

Institute of Cellular Biology and Pathology 'Nicolae Simionescu' CURRICULUM VITAE

Personal data

Name: Comarița Ioana -Karla Born: January 19th 1996, Suceava, Romania Tel: 0740830258, email: <u>comaritakarla1@yahoo.com/karla.comarita@icbp.ro</u> Address: Bd. Iuliu Maniu, nr 244E, Bucharest, District 6

Education, degrees and diplomas

- **2015 2018** Bachelor's Degree in Biology, Specialization Experimental Biology, Faculty of Biology, University of Bucharest, Romania
- **2015 2018** Psychopedagogical module level I, field of study: Education Science, Faculty of Psychology and Education Sciences, University of Bucharest, Romania
- **2018 2020** Master's Degree in Biomedicine, Faculty of Biology, University of Bucharest, Romania
- **4 2018 2020** Psychopedagogical module level II, field of study: Teacher training with specialization of the discipline, Faculty of Psychology and Educational Sciences, University of Bucharest, Romania
- 4 2020 currently PhD in Cellular and Molecular Biology, Romanian Academy, Bucharest, Romania

Professional experience, former employers

2018 - prezent - Research Assistant, Institute of Cellular Biology and Pathology (ICBP) 'N.Simionescu'.

Member in Scientific Societies:

- ↓ The Romanian Society for Cell Biology (RSCB)

Skills

- Effective communication
- Teamwork
- Organization and planning
- Computer skills: Current operation in Mendeley, EndNote, TotalLab TL120, GraphPad Prism 8, ImageJ, AdobePhotoshop, European Computer Driving Licence (ECDL) diploma
- Hard working

- Creativity
- Responsibility
- Data analysis
- Driving license B

Languages

Romanian (native) English (Independent user)

Technical skills and competences

My studies are focused on the cellular and molecular mechanisms underlying pathophysiological and physiological processes in the cardiovascular system, to define new therapeutic approaches for atherosclerosis regression and prevention of CVD events. The current research interests involve: extracellular vesicles (microvesicles/exosomes) as intracellular delivery strategies for microRNAs and potential therapies for atherosclerotic vascular/cardiopulmonary disease. My work expertise is based on in vivo and in vitro applications as well as molecular and cellular biology techniques.

Used techniques

- Western-Blott technique,
- PCR / RT-qPCR technique,
- Fluorescence Microscopy,
- Biochemical analysis,
- Spectrophotometric and spectrofluorimetric techniques,
- ELISA method,
- Flow cytometry technique,
- Immunohistochemical techniques,
- Electrophysiology techniques myograph on large/small caliber vessels,
- Cell cultures,
- Laser MicroDissection (LMD) System
- Technique of including samples in OCT/paraffin and cryotome/microtome cutting,
- Microsurgical techniques on small animals (mice and hamsters)
- Experimental animal work (Golden Syrian Hamster): collection of biological samples (peripheral blood from the venous retro-orbital plexus, thoracic aorta, carotid arteries, heart, liver, lung, pulmonary artery, bone marrow, subcutaneous adipose tissue), retroorbital / intraperitoneal injection, gavage, bronchoalveolar lavage)
- Experimental animal work (C57/BL/ ApoE-/- mice): collection of biological samples (venous puncture blood, thoracic aorta, heart, spleen, subcutaneous adipose tissue, bone marrow), intraperitoneal/subcutaneous injection, submandibular blood collection.

Courses and seminars

- Summer School "Intelligent nanoparticles for targeted delivery of bioactive compounds: preparation, characterization and applications" May 23-24, 2019, ICBP "Nicolae Simionescu", Bucharest.
- ZEISS Symposium & Workshop in Bucharest, October, 2019, ICBP "Nicolae Simionescu", Bucharest.
- Workshop "Cell day" April 17, 2019, IBPC "Nicolae Simionescu", Bucharest, Romania.
- DIABETER online workshop "A new therapeutic tool in autoimmune diabetes: Mesenchymal Stromal Cell", November 20, 2020, IBPC "Nicolae Simionescu", Bucharest, Romania.
- THERAVALDIS online workshop: "Diabetes in cardiovascular diseases; pathogenic mechanisms and targeted therapies", November 27, IBPC "Nicolae Simionescu", Bucharest, Romania.
- INTERA online workshop: "Recent advances in the field of obtaining nanovectors for gene transfection", April 22, 2021, IBPC "Nicolae Simionescu", Bucharest, Romania.
- INTERA-1 Summer School "Encapsulation of cells and drugs: materials, procedures and applications", 13-14 May 2021, IBPC "Nicolae Simionescu", Bucharest, Romania.

Articles published in ISI indexed journals with impact factor

- Nicoleta Alexandru , Alina Constantin, Miruna Nemecz, Ioana Karla Comariţa, Alexandra Vîlcu , Anastasia Procopciuc, Gabriela Tanko, Adriana Georgescu. Hypertension Associated With Hyperlipidemia Induced Different MicroRNA Expression Profiles in Plasma, Platelets, and Platelet-Derived Microvesicles; Effects of Endothelial Progenitor Cell Therapy, Frontiers in Medicine, 2019, doi: 10.3389/fmed.2019.00280 - impact factor 3.8
- 2. Nicoleta Alexandru, Anastasia Procopciuc, Alexandra Vîlcu, Ioana Karla Comariţa, Elisabeta Bădilă, Adriana Georgescu. Extracellular vesicles—incorporated microRNA signature as biomarker and diagnosis of prediabetes state and its complications. *Rev Endocr Metab Disord* (2021), doi.org/10.1007/s11154-021-09664-y impact factor 6.19
- Comarița Ioana-Karla, Vîlcu Alexandra, Constantin Alina, Procopciuc Anastasia, Safciuc Florentina, Alexandru Nicoleta, Dragan Emanuel, Nemecz Miruna, Filippi Alexandu, Chițoiu Leona, Gherghiceanu Mihaela, Georgescu Adriana. Therapeutic Potential of Stem Cell-Derived Extracellular Vesicles on Atherosclerosis-Induced Vascular Dysfunction and Its Key Molecular Players. Front Cell Dev Biol., 2022, 10:817180. doi: 10.3389/fcell.2022.817180 impact factor 6.68
- 4. Constantin A, Comarița IK, Alexandru N, Filippi A, Bojin F, Gherghiceanu M, Vîlcu A, Nemecz M, Niculescu LS, Păunescu V, Georgescu A. Stem cell-derived

extracellular vesicles reduce the expression of molecules involved in cardiac hypertrophy-In a model of human-induced pluripotent stem cell-derived cardiomyocytes. *Front Pharmacol*, 2022, doi: 10.3389/fphar.2022.1003684 - impact factor 5.98

- 5. Comarița IK, Tanko G, Anghelache IL, Georgescu A. The siRNA-mediated knockdown of AP-1 restores the function of the pulmonary artery and the right ventricle by reducing perivascular and interstitial fibrosis and key molecular players in cardiopulmonary disease. J Transl Med., 2024, doi: 10.1186/s12967-024-04933-1-impact factor 8.44
- 6. Nemecz, M., Stefan, D.S., Comariţa, I.K. et al. Microvesicle-associated and circulating microRNAs in diabetic dyslipidemia: miR-218, miR-132, miR-143, and miR-21, miR-122, miR-155 have biomarker potential. Cardiovasc Diabetol 22, 260 (2023). <u>https://doi.org/10.1186/s12933-023-01988-0</u> impact factor 9.3

Abstracts in ISI indexed journals

- N. Alexandru, A. Constantin, M. Nemecz, I. K. Comarița, A. Vîlcu, A. Procopciuc, G. Tanko, A. Georgescu. Effects of endothelial progenitor cell therapy on microRNA expression profiles in plasma, platelets and platelet-derived microvesicles in atherosclerosis. Poster 401 /#1275 at the '88th European Atherosclerosis Society Virtual Congress' (EAS 2020), October 4th-7th, 2020, Geneva, Switzerland, Abstract in Atherosclerosis, Volume 315, Page e136, Publication date: 2020/12/1, DOI: https://doi.org/10.1016/j.atherosclerosis.2020.10.420
- I.K. Comarița, A. Vîlcu, A. Procopciuc, F. Safciuc, A. Constantin, M. Nemecz, G. Tanko, N. Alexandru, A. Georgescu. The hypertensive-hyperlipidemic hamster, an experimental animal model of atherosclerosis to investigate the vascular dysfunction and cardiac hypertrophy. Poster 347 / #1345 at the '88th European Atherosclerosis Society Virtual Congress' (EAS 2020), October 4th-7th, 2020, Geneva, Switzerland. Abstract in Atherosclerosis, Volume 315, Page e120, Publication date: 2020/12/1, DOI: https://doi.org/10.1016/j.atherosclerosis.2020.10.367
- 3. <u>Ioana Karla Comarița</u>, Alina Constantin, Alexandra Vîlcu, Anastasia Procopciuc, Florentina Safciuc, Nicoleta Alexandru, Emanuel Dragan, Miruna Nemecz, Alexandru Filippi, Adriana Georgescu. Inflammation-induced arterial dysfunction in atherosclerosis; the modulating action of mesenchymal stem cell-derived extracellular vesicles. 'Frontiers in CardioVascular Biomedicine,' 29th April 1st May 2022, Budapest Hungary. Abstract No. 70108 in Cardiovascular Research 118 (Supplement_1), cvac066. 187, 2022.
- 4. Miruna Nemecz, Diana Simona Stefan, Alina Constantin, Anastasia Procopciuc, <u>Ioana Karla Comarița</u>, Gabriela Tanko, Adriana Georgescu. MicroRNAs in circulating microvesicles and plasma as biomarkers that complement the clinical diagnosis of diabetic dyslipidemia and its complications. 'Frontiers in CardioVascular Biomedicine', 29 April -

1 May 2022, Budapest – Hungary. Abstract No. 70246 in Cardiovascular Research 118 (Supplement_1), cvac066. 224, 2022.

- 5. Comarița, K.I et al. Vascular wall damage in atherosclerotic cardiovascular disease; Positive effect of extracellular vesicle-based nanotherapeutics on endothelial dysfunction and its key molecular players. Poster 042/#1044 at the '90th European Atherosclerosis Society Hybrid Congress' (EAS 2022), May 22th -25th, 2022, Milano, Italy, Abstract in *Atherosclerosis*, Volume 355, pg. 29, Publication date: August 2022, DOI: <u>https://doi.org/10.1016/j.atherosclerosis.2022.06.315</u>
- 6. I K Comarita, I L Anghelache, G Tanko, A Georgescu, The effects of siRNA-mediated knockdown of AP-1 on pulmonary arterial and right ventricular dysfunction associated with cardiac and pulmonary fibrosis in cardiopulmonary disease, Cardiovascular Research, Volume 120, Issue Supplement_1, May 2024, cvae088.205, https://doi.org/10.1093/cvr/cvae088.205

The papers (posters) presented at international meetings

- 1. Ioana Karla Comarița, Alina Constantin, Nicoleta Alexandru, Alexandru Filippi, Miruna Nemecz, Alexandra Vilcu, Anastasia Procopciuc, Gabriela Tanko, Maya Simionescu, Adriana Georgescu. Development and characterization of an in vitro experimental model of hypertrophic cardiomyocytes of pathological type. The 40th Anniversary of the Institute of Cellular Biology and Pathology "Nicolae Simionescu", September 19th-20th, 2019, Bucharest, Romania
- Anastasia Procopciuc, Ioana Karla Comarița, Alexandra Vilcu, Alexandru Filippi, Nicoleta Alexandru, Miruna Nemcz, Gabriela Tanko, Alina Constantin, Adriana Georgescu. Isolation and characterization of mesenchymal stem cells from subcutaneous adipose tissue and bone marrow from the hamster. The 40th Anniversary of the Institute of Cellular Biology and Pathology "Nicolae Simionescu", September 19th-20th, 2019, Bucharest, Romania
- 3. Alexandra Vilcu, Ioana Karla Comarița, Anastasia Procopciuc, Florentina Safciuc, Nicoleta Alexandru, Alexandru Filippi, Alina Constantin, Miruna Nemcz, Gabriela Tanko, Maya Simionescu, Adriana Georgescu. Study of vascular dysfunction and cardiac hypertrophy in an experimental animal model of atherosclerosis, The 40th Anniversary of the Institute of Cellular Biology and Pathology "Nicolae Simionescu", September 19th-20th, 2019, Bucharest, Romania
- 4. Alina Constantin, Nicoleta Alexandru, Florentina Safciuc, Ioana Karla Comarița, Alexandra Vilcu, Anastasia Procopciuc, Gabriela Tanko, Adriana Georgescu. Microvesicles collected from healthy hamsters and administered to hypertensive-hyperlipidemic hamsters mitigate the effects of diet keeping the levels of circulating EPCS

and inflammatory biomarkers close to normal values, The 37th Annual Scientific Session of the Romanian Society of Cell Biology, June 20th-23th, 2019, Book of Abstracts, page 39

- 5. Miruna Nemecz, Alina Constantin, Madalina Dumitrescu, Anastasia Procopciuc, Ioana Karla Comariţa, Alexandra Vilcu, Gabriela Tanko, Adriana Georgescu. Oleic acid protects human pancreatic beta cells against palmitic acid-induced lipotoxicity, The 37th Annual Scientific Session of the Romanian Society of Cell Biology, June 20th-23th, 2019, Book of Abstracts, page 125
- 6. Ioana Karla Comarita, Alexandra Vilcu, Anastasia Procopciuc, Nicoleta Alexandru, Alina Constantin, Florentina Safciuc, Alexandru Filippi, Miruna Nemecz, Gabriela Tanko, Adriana Georgescu. Exploration of Vascular Dysfunction in an Animal Model of Atherosclerotic Cardiovascular Disease, National Online Conference of Biophysics, 14th-16th June 2020, Braşov, România, Book of Abstracts, pg. 99.
- 7. Ioana Karla Comarița, Alina Constantin, Alexandra Vîlcu, Anastasia Procopciuc, Florentina Safciuc, Nicoleta Alexandru, Emanuel Dragan, Miruna Nemecz, Alexandru Filippi, Adriana Georgescu. Inflammation-induced arterial dysfunction in atherosclerosis; the modulating action of mesenchymal stem cell-derived extracellular vesicles. 'Frontiers in CardioVascular Biomedicine,' 29th April 1st May 2022, Budapest Hungary.
- Miruna Nemecz, Diana Simona Stefan, Alina Constantin, Anastasia Procopciuc, Ioana Karla Comarița, Gabriela Tanko, Adriana Georgescu. MicroRNAs in circulating microvesicles and plasma as biomarkers that complement the clinical diagnosis of diabetic dyslipidemia and its complications. 'Frontiers in CardioVascular Biomedicine', 29 April 1 May 2022, Budapest Hungary.
- 9. Miruna Nemecz, Diana Simona Stefan, Gabriela Tanko, Alina Constantin, Ioana Karla Comarița, Adriana Georgescu. Microvesicle-related and circulating microRNAs as potential biomarkers of diabetic dyslipidemia, The anniversary symposium of the Institute of Cellular Biology and Pathology "Nicolae Simionescu" "43 years of sustaining an excellence-promoting environment for cardiovascular research in Romania", December 8th-9th, 2022, Bucharest, Romania.
- 10. Ioana Karla Comarița, Alina Constantin, Alexandra Vîlcu, Anastasia Procopciuc, Florentina Safciuc, Nicoleta Alexandru, Emanuel Dragan, Miruna Nemecz, Alexandru Filippi, Adriana Georgescu. Vascular wall damage in atherosclerotic cardiovascular disease; Positive effect of extracellular vesicle-based nanotherapeutics on endothelial dysfunction and its key molecular players. Poster 042/#1044 at the '90th European Atherosclerosis Society Hybrid Congress' (EAS 2022), May 22th -25th, 2022, Milano, Italy
- 11. Ioana Karla Comarița, Alexandra Vîlcu, Alina Constantin, Florentina Safciuc, Nicoleta Alexandru, Miruna Nemecz, Alexandru Filippi, Adriana Georgescu. Therapeutic potential of stem cell-derived extracellular vesicles on atherosclerosis-induced vascular dysfunction

and its key molecular players, The anniversary symposium of the Institute of Cellular Biology and Pathology "Nicolae Simionescu" "43 years of sustaining an excellence-promoting environment for cardiovascular research in Romania", December 8th-9th, 2022, Bucharest, Romania

- 12. Alina Constantin, Ioana Karla Comarița, Nicoleta Alexandru, Alexandru Filippi, Alexandra Vîlcu, Miruna Nemecz, Adriana Georgescu. Stem cell derived extracellular vesicles reduce the expression of molecules involved in cardiac hypertrophy in a model of human-induced pluripotent stem cell-derived cardiomyocytes, The anniversary symposium of the Institute of Cellular Biology and Pathology "Nicolae Simionescu" "43 years of sustaining an excellence-promoting environment for cardiovascular research in Romania", December 8th-9th, 2022, Bucharest, Romania
- 13. Ioana Karla Comarița, Alina Constantin, Alexandra Vîlcu, Anastasia Procopciuc, Florentina Safciuc, Nicoleta Alexandru, Miruna Nemecz, Adriana Georgescu. Arterial dysfunction in an animal model of atherosclerosis; the beneficial effect of mesenchymal stem cell-derived extracellular vesicles in reducing inflammation. 1st Meeting of the AtheroNET COST Action CA21153, 22th-24th March 2023, Bucharest, Romania.
- 14. <u>I K Comarița</u>, I L Anghelache, G Tanko, A Georgescu, The effects of siRNA-mediated knockdown of AP-1 on pulmonary arterial and right ventricular dysfunction associated with cardiac and pulmonary fibrosis in cardiopulmonary disease, Frontiers in CardioVascular Biomedicine (FCVB), 12-14 april, 2024, Amsterdam, The Netherlands.
- 15. Ioana Karla Comarița, Gabriela Tanko, Laurențiu Anghelache, Alina Constantin, Miruna Nemecz, Nicoleta Alexandru-Moise, Adriana Georgescu. Tracking The Effect Of siRNA AP-1 As A Potential Therapeutic Strategy In Reversing The Pulmonary Arterial And Right Ventricular Dysfunction Associated With Cardiac And Pulmonary Fibrosis In A Model Of Cardiopulmonary Disease. The 44th Annual Scientific Symposium Of The Institute Of Cellular Biology And Pathology "Nicolae Simionescu" ICBP-NS Held Jointly With 40th Annual Scientific Session Of The Romanian Society For Cell Biology RSCB , 16-17 November 2023, Bucharest, Romania.

Oral presentations at international conferences

 38th Annual Scientific Session of The Romanian Society for Cell Biology, Oral presentation: Therapeutic Potential Of Stem Cell-Derived Extracellular Vesicles On Atherosclerotic-Induced Vascular Dysfunction, 4-6 November 2021, Bucharest, Romania.

Collaborator on the following national projects

1. 2018-2020: Grant of the Romanian National Authority for Scientific Research and Innovation, CNCS-UEFISCDI, - Complex Projects Completed in CDI Consortia (PCCDI) / under Program 1. Developing national CD, Subprogram 1.2. Institutional performance - "Institutional Development Project". Project no: PN-III-P1-1.2-PCCDI-2017-0527/ Contract no: 83PCCDI/2018, Project Title: Development of BIOnanotechnologies based on Extracellular Vesicles, applicable in the early diagnosis, prognosis and therapy of atherosclerotic disease. Acronym BIOVEA. Complex project director: Dr. CSI Adriana Georgescu.

- 2. 2020-2022: Grant of the Romanian National Authority for Scientific Research and Innovation, CNCS –UEFISCDI, Program Human Resources/ Project number PN-III-P1-1.1-TE-2019-0811: Immune modulation of T-cells by platelets and platelet-derived microvesicles in experimental induced atherosclerosis; the role of microRNA-142-3p / Modularea imuna a celulelor T de catre plachete si microvezicule plachetare in ateroscleroza indusa experimental; rolul microRNA-142-3p) Acronym IMPLEXIA; Grant no: 97 /04.09.2020; Project leader: Dr. CSII Alexandru-Moise Nicoleta.
- 3. 2023-2026: Grant of the Ministry of Research, Innovation and Digitization of Romania - Romania's National Recovery and Resilience Plan. Component C9. SUPPORT FOR THE PRIVATE SECTOR, RESEARCH, DEVELOPMENT AND INNOVATION - "I8. Development of a program to attract highly specialised human resources from abroad in research, development and innovation activities" (PNRR /2022/C9/MCID/I8)- Project Code 93. Project title: New nanotherapeutic strategies for cardiac fibrosis targeting the mechanisms underlying the fibroblast to myofibroblast transition; Project Acronym: HeartCure; Project Manager: Dr. ROSTYSLAV BILYY

Awards

National Prizes

- 'Scientific Achievements Original Article' Award offered by Ministry for Education and Research and Uefiscdi, Subprogram 1.1 - Human Resources - Awarding research results - Articles, Competition 2020, Evaluation results List 1_partial 2- Award applications submitted for articles published in 2019_09.11.2020, – November 2020, for the paper 'Hypertension associated with hyperlipidemia induced different microRNA expression profiles in plasma, platelets, and platelet-derived microvesicles; effects of endothelial progenitor cell therapy' in 'Frontiers in Medicine', 6 (Article 280):1-10, 2019. (N. Alexandru, A. Constantin, M. Nemecz, I.K. Comarita, A. Vîlcu, A. Procopciuc, G. Tanko and A. Georgescu).
- 'Scientific Achievements Original Article' Award offered by the Ministry of Education and Research and Uefiscdi: Subprogram 1.1 - Human Resources - Research results award - Articles, Competition 2021. Evaluation results List 2- First applications submitted for articles published in the year 2021_18.11.2021, November 2021 for the article: " Extracellular vesicles—incorporated microRNA signature as biomarker and diagnosis of prediabetes state and its complications. Rev Endocr Metab Disord, 1-24, 2021 Jun 18. doi: 10.1007/s11154-021-09664-y". (Nicoleta Alexandru, Anastasia Procopciuc, Alexandra Vîlcu, Ioana Karla Comarița, Elisabeta Bedilə, Adriana Georgescu).

- 3. 'Scientific Achievements Original Article' Award offered by the Ministry of Education and Research and Uefiscdi: Prize for research results - Web of Science Articles - 2023, within PN IV, Program 5.2 - Human Resources, Subprogram 5.2.3 - Support, List 1 -First applications submitted for published articles in 2021 and 2022 - 13.03.2023 for the article: "Therapeutic Potential of Stem Cell-Derived Extracellular Vesicles on Atherosclerosis-Induced Vascular Dysfunction and Its Key Molecular Players" in "Frontiers in Cell Developmental Biology" (Comarița I.K, Vîlcu A., Constantin A., Procopciuc A., Safciuc F., Alexandru N., Dragan E., Nemecz M., Filippi A., Chiţoiu L., Gherghiceanu M., Georgescu A).
- 4. 'Scientific Achievements Original Article' Award offered by the Ministry of Education and Research and Uefiscdi: Prize for research results - Web of Science Articles - 2023, within PN IV, Program 5.2 - Human Resources, Subprogram 5.2.3 - Support, List 1 -First applications submitted for published articles in 2021 and 2022 - 13.03.2023 for the article: "Stem cell-derived extracellular vesicles reduce the expression of molecules involved in cardiac hypertrophy-In a model of human-induced pluripotent stem cellderived cardiomyocytes" in Frontiers in Pharmacology (Constantin A , Comarița IK, Alexandru N, Filippi A, Bojin F, Gherghiceanu M, Vîlcu A, Nemecz M, Niculescu LS, Păunescu V, Georgescu A.).
- 5. First Prize For the best Poster: Tracking the effect of siRNA AP-1 as a potential therapeutic strategy in reversing the pulmonary arterial and right ventricular dysfunction associated with cardiac and pulmonary fibrosis in a model of cardiopulmonary disease at The 44th Annual Scientific Symposium Of The Institute Of Cellular Biology And Pathology "Nicolae Simionescu" ICBP-NS Held Jointly With 40th Annual Scientific Session Of The Romanian Society For Cell Biology RSCB, 16-17 November 2023, Bucharest, Romania.

Patent

Process for obtaining modified extracellular vesicles. Patent Application, OSIM No. A / 00017 of 20.01.2021. Authors: Alexandru Filippi, Nicoleta Alexandru-Moise, Alina Constantin, Karla Comarița, Alexandra Vîlcu, Anastasia Procopciuc, Adriana Georgescu