep;24(18):10889-10897. doi: 10.1111/jcmm.15717. Epub 2020 Aug 12. PMID: 32785979; PMCID: PMC7521285.
9. Wu X, Niculite CM, Preda MB, Rossi A, Tebaldi T, Butoi E, White MK, Tudoran OM, Petrusca DN, Jannasch AS, Bone WP, Zong X, Fang F, [Burlacu A](#), Paulsen MT, Hancock BA, Sandusky GE, Mitra S, Fishel ML, Buechlein A, Ivan C, Oikonomopoulos S, Gorospe M, Mosley A, Radovich M, Davé UP, Ragoussis J, Nephew KP, Mari B, McIntyre A, König H, Ljungman M, Cousminer DL, Macchi P, Ivan M. Regulation of cellular sterol homeostasis by the oxygen responsive noncoding RNA lincNORS. *Nat Commun*. 2020 Sep 21;11(1):4755. doi: 10.1038/s41467-020-18411-x. Erratum in: *Nat Commun*. 2020 Nov 6;11(1):5737. PMID: 32958772; PMCID: PMC7505984.
10. Yakala GK, Cabrera-Fuentes HA, Crespo-Avilan GE, Rattanasopa C, [Burlacu A](#), George BL, Anand K, Mayan DC, Corlianò M, Hernández-Reséndiz S, Wu Z, Schwerk AMK, Tan ALJ, Trigueros-Motos L, Chèvre R, Chua T, Kleemann R, Liehn EA, Hausenloy DJ, Ghosh S, Singaraja RR. FURIN Inhibition Reduces Vascular Remodeling and Atherosclerotic Lesion Progression in Mice. *Arterioscler Thromb Vasc Biol*. 2019 Mar;39(3):387-401. doi: 10.1161/ATVBAHA.118.311903. PMID: 30651003; PMCID: PMC6393193.

11. Lupan AM, Preda MB, Burlacu A. A standard procedure for lentiviral-mediated labeling of murine mesenchymal stromal cells in vitro. *Biotechnol Appl Biochem*. 2019 Jul;66(4):643-653. doi: 10.1002/bab.1765. Epub 2019 May 31. PMID: 31087689.
12. Hristov I, Mocanu V, Zugun-Eloae F, Labusca L, Cretu-Silivestru I, Oboroceanu T, Tiron C, Tiron A, Burlacu A, Pinzariu AC, Armasu I, Neagoe RM, Covic A, Scripcariu V, Timofte DV. Association of intracellular lipid accumulation in subcutaneous adipocyte precursors and plasma adipokines in bariatric surgery candidates. *Lipids Health Dis*. 2019 Jun 13;18(1):141. doi: 10.1186/s12944-019-1081-9. PMID: 31189474; PMCID: PMC6563373.
13. Rosca AM, Mitroi DN, Cismasiu V, Badea R, Necula-Petrareanu G, Preda MB, Niculite C, Tutuianu R, Szedlaczek S, Burlacu A. Collagen regulates the ability of endothelial progenitor cells to protect hypoxic myocardium through a mechanism involving miR-377/VE-PTP axis. *J Cell Mol Med*. 2018 Oct;22(10):4700-4708. doi: 10.1111/jcmm.13712. Epub 2018 Jul 25. PMID: 30044046; PMCID: PMC6156385.
14. Popescu LM, Piticescu RM, Appelhans D, Schöneich M, Meyer M, Burlacu A, Preda B, Schinteie G, Kuncser V, Vasile E. High Pressure Hydrothermal Procedure: A tool for surface modification of superparamagnetic nanostructured materials for medical applications. *Hybrid Organic-Inorganic Interfaces: Towards Advanced Functional Materials*, 2018, Wiley-VCH Verlag GmbH & Co. KgaA, 695-727.
15. Tutuianu R, Popescu LM, Preda MB, Rosca AM, Piticescu RM, Burlacu A. Evaluation of the Ability of Nanostructured PEI-Coated Iron Oxide Nanoparticles to Incorporate Cisplatin during Synthesis. *Nanomaterials (Basel)*. 2017; 7(10), pii: E314.
16. Odent Grigorescu G*, Rosca AM*, Preda MB, Tutuianu R, Simionescu M, Burlacu A. Synergic effects of VEGF-A and SDF-1 on the angiogenic properties of endothelial progenitor cells. *J Tissue Eng Regen Med*. 2017 Nov;11(11):3241-3252. doi: 10.1002/term.2233. Epub 2016 Dec 12. PMID: 27943613.
17. Gradinaru S, Popescu LM, Piticescu RM, Zurac S, Ciuluvica R, Burlacu A, Tutuianu R, Valsan SN, Motoc AM, Voinea LM. Computer tomograph, histological and immunohistochemical study of a novel nanostructured hydroxyapatite implant for orbital wall fractures in animal model. *Nanomaterials*. 2016; 6, 11-23.
18. Curaj A, Wu Z, Fokong S, Liehn EA, Weber C, Burlacu A, Lammers T, van Zandvoort M, Kiessling F. Noninvasive molecular ultrasound monitoring of vessel healing after intravascular surgical procedures in a preclinical setup. *Arterioscler Thromb Vasc Biol*. 2015 Jun;35(6):1366-73. doi: 10.1161/ATVBAHA.114.304857. Epub 2015 Apr 2. PMID: 25838431.
19. Odent Grigorescu G*, Preda MB*, Radu E, Rosca AM, Tutuianu R, Mitroi DN, Simionescu M, Burlacu A. Combinatorial approach for improving the outcome of angiogenic therapy in ischemic tissues. *Biomaterials*. 2015 Aug;60:72-81. doi: 10.1016/j.biomaterials.2015.05.002. Epub 2015 May 15. PMID: 25985154.
20. Preda MB, Rosca AM, Tutuianu R, Burlacu A. Pre-stimulation with FGF-2 increases in vitro functional coupling of mesenchymal stem cells with cardiac cells. *Biochem Biophys Res Commun*. 2015 Aug 21;464(2):667-73. doi: 10.1016/j.bbrc.2015.07.055. Epub 2015 Jul 14. PMID: 26187662.
21. Rosca A-M, Burlacu A. Changes in microRNA expression induced by three-dimensional aggregation of mesenchymal stem cells. *Annals Rom Soc Cell Biol*. 2015; 20(1): 53-61.
22. Preda MB, Rønningen T, Burlacu A, Simionescu M, Moskaug JØ, Valen G. Remote transplantation of mesenchymal stem cells protects the heart against ischemia-

- reperfusion injury. *Stem Cells*. 2014 Aug;32(8):2123-34. doi: 10.1002/stem.1687. PMID: 24578312.
23. Projahn D, Simseyilmaz S, Singh S, Kanzler I, Kramp BK, Langer M, Burlacu A, Bernhagen J, Klee D, Zerneck A, Hackeng TM, Groll J, Weber C, Liehn EA, Koenen RR. Controlled intramyocardial release of engineered chemokines by biodegradable hydrogels as a treatment approach of myocardial infarction. *J Cell Mol Med*. 2014 May;18(5):790-800. doi: 10.1111/jcmm.12225. Epub 2014 Feb 6. PMID: 24512349; PMCID: PMC4119385.
 24. Burlacu A, Grigorescu G, Rosca AM, Preda MB, Simionescu M. Factors secreted by mesenchymal stem cells and endothelial progenitor cells have complementary effects on angiogenesis in vitro. *Stem Cells Dev*. 2013 Feb 15;22(4):643-53. doi: 10.1089/scd.2012.0273. Epub 2012 Oct 19. PMID: 22947186; PMCID: PMC3564466.
 25. Rosca AM, Matei C, Dragan E, Burlacu A. Cardiomyocyte apoptosis in ischaemia-reperfusion due to the exogenous oxidants at the time of reperfusion. *Cell Biol Int*. 2012;36(12):1207-15. doi: 10.1042/CBI20120080. PMID: 22994946.
 26. Preda MB, Burlacu A, Simionescu M. Defined-size embryoid bodies formed in the presence of serum replacement increases the efficiency of the cardiac differentiation of mouse embryonic stem cells. *Tissue Cell*. 2013 Feb;45(1):54-60. doi: 10.1016/j.tice.2012.09.005. Epub 2012 Oct 27. PMID: 23107982.
 27. Vasile E, Popescu LM, Piticescu RM, Burlacu A, Buruiana T. Physico-chemical and biocompatible properties of hydroxyapatite based composites prepared by an innovative synthesis route. *Mat Lett*. 2012; 79: 85-88.
 28. Rosca AM, Burlacu A. Effect of 5-azacytidine: evidence for alteration of the multipotent ability of mesenchymal stem cells. *Stem Cells Dev*. 2011 Jul;20(7):1213-21. doi: 10.1089/scd.2010.0433. Epub 2011 Mar 9. PMID: 21067364.
 29. Preda MB, Burlacu A. ECG recording as a tool for validating myocardial ischemia-reperfusion procedure in mouse model. *Comp Med*. 2010; 60: 443-447.
 30. Rosca AM, Burlacu A. Isolation of a mouse bone marrow population enriched in stem and progenitor cells by centrifugation on a Percoll gradient. *Biotechnol Appl Biochem*. 2010 Apr 12;55(4):199-208. doi: 10.1042/BA20090356. PMID: 20331436.
 31. Rosca A-M, Burlacu A. Characterization of mesenchymal stem cells isolated from mouse bone marrow. *Ann Rom Soc Cell Biol*. 2010, 15(2): 57-65.
 32. Preda MB, Burlacu A. Animal models for in vivo ischemia studies. *Ann Rom Soc Cell Biol*. 2010; 15(2): 66-73.
 33. Burlacu A, Rosca AM, Maniu H, Titorencu I, Dragan E, Jinga V, Simionescu M. Promoting effect of 5-azacytidine on the myogenic differentiation of bone marrow stromal cells. *Eur J Cell Biol*. 2008 Mar;87(3):173-84. doi: 10.1016/j.ejcb.2007.09.003. Epub 2007 Nov 26. PMID: 18037191.
 34. Burlacu A, Rosca A-M, Jinga V, Simionescu M. Oxidative stress and TNF induce endothelial cells death by different mechanisms. *Proc Rom Acad Series B* 2004, Vol 6, Issue 3, 197-201.
 35. Burlacu A, Dragan E, Jinga V, Manolescu I. Morpho-functional aspects of cardiomyocytes in culture. *Current problems and techniques in cellular and molecular biology* 37-42, 2003.

Monographies:

1. Burlacu A. Oxidative stress-induced apoptosis of vascular cells. In *Cellular Dysfunction in Atherosclerosis and Diabetes. Reports from Bench to bedside 2004*; Simionescu M., Sima A., Popov D, eds., 296-305.

2. Popescu LM, Piticescu RM, Appelhans D, Schöneich M, Meyer M, Burlacu A, Preda MB, Schinteie G, Kuncser V, Vasile E. (2018) High pressure hydrothermal procedure: A tool for surface modification of superparamagnetic nanostructured materials for medical applications. In Hybrid Organic-Inorganic Interfaces, eds M.-H. Delville and A. Taubert.

Patent applications:

1. Burlacu A, Mitroi DN, Preda MB, Plesu M, Rosca A-M, Grigorescu G, Popa M, Corotchi C, Droc I, Gussi IL. Ex vivo procedure for engraftment of stem cells into viable slides of human cardiac tissue, patent application, State Office for Inventions and Trademarks, 2013, A/00845.
2. Dumitrescu M, Truşcă VG, Burlacu A, Simionescu M, Askenasy N, Gafencu AV Adenovirus containing the murine Fas ligand mini-gene for inducing functional Fas ligand protein expression, patent application, State Office for Inventions and Trademarks, 2019, A00512.

Critical Editions:

1. Burlacu A. Editorials (Hot topic: Advances in stem cell therapy for myocardial regeneration). *Curr Stem Cell Res Ther.* 2013; 8(4): 269.