

CV

Aikaterini Berdiaki MSc PhD

Current Position

2023-present: Assistant Professor of Histology-Embryology, Medical School, University of Crete

Research:

- Age-related changes in endometrial cell function and differential gene expression that affect receptivity of human endometrium.
- Investigation of the role of hyaluronan and hyaluronan receptor RHAMM in fibrosarcoma cell functions. In addition, the role of proteoglycans, other glycosaminoglycans and growth factors are studied in several cancer cell lines: fibrosarcoma, osteosarcoma, melanoma, breast and colon; importance in tumor.
- Nanoparticles and cell survival

Education

1996-1999: **BSc in Molecular and Cellular Biology, University of Kent at Canterbury: Graduated with Upper Second Class 2(i) Honours.**

1999-2000: **MSc Course in Clinical Biochemistry with Molecular Biology, University of Surrey**

2001- 2006: **PhD Institute of reproductive and developmental biology, Imperial College.** PhD studentship founded by Wellbeing. Title: 'Peroxisome Proliferator-activated receptor γ action in the human

Previous Positions

2021-2023: Scientific staff and trainee in Embryological techniques in human gametes at the IVF clinic IRISMED in Heraklion Crete, Greece.

2018-2023: Postdoc University of Crete, School of Medicine, Laboratory of Human Reproduction.

2006-2023: Postdoc University of Crete, School of Medicine, Laboratory of Histology-Embryology.

2014-2015: Postdoc University of Crete, School of Medicine, Laboratory of Pharmacology Research: funded by the European Union and the Greek government (ΑΡΙΣΤΕΙΑ) titled 'Targeting RGS9-2 in the brain in order to fight for addiction and chronic pain'.

2013-2014: Postdoc University of Crete, School of Medicine, Laboratory of Histology-Embryology in collaboration with the University of Patras, Department of Biochemistry. Research: funded by the European Union and the Greek government (ΘΑΛΗΣ) titled 'The role of intracellular interaction of ER α/β with EGF-R and IGF-R in the growth and progression of breast cancer'.

2014-2015: Postdoc University of Crete, School of Medicine, Laboratory of Pharmacology Research: funded by the European Union and the Greek government (ΑΡΙΣΤΕΙΑ) titled 'Targeting RGS9-2 in the brain in order to fight for addiction and chronic pain'.

2005-2007: Postdoc University of Crete, School of Medicine, Laboratory of Histology-Embryology funded by the European Union and the Greek government (ΠΥΘΑΓΟΡΑΣ II) 'Investigation of molecules important in HDL/LDL homeostasis and in the differentiation of macrophages to foam cells, as prognostic markers in atherosclerosis'.

Teaching experience

2007-present: teaching position at the University of Crete, School of Medicine, Laboratory of Histology-Embryology. Teaching medical students the subjects of **Embryology and Histology**. Assisted in the supervision of 13 PhD students in the field of extracellular matrix and cancer.

2021-present: Gynecology: a) Research in Human infertility b) Male fertility testing.

2022- International Society for In Vitro fertilization (ISIVF) **Webminar, SIG Endometrium and RIF, The role of platelet-rich plasma in IVF/RIF FEB 5 SATURDAY. Title: Technical aspect of PRP preparation**

2017 February- September: teaching position at the University of Crete, School of Medicine, Department of Morphology. Teaching to 3rd year medical students the subject of Cytology. Funded by the Greek government.

2007-2013: Teaching seminars for graduate students, founded by the European Union and the Greek government at the University of Crete, School of Medicine. The program was titled 'Diagnostics and therapeutics aspects of the 21st century'.

2005-2006: Institute of reproductive and developmental biology, Imperial College. Supervision of two MSc students in the subject of Developmental Biology.

Publications

Presented data in 41 International conferences and 16 National conferences.

Published 54 scientific publications in international peer reviewed journals.

1. Tzenaki N, Xenou L, Goulielmaki E, Tsapara A, Voudouri I, Antoniou A, et al. A combined opposite targeting of p110delta PI3K and RhoA abrogates skin cancer. *Commun Biol.* 2024;7(1):26.
2. Berdiaki A, Vergadi E, Makrygiannakis F, Vrekoussis T, Makrygiannakis A. Title: Repeated implantation failure is associated with increased Th17/Treg cell ratio, during the secretory phase of the human endometrium. *J Reprod Immunol.* 2024;161:104170.
3. Tsatsakis A, Oikonomopoulou T, Nikolouzakakis TK, Vakonaki E, Tzatzarakis M, Flamourakis M, et al. Role of telomere length in human carcinogenesis (Review). *Int J Oncol.* 2023;63(1).
4. Kakridonis F, Pneumatikos SG, Vakonaki E, Berdiaki A, Tzatzarakis MN, Fragkiadaki P, et al. Telomere length as a predictive biomarker in osteoporosis (Review). *Biomed Rep.* 2023;19(5):87.
5. Berdiaki A, Thrapsanioti LN, Giatagana EM, N KK, R CS, G NT, et al. RHAMM/hyaluronan inhibit beta-catenin degradation, enhance downstream signaling, and facilitate fibrosarcoma cell growth. *Mol Biol Rep.* 2023;50(11):8937-47.
6. Berdiaki A, Neagu M, Spyridaki I, Kuskov A, Perez S, Nikitovic D. Hyaluronan and Reactive Oxygen Species Signaling-Novels Cues from the Matrix? *Antioxidants (Basel).* 2023;12(4).
7. Berdiaki A, Giatagana EM, Tzanakakis G, Nikitovic D. The Landscape of Small Leucine-Rich Proteoglycan Impact on Cancer Pathogenesis with a Focus on Biglycan and Lumican. *Cancers (Basel).* 2023;15(14).
8. Kuskov A, Nikitovic D, Berdiaki A, Shtilman M, Tsatsakis A. Amphiphilic Poly-N-vinylpyrrolidone Nanoparticles as Carriers for Nonsteroidal, Anti-Inflammatory Drugs: Pharmacokinetic, Anti-Inflammatory, and Ulcerogenic Activity Study. *Pharmaceutics.* 2022;14(5).
9. Giatagana EM, Berdiaki A, Gaardlos M, Tsatsakis AM, Samsonov SA, Nikitovic D. Rapamycin-induced autophagy in osteosarcoma cells is mediated via the biglycan/Wnt/beta-catenin signaling axis. *Am J Physiol Cell Physiol.* 2022;323(6):C1740-C56.

10. Giatagana EM, Berdiaki A, Gaardlos M, Samsonov SA, Tzanakakis GN, Nikitovic D. Biglycan Interacts with Type I Insulin-like Receptor (IGF-IR) Signaling Pathway to Regulate Osteosarcoma Cell Growth and Response to Chemotherapy. *Cancers (Basel)*. 2022;14(5).
11. Berdiaki A, Zafeiropoulou S, Makrygiannakis F, Drakopoulos P, Gurgan T, Makrygiannakis A. Ageing, a modulator of human endometrial stromal cell proliferation and decidualization: a role for implantation? *Reprod Biomed Online*. 2022;45(2):202-10.
12. Berdiaki A, Kuskov AN, Kulikov PP, Thrapsanioti LN, Giatagana EM, Stivaktakis P, et al. In Vitro Assessment of Poly-N-Vinylpyrrolidone/Acrylic Acid Nanoparticles Biocompatibility in a Microvascular Endothelium Model. *Int J Mol Sci*. 2022;23(20).
13. Tzanakakis GN, Giatagana EM, Berdiaki A, Spyridaki I, Hida K, Neagu M, et al. The Role of IGF/IGF-IR-Signaling and Extracellular Matrix Effectors in Bone Sarcoma Pathogenesis. *Cancers (Basel)*. 2021;13(10).
14. Nikolouzakakis TK, Vakonaki E, Stivaktakis PD, Alegakis A, Berdiaki A, Razos N, et al. Novel Prognostic Biomarkers in Metastatic and Locally Advanced Colorectal Cancer: Micronuclei Frequency and Telomerase Activity in Peripheral Blood Lymphocytes. *Front Oncol*. 2021;11:683605.
15. Giatagana EM, Berdiaki A, Tsatsakis A, Tzanakakis GN, Nikitovic D. Lumican in Carcinogenesis-Revisited. *Biomolecules*. 2021;11(9).
16. Berdiaki A, Neagu M, Giatagana EM, Kuskov A, Tsatsakis AM, Tzanakakis GN, et al. Glycosaminoglycans: Carriers and Targets for Tailored Anti-Cancer Therapy. *Biomolecules*. 2021;11(3).
17. Tzanakakis G, Giatagana EM, Kuskov A, Berdiaki A, Tsatsakis AM, Neagu M, et al. Proteoglycans in the Pathogenesis of Hormone-Dependent Cancers: Mediators and Effectors. *Cancers (Basel)*. 2020;12(9).
18. Papoutsidakis A, Giatagana EM, Berdiaki A, Spyridaki I, Spandidos DA, Tsatsakis A, et al. Lumican mediates HTB94 chondrosarcoma cell growth via an IGF-IR/Erk1/2 axis. *Int J Oncol*. 2020;57(3):791-803.
19. Berdiaki A, Perisynaki E, Stratidakis A, Kulikov PP, Kuskov AN, Stivaktakis P, et al. Assessment of Amphiphilic Poly-N-vinylpyrrolidone Nanoparticles' Biocompatibility with Endothelial Cells in Vitro and Delivery of an Anti-Inflammatory Drug. *Mol Pharm*. 2020;17(11):4212-25.
20. Tsatsakis A, Stratidakis AK, Goryachaya AV, Tzatzarakis MN, Stivaktakis PD, Docea AO, et al. In vitro blood compatibility and in vitro cytotoxicity of amphiphilic poly-N-vinylpyrrolidone nanoparticles. *Food Chem Toxicol*. 2019;127:42-52.
21. Kavasi RM, Berdiaki A, Spyridaki I, Papoutsidakis A, Corsini E, Tsatsakis A, et al. Contact allergen (PPD and DNCB)-induced keratinocyte sensitization is partly mediated through a low molecular weight hyaluronan (LMWHA)/TLR4/NF-kappaB signaling axis. *Toxicol Appl Pharmacol*. 2019;377:114632.
22. Tzanakakis G, Kavasi RM, Voudouri K, Berdiaki A, Spyridaki I, Tsatsakis A, et al. Role of the extracellular matrix in cancer-associated epithelial to mesenchymal transition phenomenon. *Dev Dyn*. 2018;247(3):368-81.
23. Nikitovic D, Berdiaki A, Spyridaki I, Krasanakis T, Tsatsakis A, Tzanakakis GN. Proteoglycans-Biomarkers and Targets in Cancer Therapy. *Front Endocrinol (Lausanne)*. 2018;9:69.
24. Aggelidakis J, Berdiaki A, Nikitovic D, Papoutsidakis A, Papachristou DJ, Tsatsakis AM, et al. Biglycan Regulates MG63 Osteosarcoma Cell Growth Through a LPR6/beta-Catenin/IGFR-IR Signaling Axis. *Front Oncol*. 2018;8:470.
25. Mytilinaiou M, Nikitovic D, Berdiaki A, Papoutsidakis A, Papachristou DJ, Tsatsakis A, et al. IGF-I regulates HT1080 fibrosarcoma cell migration through a syndecan-2/Erk/ezrin signaling axis. *Exp Cell Res*. 2017;361(1):9-18.

26. Mytilinaiou M, Nikitovic D, Berdiaki A, Kostouras A, Papoutsidakis A, Tsatsakis AM, et al. Emerging roles of syndecan 2 in epithelial and mesenchymal cancer progression. *IUBMB Life*. 2017;69(11):824-33.
27. Kavasi RM, Berdiaki A, Spyridaki I, Corsini E, Tsatsakis A, Tzanakakis G, et al. HA metabolism in skin homeostasis and inflammatory disease. *Food Chem Toxicol*. 2017;101:128-38.
28. Voudouri K, Nikitovic D, Berdiaki A, Tsiaoussis J, Kletsas D, Karamanos NK, et al. Data on the putative role of p53 in breast cancer cell adhesion: Technical information for adhesion assay. *Data Brief*. 2016;9:568-72.
29. Voudouri K, Nikitovic D, Berdiaki A, Papachristou DJ, Tsiaoussis J, Spandidos DA, et al. Heparin regulates B6FS cell motility through a FAK/actin cytoskeleton axis. *Oncol Rep*. 2016;36(5):2471-80.
30. Voudouri K, Nikitovic D, Berdiaki A, Kletsas D, Karamanos NK, Tzanakakis GN. IGF-I/EGF and E2 signaling crosstalk through IGF-IR conduit point affects breast cancer cell adhesion. *Matrix Biol*. 2016;56:95-113.
31. Nikitovic D, Kouvidi K, Kavasi RM, Berdiaki A, Tzanakakis GN. Hyaluronan/Hyaladherins - a Promising Axis for Targeted Drug Delivery in Cancer. *Curr Drug Deliv*. 2016;13(4):500-11.
32. Nikitovic D, Kavasi RM, Berdiaki A, Papachristou DJ, Tsiaoussis J, Spandidos DA, et al. Parathyroid hormone/parathyroid hormone-related peptide regulate osteosarcoma cell functions: Focus on the extracellular matrix (Review). *Oncol Rep*. 2016;36(4):1787-92.
33. Kouvidi K, Berdiaki A, Tzardi M, Karousou E, Passi A, Nikitovic D, et al. Receptor for hyaluronic acid- mediated motility (RHAMM) regulates HT1080 fibrosarcoma cell proliferation via a beta-catenin/c-myc signaling axis. *Biochim Biophys Acta*. 2016;1860(4):814-24.
34. Voudouri K, Berdiaki A, Tzardi M, Tzanakakis GN, Nikitovic D. Insulin-like growth factor and epidermal growth factor signaling in breast cancer cell growth: focus on endocrine resistant disease. *Anal Cell Pathol (Amst)*. 2015;2015:975495.
35. Nikitovic D, Tzardi M, Berdiaki A, Tsatsakis A, Tzanakakis GN. Cancer microenvironment and inflammation: role of hyaluronan. *Front Immunol*. 2015;6:169.
36. Nikitovic D, Berdiaki A, Galbiati V, Kavasi RM, Papale A, Tsatsakis A, et al. Hyaluronan regulates chemical allergen-induced IL-18 production in human keratinocytes. *Toxicol Lett*. 2015;232(1):89-97.
37. Nikitovic D, Mytilinaiou M, Berdiaki A, Karamanos NK, Tzanakakis GN. Heparan sulfate proteoglycans and heparin regulate melanoma cell functions. *Biochim Biophys Acta*. 2014;1840(8):2471-81.
38. Nikitovic D, Kouvidi K, Voudouri K, Berdiaki A, Karousou E, Passi A, et al. The motile breast cancer phenotype roles of proteoglycans/glycosaminoglycans. *Biomed Res Int*. 2014;2014:124321.
39. Kouvidi K, Nikitovic D, Berdiaki A, Tzanakakis GN. Hyaluronan/RHAMM interactions in mesenchymal tumor pathogenesis: role of growth factors. *Adv Cancer Res*. 2014;123:319-49.
40. Nikitovic D, Berdiaki A, Banos A, Tsatsakis A, Karamanos NK, Tzanakakis GN. Could growth factor-mediated extracellular matrix deposition and degradation offer the ground for directed pharmacological targeting in fibrosarcoma? *Curr Med Chem*. 2013;20(23):2868-80.
41. Mytilinaiou M, Bano A, Nikitovic D, Berdiaki A, Voudouri K, Kalogeraki A, et al. Syndecan-2 is a key regulator of transforming growth factor beta 2/Smad2-mediated adhesion in fibrosarcoma cells. *IUBMB Life*. 2013;65(2):134-43.
42. Nikitovic D, Chalkiadaki G, Berdiaki A, Aggelidakis J, Katonis P, Karamanos NK, et al. Lumican regulates osteosarcoma cell adhesion by modulating TGFbeta2 activity. *Int J Biochem Cell Biol*. 2011;43(6):928-35.

43. Kouvidi K, Berdiaki A, Nikitovic D, Katonis P, Afratis N, Hascall VC, et al. Role of receptor for hyaluronic acid-mediated motility (RHAMM) in low molecular weight hyaluronan (LMWHA)-mediated fibrosarcoma cell adhesion. *J Biol Chem.* 2011;286(44):38509-20.
44. Datsis GA, Berdiaki A, Nikitovic D, Mytilineou M, Katonis P, Karamanos NK, et al. Parathyroid hormone affects the fibroblast growth factor-proteoglycan signaling axis to regulate osteosarcoma cell migration. *FEBS J.* 2011;278(19):3782-92.
45. Chalkiadaki G, Nikitovic D, Katonis P, Berdiaki A, Tsatsakis A, Kotsikogianni I, et al. Low molecular weight heparin inhibits melanoma cell adhesion and migration through a PKCa/JNK signaling pathway inducing actin cytoskeleton changes. *Cancer Lett.* 2011;312(2):235-44.
46. Chalkiadaki G, Nikitovic D, Berdiaki A, Katonis P, Karamanos NK, Tzanakakis GN. Heparin plays a key regulatory role via a p53/FAK-dependent signaling in melanoma cell adhesion and migration. *IUBMB Life.* 2011;63(2):109-19.
47. Chatzinikolaou G, Nikitovic D, Berdiaki A, Zafiropoulos A, Katonis P, Karamanos NK, et al. Heparin regulates colon cancer cell growth through p38 mitogen-activated protein kinase signalling. *Cell Prolif.* 2010;43(1):9-18.
48. Berdiaki A, Datsis GA, Nikitovic D, Tsatsakis A, Katonis P, Karamanos NK, et al. Parathyroid hormone (PTH) peptides through the regulation of hyaluronan metabolism affect osteosarcoma cell migration. *IUBMB Life.* 2010;62(5):377-86.
49. Chalkiadaki G, Nikitovic D, Berdiaki A, Sifaki M, Krasagakis K, Katonis P, et al. Fibroblast growth factor-2 modulates melanoma adhesion and migration through a syndecan-4-dependent mechanism. *Int J Biochem Cell Biol.* 2009;41(6):1323-31.
50. Berdiaki A, Nikitovic D, Tsatsakis A, Katonis P, Karamanos NK, Tzanakakis GN. bFGF induces changes in hyaluronan synthase and hyaluronidase isoform expression and modulates the migration capacity of fibrosarcoma cells. *Biochim Biophys Acta.* 2009;1790(10):1258-65.
51. Nikitovic D, Berdiaki K, Chalkiadaki G, Karamanos N, Tzanakakis G. The role of SLRP-proteoglycans in osteosarcoma pathogenesis. *Connect Tissue Res.* 2008;49(3):235-8.
52. Nikitovic D, Berdiaki A, Zafiropoulos A, Katonis P, Tsatsakis A, Karamanos NK, et al. Lumican expression is positively correlated with the differentiation and negatively with the growth of human osteosarcoma cells. *FEBS J.* 2008;275(2):350-61.
53. Kousidou O, Berdiaki A, Kletsas D, Zafiropoulos A, Theocharis AD, Tzanakakis GN, et al. Estradiol-estrogen receptor: a key interplay of the expression of syndecan-2 and metalloproteinase-9 in breast cancer cells. *Mol Oncol.* 2008;2(3):223-32.
54. Berdiaki A, Zafiropoulos A, Fthenou E, Katonis P, Tsatsakis A, Karamanos NK, et al. Regulation of hyaluronan and versican deposition by growth factors in fibrosarcoma cell lines. *Biochim Biophys Acta.* 2008;1780(2):194-202.

Books

- I. Nikitovic D., Pratsinis H, Berdiaki A., Gialeli C., Kletsas D., and Tzanakakis G.N.; *Extracellular Matrix: Pathobiology & signaling* (DeGruyter, Berlin, 2012) Chapter 8.3: Growth factor signaling and extracellular matrix.
- II. Nikitovic D., Kavasi R.M., Moraiti R, Berdiaki A., Aggelidakis J., Tzanakakis GN. Chapter 3: OSTEOSARCOMA CELL FUNCTIONS- FOCUS ON EXTRACELLULARMATRIX SIGNALING. *Horizons in Cancer Research.* Volume 62. NovaSciencePublishers, Inc. NY, 2015
- III. Nikitovic D., Berdiaki A. *Encyclopedia of Toxicology.* Chapter "Developmental Toxicology. Title: Male reproductive system. In print

Links:

- 1) https://scholar.google.com/citations?view_op=list_works&hl=en&hl=en&user=Sfv9WgoAAAAJ&pagesize=80
- 2) <https://www.scopus.com/authid/detail.uri?authorId=23134593900>