
Raphael Sandaltzopoulos, PhD, MBA
Associate Professor Molecular Biology



Current position:

- HEAD, DEPARTMENT OF MOLECULAR BIOLOGY AND GENETICS (MBG), DEMOCRITUS UNIVERSITY OF THRACE (DUTH), ALEXANDROUPOLIS, GREECE
- CHIEF, LABORATORY OF GENE EXPRESSION, MOLECULAR DIAGNOSIS AND MODERN THERAPEUTICS, MBG, DUTH

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EDUCATION/TRAINING

INSTITUTION AND LOCATION	DEGREE	YEAR(s)	FIELD OF STUDY
ARISTOTLE UNIVERSITY OF THESSALONIKI	BSc.	1986-1990	BIOLOGY
UNIV. OF HEIDELBERG (EMBL)	PhD	1992-1996	MOLECULAR BIOLOGY
NATIONAL CANCER INSTITUTE, N.I.H., BETHESDA, USA	Post-doctoral research	1996-1999	MOLECULAR BIOLOGY
KELLER'S GRADUATE SCHOOL OF MANAGEMENT, VA, USA	MBA	1997-1999	BUSINESS ADMINISTRATION

Positions and Honors

- 2013-today: Elected Head of the Department of Molecular Biology and Genetics, D.U.Th., Alexandroupolis, Greece.
- 2013-today: Member of the Democritus University of Thrace Senate.
- 2013-today: Member of the Management Board of the Hellenic National Academic Recognition Information Center (NARIC)
- 2010-today: Member of the Research Committee at Democritus University of Thrace.
- 2009-2010: Scientific Expert of the Greek National Committee for the EU-FP7 (Food, Agriculture & Biotechnology).
- 2003 - today: Head of the Laboratory of Gene Expression, Molecular Diagnosis and Modern Therapeutics at MBG
- 2002- today: Faculty member at MBG.

2001-2002 **Head of the Molecular Biology and Biochemistry unit at the start-up biotech company LifeBits AG (Tuebingen, Germany).**

1998-1999: **Long-term Postdoctoral Fellowship from Human Frontiers in Science and Progress Organization (HFSP, Strasbourg, France).**

1996-1997: **Long-term Postdoctoral Fellowship from European Molecular Biology Organization, EMBO).**

1992-1996: **EMBL predoctoral Fellowship.**

Research interests:

- Gene expression and signaling mechanisms with emphasis on ovarian cancer tumor microenvironment.
- Cancer diagnostic and prognostic markers discovery, analysis and validation.
- Biotechnological applications of molecular biology and molecular genetics technologies and biochemical isolation of natural products.
- Mathematical modeling of biological phenomena.

Reviewer for: MDPI Cancers, Cellular and Molecular Life Sciences, Experimental Cell Research, Food and Chemical Toxicology, PLoS ONE, Nucleic Acids Res, International Journal of Biochemistry and Cell Biology, BBA General subjects, Applied Biochemistry and Biotechnology, Experimental Biology and Medicine.

Teaching experience

- Undergraduate level: “Molecular Biology I” and “Gene Expression and Signaling I” at MBG since 2002-03.
- Postgraduate level: “Molecular Therapeutics in Diabetes” at the Program of Specialization in Surgery: Liver-Bile-Pancreas, since 2004-05, School of Medicine DUTH, “Analysis of Genetic variation” at the Dept. of Forestry and Natural Resources Management, since 2007-08, and “Clinical Pharmacology and Therapeutics” School of Medicine DUTH, “Biomarkers Discovery” at the MSc. Programme “Translational Research in Molecular Biology and Genetics”, Dept. Molecular Biology and Genetics, DUTH.
- Translation of textbooks in Greek: *GENES VIII*, B. Lewin, (coordinator of the Greek edition, edited 12 chs.), *Molecular Diagnostics*, Editors Ansorge & Patrinos, (edited 1 ch.), *Recombinant DNA 3e*, J. Watson et al. (coordinator of the Greek edition, edited 8 chs.), *iGENETICS: A Mendelian approach*, P. Russell (edited 1 ch.), *The Cell: A molecular approach*, 5e, Cooper & Hausman, (edited 1 ch.).
- Supervised 22 Diploma theses and 13 PhD theses (8 completed).

Peer-reviewed research articles (in reverse chronological order):

- E. Matthaïou, J. Barar, **R. Sandaltzopoulos**, C. Li, G. Coukos and Y. Omidi (2014). Shikonin-loaded antibody-armed nanoparticles for targeted therapy of ovarian cancer. **International Journal of Nanomedicine** 9: 1-16.
- I.G. Karafyllidis, D. Sasaroli, A. Karapetsas and **R. Sandaltzopoulos** (2014). Modeling the Effect of Tissue Displacement during Avascular Tumor Growth on Tumor Progression. **Asian Journal of Fuzzy and Applied Mathematics**, 2:45-55.
- Dangaj D, Lanitis E, Zhao A, Joshi S, Cheng Y, **Sandaltzopoulos R**, Ra HJ, Danet-Desnoyers G, Powell DJ Jr, Scholler N (2013). Novel recombinant human B7-H4 antibodies overcome tumoral immune escape to potentiate T cell anti-tumor responses. **Cancer Res.** 3(15):4820-9.
- Lanitis E, Poussin M, Klattenhoff AW, Song D, Sandaltzopoulos R, June CH, Powell DJ Jr (2013). Chimeric Antigen Receptor T Cells with Dissociated Signaling Domains Exhibit Focused Antitumor Activity with Reduced Potential for Toxicity *In Vivo*. **Cancer Immunol. Res.** 1(1). doi: 10.1158/2326-6066.CIR-13-0008.
- Lanitis E, Dangaj D, Hagemann IS, Song DG, Best A, **Sandaltzopoulos R**, Coukos G, Powell DJ Jr. (2012). Primary human ovarian epithelial cancer cells broadly express HER2 at immunologically-detectable levels. **PLoS One.** 2012;7(11):e49829.
- Lanitis E, Poussin M, Hagemann IS, Coukos G, **Sandaltzopoulos R**, Scholler N, Powell DJ Jr. (2012). Redirected antitumor activity of primary human lymphocytes transduced with a fully human anti-mesothelin chimeric receptor. **Molecular Therapy**, 20(3):633-43.
- Sasaroli D, Gimotty PA, Pathak HB, Hammond R, Kougioumtzidou E, Katsaros D, Buckanovich R, Devarajan K, **Sandaltzopoulos R**, Godwin AK, Scholler N, Coukos G. (2011). Novel surface targets and serum biomarkers from the ovarian cancer vasculature. **Cancer Biol Ther.** 12(3):169-180.
- Dangaj D, Abbott KL, Mookerjee A, Zhao A, Kirby PS, **Sandaltzopoulos R**, Powell DJ Jr, Lamazière A, Siegel DL, Wolf C, Scholler N. (2011). Mannose receptor (MR) engagement by mesothelin GPI anchor polarizes tumor-associated macrophages and is blocked by anti-MR human recombinant antibody. **PLoS One.** 6(12):e28386.
- Karapetsas A, Giannakakis A, Pavlaki M, Panayiotidis M, **Sandaltzopoulos R**, Galanis A. (2011). Biochemical and molecular analysis of the interaction between ERK2 MAP kinase and hypoxia inducible factor-1 α . **Int J Biochem Cell Biol.** 43(11):1582-90.
- Tsika E, Moysidou M, Guo J, Cushman M, Gannon P, **Sandaltzopoulos R**, Giasson BI, Krainc D, Ischiropoulos H, Mazzulli JR. (2010). Distinct region-specific alpha-synuclein oligomers in A53T transgenic mice: implications for neurodegeneration. **J Neurosci.** 30(9):3409-18.
- Kalogeropoulou M, Voulgari A, Kostourou V, **Sandaltzopoulos R**, Dikstein R, Davidson I, Tora L, Pintzas A. (2010). TAF4b and Jun/activating protein-1 collaborate to regulate the expression of integrin α 6 and cancer cell migration properties. **Mol Cancer Res.** 8(4):554-68.

- Karapetsas A, Vavoulidis E, Galanis A, **Sandaltzopoulos R**, Kourkoutas Y. (2010). Rapid detection and identification of probiotic *Lactobacillus casei* ATCC 393 by multiplex PCR. **J Mol Microbiol Biotechnol.** 18(3):156-61.
- Fostira F, Thodi G, **Sandaltzopoulos R**, Fountzilias G, Yannoukakos D. (2010). Mutational spectrum of APC and genotype-phenotype correlations in Greek FAP patients. **BMC Cancer.** 10:389.
- Thodi G, Fostira F, **Sandaltzopoulos R**, Nasioulas G, Grivas A, Boukovinas I, Mylonaki M, Panopoulos C, Magic MB, Fountzilias G, Yannoukakos D. (2010). Screening of the DNA mismatch repair genes MLH1, MSH2 and MSH6 in a Greek cohort of Lynch syndrome suspected families. **BMC Cancer.** 10:544.
- Apostolidis, A. Georgiadis, N. Karaiskou and **R. Sandaltzopoulos.** (2008). Reliable and rapid discrimination of congeneric species by mtDNA SNP analysis by multiplex PCR: application on three *Trachurus* and two *Mullus* fish species as model cases (2008). **Hydrobiologia** 614:401-404.
- L. Zhang, S. Volinia, T. Bonome, GA. Calin, J. Greshock, N. Yang, CG. Liu, A. Giannakakis, P. Alexiou, K. Hasegawa, CN. Johnstone, MS. Megraw, S. Adams, H. Lassus, J. Huang, S. Kaur, S. Liang, P. Sethupathy, A. Leminen, VA. Simossis, **R. Sandaltzopoulos**, Y. Naomoto, D. Katsaros, PA. Gimotty, A. DeMichele, Q. Huang, R. Bützow, AK. Rustgi, BL. Weber, MJ. Birrer, AG. Hatzigeorgiou, CM. Croce and G. Coukos, (2008). Genomic and epigenetic alterations deregulate microRNA expression in human epithelial ovarian cancer. **Proc Natl Acad Sci U S A.** 105(19):7004-9.
- PE. Antoniou, P. Bousbouras, **R. Sandaltzopoulos** and E. Kaldoudi, (2008). Investigating the potential of polymer gel dosimetry for interventional radiology: first results. **Phys Med Biol.** 53(8):N127-36.
- C. Mizas, GC. Sirakoulis, V. Mardiris, I. Karafyllidis, N. Glykos and **R. Sandaltzopoulos,** (2008). Reconstruction of DNA sequences using Genetic Algorithms and Cellular Automata: towards mutation prediction? **Biosystems** 92(1):61-8.
- A.Giannakakis, **R. Sandaltzopoulos**, J. Greshock, S. Liang, J. Huang, K. Hasegawa, C. Li, A. O'Brien-Jenkins, D. Katsaros, BL. Weber, C. Simon, G. Coukos, L. Zhang (2007). miR-210 Links Hypoxia with Cell Cycle Regulation and Is Deleted in Human Epithelial Ovarian Cancer. **Cancer Biology & Therapy,** Nov 14:7(2).
- AP. Apostolidis, PK. Apostolou, A. Georgiadis and **R. Sandaltzopoulos,** (2007). Rapid identification of *Salmo trutta* lineages by multiplex PCR utilizing primers tailored to discriminate single nucleotide polymorphisms (SNPs) of the mitochondrial control region. **Conservation Genetics,** 8 (5): 1025-1028.
- RJ. Buckanovich, D. Sasaroli, A. O'Brien-Jenkins, J. Botbyl, R. Hammond, D. Katsaros, **R. Sandaltzopoulos,** LA. Liotta, PA. Gimotty, and G. Coukos (2007). Tumor Vascular Proteins as Biomarkers in Ovarian Cancer. **Journal of Clinical Oncology,** 25(7):852-861.
- G. Ch. Sirakoulis, I. Karafyllidis, **R. Sandaltzopoulos,** Ph. Tsalides and A. Thanailakis (2004). An algorithm for the study of DNA sequence evolution based on the genetic code. **BioSystems,** 77:11-23.
- Xiao H., **Sandaltzopoulos R.**, Wang HM., Hamiche A., Ranallo R., Lee KM., Fu D. and C. Wu (2001). Dual functions of the largest NURF subunit NURF301 in nucleosome sliding and transcription factor interactions. **Mol. Cell** 8:531-543.
- Hamiche A., **R. Sandaltzopoulos,** David A. Gdula, and Carl Wu (1999). ATP-Dependent Histone Octamer Sliding Mediated by the Chromatin Remodeling Complex NURF. **Cell** 97:833-842.
- Gdula D., **R. Sandaltzopoulos,** T. Tsukiyama, V. Ossipow and C. Wu (1998). Inorganic Pyrophosphatase is a component of the *Drosophila* Nucleosome Remodeling Factor Complex. **Genes Dev.** 12:3206-3216.
- Sandaltzopoulos R.** and PB. Becker (1998). Heat Shock Factor increases the reinitiation rate from potentiated chromatin templates. **Mol. Cell. Biol.** 18:361-367.
- Sandaltzopoulos R.,** V. Ossipow, D. Gdula, T. Tsukiyama and C. Wu, (1999). Purification of nucleosome remodeling factor. **Methods Enzym.,** 304:757-765.
- Karetsou Z., **R. Sandaltzopoulos,** M. Frangou-Lazaridis, Chun-Yen Lai, O. Tsolas, PB. Becker and T. Papamarcaki, (1998). Prothymosin α modulates the interaction of histone H1 with chromatin. **Nucl. Acids Res.** 26: 13-23.
- Blank T., **R. Sandaltzopoulos** and PB. Becker, (1997). Biochemical analysis of chromatin structure and function using *Drosophila* embryo extracts. **Methods: Comp. Meth. Enzym.** 12:28-35.
- Rhee K., G. Stier, PB. Becker, D. Suck and **R. Sandaltzopoulos,** (1997). The bifunctional protein DCoH modulates interactions of the homeodomain transcription factor HNF1 with nucleic acids. **J. Mol. Biol.** 265: 20-29.
- Heald R., R. Tournebize, T. Blank, **R. Sandaltzopoulos,** P. Becker, A. Hyman and E. Karsenti, (1996). Self-organization of microtubules into bipolar spindles around artificial chromosomes in *Xenopus* egg extracts. **Nature (cover article)** 382:420-425.

- Sandaltzopoulos R.**, C. Mitchelmore, E. Bonte, G. Wall and PB. Becker. (1995). Dual regulation of the *Drosophila* hsp26 promoter *in vitro*. **Nucl. Acids Res.** 23: 2479-2487.
- Wall G., PD. Varga-Weisz, **R. Sandaltzopoulos** and PB. Becker, (1995). Chromatin remodeling by GAGA factor and Heat shock factor at the hypersensitive *Drosophila* hsp26 promoter *in vitro*. **EMBO J.** 14:1727-1736.
- Sandaltzopoulos R.** and E. Bonte, (1995). Elimination of background in footprinting analysis by template selection. **BioTechniques** 5: 775-776.
- Sandaltzopoulos R.**, W. Ansorge, PB. Becker and H. Voss, (1994). Nonradioactive, solid-phase DNase I footprints analysed on an A.L.F. DNA sequencer. **BioTechniques** 17: 474-477.
- Sandaltzopoulos R.** and PB. Becker, (1994). Solid-phase DNase I footprinting : Quick and versatile. **Nucl. Acids Res.** 22: 1511-1512.
- Sandaltzopoulos R.**, T. Blank and PB. Becker, (1994). Transcriptional repression by nucleosomes but not histone H1 in reconstituted preblastoderm *Drosophila* chromatin. **EMBO J.** 13: 373-379.
- Triantaphyllidis GV, Abatzopoulos TJ, **Sandaltzopoulos RM**, Stamou G, CD Kastritsis (1993). Characterization of two new *Artemia* populations from two solar saltworks of Lesbos Island (Greece): biometry, hatching characteristics and fatty acid profile. **Int. J. of Salt Lake Res.**, 2:59-68.

Review articles:

- Li C, Sasaroli D, Chen X, Hu J, **Sandaltzopoulos R**, Omidi Y, Coukos G. (2010-2011). Tumor vascular biomarkers: new opportunities for cancer diagnostics. **Cancer Biomark.** 8(4-5):253-71.
- A. Galanis, A. Karapetsas and **R. Sandaltzopoulos**, (2009). Metal-induced carcinogenesis, oxidative stress and hypoxia signalling. **Mutat Res.** 674(1-2):31-5.
- A. Galanis, A. Pappa, A. Giannakakis, E. Lanitis, D. Dangaj and **R. Sandaltzopoulos**, (2008). Reactive oxygen species and HIF-1 signalling in cancer. **Cancer Lett.** 266(1):12-20.
- F. Fostira, G. Thodi, I. Konstantopoulou, **R. Sandaltzopoulos** and D. Yannoukakos (2007). Hereditary Cancer Syndromes. **J. BUON**, Sep;12 Suppl 1:S13-22.
- A. Pappa, R. Franco, O. Schoneveld, A. Galanis, **R. Sandaltzopoulos** and M.I. Panayiotidis, (2007). Sulfur-Containing Compounds in Protecting Against Oxidant-Mediated Lung Diseases. **Current Medicinal Chemistry**, 14:2590-96.
- A. Giannakakis, G. Coukos, Hatzigeorgiou A., **R. Sandaltzopoulos** and L. Zhang, (2007). miRNA genetic alterations in human cancers. **Expert Opin. Gene Therapy** 7(9):1-12.
- K. Chlichlia, V. Schirmmacher, **R. Sandaltzopoulos** (2005). Cancer immunotherapy: Battling tumors with gene vaccines. **Current Medicinal Chemistry**, 4:353-365.
- Sandaltzopoulos R.** and PB Becker (2003). Analysis of activator-dependent transcription reinitiation *in vitro*. **Methods Enzym.**,370:487-501.
- Wu C., D. Gdula, P. Georgel, M. Martinez-Balbas, G. Mizuguchi, V. Ossipow, **R. Sandaltzopoulos**, and H.-M. Wang (1998). ATP-dependent Remodeling of Chromatin. **Cold Spring Harb. Symp. Quant. Biol.** 63:525-534.
- Sandaltzopoulos R.** and AG. Papavassiliou, (1995). Use of potassium permanganate in *in vitro* footprinting analysis. **Meth. Mol. Cell. Biol.** 5: 131-134.
- Sandaltzopoulos R.**, JP. Quivy and PB. Becker, (1995). Analysis of protein/DNA interactions by solid-phase footprinting. **Meth. Mol. Cell. Biol.** 5:176-181.

Book chapters and dissertation:

- Sandaltzopoulos R**, Becker PB. (2014). Beads-on-a-string on a bead: Reconstitution and analysis of chromatin on a solid support. **Methods Mol Biol.** (in press) Humana Press.
- Sandaltzopoulos R**, Becker PB. (2009). Analysis of reconstituted chromatin using a solid-phase approach. **Methods Mol Biol.** 523:11-25.
- Sandaltzopoulos R.** and PB. Becker, (2000). Solid-phase DNase I footprinting. In: **Practical approach series: Protein-DNA Interactions a Practical Approach**, 11:151-159. Eds. A. Travers and M. Buckle, Oxford University Press.

- Sandaltzopoulos R.** and P.B. Becker (1999). A solid-phase approach for the analysis of reconstituted chromatin. In : *Methods in Molecular Biology*, “Chromatin Protocols”, Vol. 119, p. 195-206. Ed. P. B. Becker, Humana Press, Inc., Totowa, NJ.
- Sandaltzopoulos R.** and P.B. Becker, (1997). Antirepression, potentiation and activation of promoters in reconstituted chromatin. In: *Nucleic Acids & Molecular Biology*, Vol. 11, p. 291-307. Eds. F. Eckstein & D. Lilley, Springer-Verlag Berlin Heidelberg.
- Sandaltzopoulos R.**, (1996). Transcriptional regulation of Heat shock promoters in reconstituted chromatin. **PhD thesis, University of Heidelberg**, Germany.
- Sandaltzopoulos R.** and P.B. Becker, (1995). Solid-phase DNase I footprinting. *Biochemica* 4:25-27.

Publications metrics:

- Co-authored **49 articles** in peer-reviewed journals such as: **Nature, Cell, Mol Cell, Genes Dev, Proc Natl Acad Sci USA, EMBO J, Mol Cell Biol, Nucleic Acids Res, J Mol Biol, J Clin Oncol, Expert Opin Biol Ther, Cancer Biol Ther, Mol Cancer Res, Cancer Lett, BMC Cancer, Mutation Res, Cold Spring Harb Symp Quant Biol., Curr Med Chem, Meth Mol Biol, Meth Enzymol, Biosystems, Biotechniques**, etc.
- Co-authored **6 book chapters** and 1 PhD thesis.
- **Total Impact factor: approx. 280**
- **Citations from other scientists: approx. 2700**
- **h-factor: 20**
- **1 patent** (No.196-02300.9 “Immobilization of biopolymers”, Germany, rights bought by Dynal AS, Oslo, Norway).

Participation in Research Programs and Funding Sources

- **Coordinator of participating research team:** THALES, GSRT. Defining novel mechanisms whereby IKK-dependent NF-kB activation impacts on the control of E2F-target genes in normal and cancer cells. Coordinator: Dr. E. Kolettas, School of Medicine, Univ. of Ioannina. **Budget: 521.730 €.**
- **Collaborating researcher:** ESPA 2007-2013, SYNERGASIA, GSRT. Evaluation of maize strains and hybrids in poor irrigation conditions. Coordinator: Dr J. Tokatlidis, Dept. of Agriculture, D.U.Th., Orestiada. **Budget: 800.000 €.**
- **Member of the management committee and work package leader:** 7th Framework Programme “Capacities”, Coordination and Support Action. REGPOT-2008-1. «Strengthening Regional Bioresearch Potential in Greece: Advanced scientific performance at the Department of Molecular Biology and Genetics in Thrace». Coordinator: Dr. B. Agianian, Dept. Molecular Biology and Genetics, D.U.Th. **Budget: 1.000.000 €.**
- **Coordinator:** Heraclitos I (Ministry of Education) «Functional genomics: identification of genes overexpressed in ovarian cancer and analysis of their diagnostic and prognostic value in cancer», **Budget: 33.000 €.**
- **Coordinator:** Pythagoras I - «Study of regulator subunits of the chromatin remodeling complex NURF (NUcleosome Remodeling Factor)», **Budget: 40.000 €.**
- **Participating researcher:** Pythagoras II - «Three dimensional dosimetry of diagnostic radiological examinations by magnetic tomography», School of Medicine, Democritus Univ. of Thrace. **Budget: 80.000 €.**
- **Scientist in charge:** MARIE CURIE, ERG reintegration grant, (014852-spindle assembly, 2004 call) (for Dr M. Koffa). **Budget: 40.000 €.**
- **Coordinator of participating research team:** PENED 2003, (03EΔ562) «Functional oncogenomics: Massive analysis of gene function as a novel tool for the utilization of basic research in diagnosis and therapy of colon cancer». **Budget 235.000 €.**
- **Scientist in charge:** Marie Curie (International Reintegration Grant MIRG-CT-2006-036585) «Corneal ALDH3A1 and UV protection» (for Assistant Professor Dr. Aglaia Pappa. **Budget: 80.000 €.**
- **Scientist in charge:** GSRT matching funds of the programme International Reintegration Grant MIRG-CT-2006-036585 «Corneal ALDH3A1 and UV protection». **Budget: 9.318,54 €.**
- **Participating researcher:** National Oncology Committee, Ministry of Health, Call 2003 (65K/80) «Study of molecular and cytogenetical markers in patients with myelohyperplastic syndromes and analysis of their diagnostic and prognostic value». **Budget: € 14.650.**