

CURRICULUM VITAE

First name: Ana-Maria

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Studies:

May 2014 – September 2015: Postdoctoral position in Biology field, (University of Bucharest, POSDRU/159/1.5/S/133391), under the mentorship of Acad. Maya Simionescu: *“Correlation of cardiac regenerative potential of mesenchymal stem cells with microRNA secretion stimulated by three-dimensional aggregation”*;

2005 – 2012: PhD in Biology field (Romanian Academy Doctoral School), under the guidance of Acad. Maya Simionescu: *“Studies on progenitor cell differentiation into cardiomyocytes in order to improve cardiac cell transplantation”*;

2002 – 2004: Master in Biochemistry and Molecular Biology, Faculty of Biology, University of Bucharest;

1998 – 2002: Faculty of Biology, Biochemistry Section, University of Bucharest.

Work Experience:

2013-present: scientific researcher grade III - ICBP “Nicolae Simionescu”, Bucharest; **2007-2013:** scientific researcher - ICBP “Nicolae Simionescu”, Bucharest; **2004-2007:** research assistant - ICBP “Nicolae Simionescu”, Bucharest.

Expertise: isolation, initiation of primary cultures and characterization of mouse and human cells (mouse and human mesenchymal stem cells, mouse and rat cardiomyocytes, human dermal fibroblasts), biocompatibility assessment, 2D and 3D culture systems, biochemistry techniques, molecular biology (Western blot, PCR, RT-PCR, qPCR, transfections), histological analysis, Fluorescence microscopy, confocal microscopy, in vivo angiogenesis assay, in vivo full thickness wound mouse model.

Research projects - director:

2022-2024: Enhancing the paracrine properties of fibroblasts by three-dimensional aggregation for chronic wounds therapy, PN-III-P1-1.1-TE-2021-1344

2007-2008: In vitro effect of the ischemic myocardium released factors in the cardiomyocyte differentiation of adult stem cells (CNCSIS Td)

National research projects - collaborator:

- 2024-2026:** Substituenti inovativi cu structura tridimensionala si activitate antimicrobiana pe baza de collagen pentru reconstructia cranio-faciale, PN-IV-P7-7.1-PED2024-1446;
- 2023-2026:** Enhancing the endogenous anti-oxidant and cholesterol removal potential by gene editing in fatty liver disease; pre-clinical studies, 197 PNRR/2023
- 2022-2024:** Optimization of human mesenchymal stem cells interaction with innovative biomimetic structures for tissue engineering applications, PN-III-P2-2.1-PED-2021-4275, 2022-2024
- 2018-2020:** Bioactive nanostructures for innovative therapeutic strategies, PN-III-P1-1.2-PCCDI-2017-0749
- 2018-2020:** Mesenchymal stromal cells contribution to the re-epithelialization process of the biomimetic skin cultures by differentiation and paracrine factors, PN-III-P1-1.1-TE-2016-1592
- 2018-2020:** Development of BIONanotechnologies based on extracellular VEsicles for early diagnosis, prognosis and therapy of Atherosclerotic disease; PN-III-P1-1.2-PCCDI-2017-0527
- 2015-2017:** Ischemic tissue engineering by combinatorial transplant: piecing together the puzzle to gain mutual benefits for graft survival and host tissue repair, **PNII-RU-TE**
- 2012-2016:** Preclinical model of cell therapy employing protein tyrosine phosphatase-microRNA interplay to optimize neovascularization (*THERION*), PCCA-Tipul 1
- 2010-2013:** Development of new strategies to improve cell survival and differentiation of stem cells after transplantation into the ischemic myocardium, RU-TE
- 2007-2010:** Comparative analysis of the molecular signals involved in the differentiation of embryonic stem cells and adult multipotent progenitor cells of mice, CNCSIS-IDEI
- 2006-2008:** Establishing markers and mechanisms of in vitro differentiation of human stem cells in view of cellular therapy for myocardial regeneration, CEEX
- 2005-2008:** In vitro manipulation of adult progenitor cells and establishing the efficiency of autologous cell transplantation in the treatment of myocardial infarction, 2005-2008, CEEX
- 2005-2007:** New sources of insulin-secreting cells in the therapy of Type 1 Diabetes Mellitus, CEEX
- 2005-2007:** Stem cell therapy for vascular regeneration and reconstruction, CEEX- Proiecte de cercetare-dezvoltare complexa

International projects - collaborator:

- 1. COST Action CA21108, European Network for Skin Engineering and Modeling, 2022-2026, Chair of the Action: Sandrine DUBRAC (AU)**
- 2. COST Action CA16119 CellFit, “In vitro 3-D total cell guidance and fitness” 2016-2021, Chair of the Action: Prof Tiziana BREVINI (IT)**

3. RAMSES

FP7 - Research Potential REGPOT-2009-2: RAMSES: Reinforcement of the Adult stem cell research area through Mobility and Scientific networking between Egypt, Romania and a German consortium for Strengthening the international scientific competency. Grant agreement no. 245691 (2010-2013), Scientific Coordinator from IBPC “N. Simionescu”: Dr. Marilena Lupu

4. SERA Project

Contract SERA nr. 016873; Program Specific Support Action: Strengthening the European Research Area by Reinforcement of Romanian Research Competency in Genomics and Proteomics of Major Global Risk Diseases: Atherosclerosis, Diabetes and its Complications (2005-2007).

Prizes:

PN-II-RU-PRECISI-2011-5: The effect of 5-azacytidine: Evidence for alteration of the multipotent ability of mesenchymal stem cells. *Stem Cells Dev* 20, 1213-1221, 2011

PN-II-RU-PRECISI-2013-7: 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.

PN-II-RU-PRECISI-2015-9: Combinatorial approach for improving the outcome of angiogenic therapy in ischemic tissues. *Biomaterials.* 2015 Aug; 60:72-81.

PN-III-P1-1.1-PRECISI2018-21777: Evaluation of the Ability of Nanostructured PEI Coated Iron Oxide Nanoparticles to Incorporate Cisplatin during Synthesis

PN-III-P1-1.1-PRECISI2018-21924: Synergic effects of VEGF-A and SDF-1 on the angiogenic properties of endothelial progenitor cells

PN-III-P1-1.1-PRECISI-2019-34158: Collagen regulates the ability of endothelial progenitor cells to protect hypoxic myocardium through a mechanism involving miR-377/VE-PTP axis

PN-III-P1-1.1-PRECISI-2020-75080: Mesenchymal stromal cell-derived factors promote the colonization of collagen 3D scaffolds with human skin cells

PN-IV-P2-2.3-PRECISI-2023-82650: Generation of an Immortalized Human Adipose-Derived Mesenchymal Stromal Cell Line Suitable for Wound Healing Therapy

Patents:

1. Burlacu A, Mitroi DN, Preda MB, Plesu M, Rosca AM, 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, *State Office for Inventions and Trademarks*, RO BOPI nr. 9/2019.

2. Titorencu I, Rosca AM, Iacomini MD, Tutuianu R et al. Composite polymeric hydrogels with antibacterial and healing properties and process for obtaining them, *State Office for Inventions and Trademarks*, A/00370/26.06.2021 (patent application).

Scientific papers:

1. Luca I, Albu Kaya MG, Titorencu I, Dinu-Pîrvu CE, Marin MM, Popa L, Rosca AM, Antoniac A, Anuta V, Prisada RM, Kaya DA, Ghica MV. Influence of Mucoadhesive Polymers on Physicochemical Features and Biocompatibility of Collagen Wafers. ACS Polym Au. 2025 May 1;5(3):282-297.
2. Coman AE, Marin MM, Rosca AM, Albu Kaya MG, Constantinescu RR, Titorencu I. Marine Resources Gels as Main Ingredient for Wound Healing Biomaterials: Obtaining and Characterization. Gels. 2024 Nov 11;10(11):729. (corresponding author)
3. Tudoroiu EE, Albu Kaya MG, Titorencu I, Dinu-Pîrvu CE, Marin MM, Rosca AM, Popa L, Anuța V, Antoniac A, Chelaru C, Kaya DA, Prisada RM, Ghica MV. (2023) Design and evaluation of new wound dressings based on collagen-cellulose derivatives, Materials & Design, 236: 112469.
4. Iacomì DM, Rosca AM, Tutuianu R, Neagu TP, Pruna V, Simionescu M, Titorencu I. Generation of an Immortalized Human Adipose-Derived Mesenchymal Stromal Cell Line Suitable for Wound Healing Therapy. Int J Mol Sci. 2022 Aug 10;23(16):8925. (corresponding author).
5. Tutuianu R*, Rosca A-M*, Iacomì DM, Simionescu M, Titorencu I. Human Mesenchymal Stromal Cell-Derived Exosomes Promote In Vitro Wound Healing by Modulating the Biological Properties of Skin Keratinocytes and Fibroblasts and Stimulating Angiogenesis. International Journal of Molecular Sciences. 2021; 22(12):6239. (*equal contribution).
6. Micheu MM, Rosca AM. Patient-specific induced pluripotent stem cells as "disease-in-a-dish" models for inherited cardiomyopathies and channelopathies - 15 years of research. World J Stem Cells. 2021 Apr 26;13(4):281-303
7. Tutuianu R*, Rosca AM*, Albu Kaya MG, Pruna V, Neagu TP, Lascar I, Simionescu M, Titorencu I. Mesenchymal stromal cell-derived factors promote the colonization of collagen 3D scaffolds with human skin cells. J Cell Mol Med. 2020 Sep;24(17):9692-9704. (*equal contribution).
8. Țuțuianu R*, Rosca AM*, Florea G, Prună V, Iacomì DM, Rădulescu LA, Neagu TP, Lascăr I, Titorencu ID. Heterogeneity of human fibroblasts isolated from hypertrophic scar. Rom J Morphol Embryol. 2019; 60(3):793-802 (*equal contribution).
9. Rosca AM, R Tutuianu, ID Titorencu. Mesenchymal stromal cells derived exosomes as tools for chronic wound healing therapy. Rom J Morphol Embryol. 2018;59(3):655-662.
10. Rosca AM, Mitroi DN, Cismasiu V, Badea R, Necula-Petrareanu G, Preda MB, Niculite C, Tutuianu R, Szedlacsek 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.
11. 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 Oct 12;7(10). pii: E314. doi: 10.3390/nano7100314
12. Odent (Grigorescu) G *, AM Rosca*, MB Preda, R Tutuianu, M Simionescu, A Burlacu. 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.

13. Rosca AM, DM Rayia, R Tutuianu. Emerging Role of Stem Cells-Derived Exosomes as Valuable Tools for Cardiovascular Therapy. Current stem cell research & therapy. Curr Stem Cell Res Ther. 2017;12(2):134-138.
14. Micheu MM, Rosca AM, Deleanu OC. Stem/progenitor cells and obstructive sleep apnea syndrome - new insights for clinical applications. World J Stem Cells. 2016 Oct 26;8(10):332-341.
15. Rosca AM, A. Burlacu. Changes in microRNA expression induced by three-dimensional aggregation of mesenchymal stem cells. Annals of the Romanian Society for Cell Biology vol. XX, Issue 1, 2015, pag.57-65.
16. Preda MB, AM Rosca, R Tutuianu, A Burlacu. 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.
17. Odent Grigorescu G, MB Preda, E Radu, AM Rosca, R Tutuianu, DN Mitroi, M Simionescu, A Burlacu. Combinatorial approach for improving the outcome of angiogenic therapy in ischemic tissues. Biomaterials. 2015 Aug;60:72-81.
18. Burlacu A, G Grigorescu, AM Rosca, MB Preda, M Simionescu. Factors Secreted by Mesenchymal Stem Cells and Endothelial Progenitor Cells Have Complementary Effects on Angiogenesis In Vitro. Stem Cells Dev 2013; 22(4):643-53.
19. Rosca AM, C Matei, E Dragan, A Burlacu. Cardiomyocyte apoptosis in ischaemia-reperfusion due to the exogenous oxidants at the time of reperfusion. Cell Biol Int 2012; 36(12):1207-15.
20. Rosca AM and A Burlacu. The effect of 5-azacytidine: Evidence for alteration of the multipotent ability of mesenchymal stem cells. Stem Cells Dev 2011; 1213-1221.
21. Rosca AM and A Burlacu. Characterization of mesenchymal stem cells isolated from mouse bone marrow, Annals of the Romanian Society for Cell Biology vol. XV, Issue 2, 2010, pag.53-61.
22. Rosca AM and A Burlacu. Isolation of a mouse bone marrow population enriched in stem and progenitor cells by centrifugation on Percoll gradient, Biotechnol Appl Biochem 2010; 55(4):199-208.
23. Burlacu A, AM Rosca, H Maniu, I Titorencu, E Dragan, V Jinga, M Simionescu. Promoting effect of 5-azacytidine on the myogenic differentiation of bone marrow stromal cells. Eur J Cell Biol 2008; 87 (3):173-184.
24. Burlacu A, AM Rosca, V Jinga, M. Simionescu. Oxidative stress and TNF α induce endothelial cells death by different mechanisms-Proc Rom Acad, series B, 2004: 3: 197-201.

Book chapters

1. Rosca, AM, Tutuianu R, Titorencu I. Advances in Skin Regeneration and Reconstruction. In Frontiers in Stem Cell and Regenerative Medicine Research, BENTHAM SCIENCE PUBLISHERS LTD 2020, vol 9, Pp. 143-187 (45);

2. Rosca, AM, Tutuianu, R, Ghetu, DM, Titorencu, I. (2023). Mesenchymal Stromal Cells for Wound Healing Therapy: From Expectations to Reality. In: Haider, K.H. (eds) Handbook of Stem Cell Applications. Springer, Singapore. https://doi.org/10.1007/978-981-99-0846-2_53-1.

Invited peer reviewer:

Cytotechnology

Clinical Medical Journals (Omics Publishing Group)

MDPI

Cell transplantation

Scientific Reports

Cell communication and signaling

Memberships: Romanian Society for Cell and Molecular Biology, -International Society of Regenerative Medicine and Surgery