



EBRU NUR AY, Ph.D.
Assist. Prof. - Research
Scientist
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EDUCATION

2015-2019

Ph.D., Molecular Medicine

Aziz Sancar Institute of Experimental Medicine,
Department of Molecular Medicine,
Istanbul University, Istanbul, Türkiye

Thesis Title: *The Investigation of the Relation to the Immune System Between Tryptophan Metabolism and Foxp3 in Colorectal Cancer*

2012-2015

M.Sc., Molecular Biology and Genetics

Department of Molecular Biology and Genetics,
Yıldız Technical University, Istanbul, Türkiye

Thesis Title: *Chemical Synthesis of Pharmacologically Important Dihydrobenzofuranone Derivatives and Enzymatic Biotransformation by Biotechnological Methods*

2007-2011

B.Sc., Biology

Abant İzzet Baysal University, Bolu, Türkiye

EXPERIENCE

2023-Present **Assist. Prof.**

Faculty of Engineering and Natural Sciences
Department of Molecular Biology and Genetics,
Istinye University, Istanbul, Türkiye

2021-2022 **Postdoctoral Researcher**

Prof. Carl Figdor
Tumor Immunology Laboratory,
Department of Tumor Immunology
Radboud Institute for Molecular Life Sciences (RIMLS)
Radboud University, Nijmegen, Netherlands

2020-2023 **Assist. Prof.**

Vocational School of Health Services,
Istinye University, Istanbul, Türkiye

2019 **Visiting Researcher**

Prof. Dr. med. Ralf Gold and Dr. med. Kalliopi Pitarokoili,
Neuroimmunological laboratory,
Department of Neurological,
Ruhr-University, Bochum, Germany

2016-2020 **Lecturer**

Vocational School of Health Services,
Istinye University, Istanbul, Türkiye

CONGRESS AND PRESENTATIONS

- **August 2025**, “A Global Public Health Threat: Molecular Foundations of Antimicrobial Resistance and Clinically Integrated Strategies for Combating It”, 6th International Congress of Asclepius Medicine, Nursing, Midwifery and Health Sciences (Virtual).
- **December 2022**, “Investigation of the Effect of TGF- β Signaling Regulation on Cytotoxic Activity of Irinotecan in Colorectal Cancer” (*Oral Presentation*), 8th International Bahçeşehir University (BAU) Drug Design Congress, Bahçeşehir University, Istanbul, Türkiye
- **October 2022**, “Strong T Cell-Mediated Antitumor Immune Response by delivery of PLGA Encapsulated STING Agonist” (*Oral Presentation*), 5th International Molecular Immunology & Immunogenetics Congress (MIMIC-V), Dokuz Eylul University, Izmir, Türkiye
- **October 2020**, “Coronary Artery Bypass Grafting in a Lipodystrophy”, 16th UCCVS Congress, Antalya, Türkiye
- **November 2019**, “Investigation of the Effect of an Effective Chemoimmunonanoparticle Combination Targeting the IDO Metabolic Pathway to be Used in Gastric Cancer”, Onkolojide İz Birakanlar Congress, Antalya, Türkiye
- **September 2019**, “Investigation of The Possible Effect of Foxp3 C/A Gene Variants in Laryngeal Cancer”, VII International Congress of Molecular Medicine, Istanbul, Türkiye
- **October 2018**, “PD-1/PD-L1 Genetic Variants and Soluble PD-1 Levels in Gastric Cancer”, 7th Multidisciplinary Cancer Research & 1st Basic Oncology Congress, Izmir, Türkiye
- **May 2017**, “Investigation of The Cytotoxic Effects of Arum Conophalloides Extract”, VI. International Congress of Molecular Medicine, Istanbul, Türkiye
- **February 2017**, “Investigation of Anti-Proliferative and Antimicrobial Effects of Vitex Agnus-Castus Essential Oil”, II. Life Sciences Symposium, Kayseri, Türkiye
- **March 2017**, “Investigation of Possible Anticancer Effects of Combination of Vitamin D3 and Doxorubicin on Breast Cancer Cells”, VI. International Molecular Medicine Congress, Istanbul, Türkiye
- **May 2016**, “Cytotoxicity of Aqueous and Ethanolic Extracts of Capsella Bursa-Pastoris on HI-60 Cell Lines”, III. International Congress on Experimental Hematology, Kayseri, Türkiye

PRACTICAL COURSES AND LECTURES ATTENDED

- **September 2023**, “WORKSHOP: TÜBİTAK 1004 Inflammist Project Molecular Biology Association 2023 Istanbul Workshop on Nanobodies”, Istanbul, Türkiye
- **December 2022**, “WORKSHOP: Target-Driven Based Drug Repurposing-Ligand Docking”, Bahçeşehir University, Istanbul, Türkiye
- **December 2022**, “WORKSHOP: Data Mining and Pathway Analysis”, Bahçeşehir University, Istanbul, Türkiye
- **November 2022**, “Course: XXIX. Training Program for Certificate of Animal Use in Experimental Studies” Bezmialem Vakıf University, Istanbul, Türkiye
- **November 2022**, “Pfizer-Istinye University Cooperation Clinical Research Training Program”, Istanbul, Türkiye
- **September 2019**, “Course: Training in Data Analysis and Visualization with R”, Istinye University, Istanbul, Türkiye
- **August 2019**, “WORKSHOP: SHIMADZU HPLC General Usage Training”, Ant Technical Company, Aziz Sancar Institute of Experimental Medicine, Istanbul University, Istanbul, Türkiye

- **October 2018**, “WORKSHOP: Cell Death / Cytotoxicity”, 7th Multidisciplinary Cancer Research and 1st Basic Oncology Congress, Izmir, Türkiye
- **May 2018**, “WORKSHOP: BIO-RAD - V3 Western Workflow & Total Protein Normalization Practical Training”, Gen Era diagnostic company, İstinye University, İstanbul, Türkiye
- **February 2017**, “WORKSHOP: New Technologies in Cell Death”, Gebze Technical University, Kocaeli, Türkiye
- **February 2017**, “WORKSHOP: Bioinformatics Approaches in Cell Death”, Gebze Technical University, Kocaeli, Türkiye
- **May 2016**, “I. Autophagia Practical Course”, Faculty of Engineering and Natural Sciences, Sabancı University, İstanbul, Türkiye
- **June 2009**, “MATLAB Training”, Akiza Information Technology Academy, İstanbul, Türkiye

OTHER MEETINGS

- **April 2023**, “Bogazici LifeSci Symposium: Targeted Treatment Technologies”, Bogazici University, İstanbul, Türkiye
- **July 2022**, “Shaping of Antitumor Immunity in the Tumor Microenvironment”, Wolf H. Fridman, International Union of Immunological Societies (IUIS), Online seminar
- **February 2020**, “3rd Rare Diseases Awareness Symposium-UPNAM 2020”, Umraniye Pediatric Rare Diseases Research and Treatment Center, Umraniye Training and Research Hospital, İstanbul, Türkiye
- **September 2019**, “EFIS on Tour Immunology Symposium, İstanbul University”, İstanbul, Türkiye
- **April 2018**, “Bioscience Academy Seminar”, Merck- Ph. D. Scientist Jun Park, and Ph. D. Sr. R&D Manager Jeffrey L. Turner, DoubleTree by Hilton Hotel, İstanbul, Türkiye
- **October 2018**, “7th Multidisciplinary Cancer Research and 1st Basic Oncology Congress”, Izmir, Türkiye
- **February 2017**, “II. Life Sciences Congress”, Abdullah Gül University, Kayseri, Türkiye
- **March 2017**, “Molecular Cancer Summit”, İstinye University, İstanbul, Türkiye
- **May 2016**, “3rd International Experimental Hematology Congress”, Erciyes University, Kayseri, Türkiye
- **May 2016**, “II. Karaköy Autophagia Symposium”, Sabancı University, İstanbul, Türkiye
- **February 2016**, “I. Life Sciences Congress”, Abdullah Gül University, Kayseri, Türkiye
- **November 2015**, “Drug induced liver injury: Genomic Approaches and Risk Assessment Mini Symposium”, İstanbul University, İstanbul, Türkiye
- **May 2015**, “EACR- Sponsored 3rd Anticancer Agent Development Congress”, Dokuz Eylül University, Izmir, Türkiye
- **May 2010**, “2nd Basic Immunology and Neuroimmunology Congress”, Abant İzzet Baysal University, Bolu, Türkiye

PUBLICATIONS

- **Ay E.N.**, Çakır F., Akyüz S., Kılınç N., Tokalı F.S., Şeno H. (2025) “Synthesis, characterization, In vitro and In silico investigations of novel 1,2,3-triazole substituted salicylic acid phenolic hydrazones hybrids targeting TGF- β 2 expression in colorectal carcinoma”. European Journal of Medicinal Chemistry, 296:117915. <https://doi.org/10.1016/j.ejmech.2025.117915>
- Ünver H., Bağcı E.R., Gül Ü.D., Kapavarapu R., **Ay E.N.**, Acar Çevik U. (2025) “Design, synthesis, in vitro, and in silico studies of benzimidazolium derivatives as potent antimicrobial agents”. Journal of Molecular Structure, <https://doi.org/10.1016/j.molstruc.2025.143119>
- Kaya B., Acar Çevik U., Çiftçi B., Necip A., Işık M., **Ay E.N.**, Yur S., Özkay Y., Beydemir Ş., Kaplancıklı Z.A. (2025) “Design, Synthesis, and Molecular Docking Studies of Novel Pyrazoline-Thiazoles as Cholinesterase Dual-Target Inhibitors for the Treatment of Alzheimer’s Disease”. ACS OMEGA, <https://doi.org/10.1021/acsomega.5c01055>
- **Ay E.N.**, Acar D.H., Kaleağasıoğlu F. (2023) “Potential Applications of Photobiomodulation in Combinatorial Cancer Therapy”. Journal of Oncological Sciences, DOI: 10.37047/jos.2023-99295
- **Ay E.N.**, Caner A., Hepokur C., Kalindemirtaş F., Eroğlu G., Kariper A. (2023) “Propolis nanoparticles synthesis and characterization with cytotoxic and apoptotic effects on breast cancer cells”. Journal of Taibah University for Science, DOI: 10.1080/16583655.2023.2249628
- **Ay E.N.**, Demirkol Ş., Hakan M.T., Horozoğlu C., Arıkan S., Doğan M., Akyüz F., Hepokur C., Yaylın İ. (2022) “Investigation of Possible Associations Between Tryptophan/Kynurenine Status and FOXP3 Expression in Colorectal Cancer”. The Scandinavian Journal of Clinical & Laboratory Investigation, DOI: 10.1080/00365513.2022.2040050
- **Ay E.N.** (2022) “Therapeutic Targeting of Molecular Pathways in Colorectal Cancer”. Experimental Oncology, DOI: 10.32471/exp-oncology.2312-8852.vol-44-no-1.17455
- Hepokur C., Kariper İ.A., Mısır S., **Ay E.N.**, Tunaoglu S., Süleymanoğlu M., Zeybek Ü., Kuruca S., Yaylın İ. (2019) “Silver Nanoparticle Capecitabine for Breast Cancer Cell Treatment”. Toxicology in Vitro, DOI: 10.1016/j.tiv.2019.104600
- Bildiren Ö., Cevatemre B., **Ay E.N.**, Özen G., Hepokur C., Erkisa M., Küçük Hüseyin Ö., Ulukaya E., Kuruca S., Yaylın İ. (2018) “An Investigation of Anticancer Effects of Doxorubicin and Calcitriol Combination on MCF-7 Cells”. Experimed, DOI: 10.26650/experimed.2018.18001
- Çalışkan Z., **Ay E.N.** (2018) “Synthesis of Dihydrobenzofuranone Derivatives with Biotechnological Methods”. Jotcsa, DOI: 10.18596/jotcsa.44855

SCIENTIFIC PROJECTS

- **2024-..., The Scientific and Technological Research Council of Türkiye (TÜBİTAK) 3501:** Investigation of the Effect of STING Agonist Encapsulated with Cationic Polymer Nanoparticle on T Cell-Mediated Anti-Tumor Immune Response in Cancer Immunotherapy, *Project Leader*. (Project No: 223S426)
- **2024-2025, IstinYE University Scientific Research Projects Council:** Development and *In Vitro* Evaluation of Polymer Nanoparticle Formulations from Renewable Resources, *Project Leader*. (Project No: 2023-B10)
- **2023-2024, The Scientific and Technological Research Council of Türkiye (TÜBİTAK) 1002:** Investigation of the *In Vitro* Efficacy of Targeted Nanoparticles Containing a New Chemotherapeutic Agent Combination (Irinotecan/LY2109761) in the Treatment of Colorectal Cancer, *Project Leader*. (Project No: 123Z810)
- **2023-2024, The Scientific and Technological Research Council of Türkiye (TÜBİTAK) 1002:** Investigation of *In Vivo* Effects of TGF- β Signal Inhibition on Irinotecan Cytotoxicity in a Colorectal Cancer Tumor Model, *Project Leader*. (Project No: 123Z138)
- **2023-2024, Health Institutes of Türkiye Scientific Research Project (TUSEB):** Investigation of the Effects of Targeted Nanoparticles Containing Irinotecan/TGF- β Receptor Inhibitor in Colorectal Cancer, *Project Leader*. (Project No: 22736)
- **2023-2024, Bezmialem Vakıf University Scientific Research Projects Council:** Design, Synthesis, and Investigation of Biological Activities of Novel Salicylic Acid Derivatives as TGF- β Receptor Type 2 Antagonists, *Researcher*. (Project No: 20221007)
- **2021-2022, TUBITAK 2219-International Postdoctoral Research Fellowship Program Project:** Strong T Cell-Mediated Antitumor Immune Response by Delivery of PLGA Encapsulated STING Agonist, *Project Leader*.
- **2021-2022, ISU Scientific Research Project:** Investigation of the Effect of Foxp3 and TGF- β Receptor Gene Regulations on the Cytotoxic Activity of Irinotecan in Colorectal Cancer: A Predictive Marker Discovery, *Project Leader*. (Project No: 2020 B/7)

STUDENT PROJECTS-*Advisor*

- **2024-2025, The Scientific and Technological Research Council of Türkiye (TÜBİTAK) 2209:** Investigation of the Cytotoxic Effects of New Synthetic Ursolic Acid Derived Molecules in the Microenvironment Created by Co-Culture of Polymorphonuclear Leukocytes and Tumor Cells
- **2025-..., The Scientific and Technological Research Council of Türkiye (TÜBİTAK) 2209:** Investigation of Epirubicin/P-Glycoprotein Inhibitor Combination Therapy on Brain Mrp-1 Expression in an Experimental Septic Shock Model
- **2025-..., The Scientific and Technological Research Council of Türkiye (TÜBİTAK) 2209:** Biochemical Investigation of the Therapeutic Potential of Epirubicin/Reversan Combination in Mice with Sepsis

MASTER THESIS- *Thesis Supervisor*

- **2024-...,** Investigation of the Effect of STING Agonist Encapsulated with Cationic Polymer Nanoparticle on T Cell-Mediated Anti-Tumor Immune Response
- **2024-...,** The Role of TP53 Gene Codon 72 Polymorphism in Colorectal Cancer
- **2024-...,** Investigation of Changes in Serum NOTUM and REG4 Levels According to Tumor Stage and Grade in Gastric Cancer
- **2024-...,** Investigation of the Possible Therapeutic Effect of Geraniol on Acetic Acid-Induced Ulcerative Colitis in BALBC Mice

ACHIEVEMENTS - FELLOWSHIP

- **2022 - TUBITAK 2219- International Postdoctoral Research Fellowship Program-** Radboud University, Netherlands / Nanoparticle Cancer Vaccine Studies in the Tumor Immunology Department at RIMLS.
- **2019 - Erasmus+ Staff Mobility for Teaching and Training Program-** Ruhr-Universität, Germany / in the Field of Neuro-Immunology at Josef Hospital Zentrum Für Klinische Forschung (ZKF).

USED METHODS IN SCIENTIFIC STUDIES

- *In vivo* Tumor Models
- Molecular Biology Techniques
- Cell Culture Methods
- HPLC
- ELISA
- Immunofluorescence
- Flow Cytometry

TEXTBOOKS

- **Editor**, Medical Terminology, Ankara Nobel Medicine Bookstores 2021, ISBN: 978-625-7146-90-7.
- **Editor**, Basic Biochemistry for Health Sciences, Ankara Nobel Medicine Bookstores 2020, ISBN: 978-625-7146-22-7.
- **Basic Biochemistry Chapter Author**, Perfusion for Health Sciences, Editor Özgür Y., Ankara Nobel Medicine Bookstores 2021, ISBN: 978-625-7146-35-7.

GIVEN LESSONS AS LECTURER

- Anticancer Drug Development (Course language, English)
- Molecular Biology of The Cell (Course language, English)
- Molecular Biology Laboratory Techniques (Course language, English)
- Biochemistry (Course language, English)
- Immunology
- Hematology
- Biochemistry and Hematology Lab Applications
- Medical Terminology
- Holistic Approach in Science (Course language, English)

ASSOCIATION MEMBERSHIP

- European Cooperation in Science and Technology (COST)- **CA23156**/ European Network for Sigma-1 Receptor as a Therapeutic Opportunity (SIGMA-1EUROPE)- WG2
- European Cooperation in Science and Technology (COST)- **CA21135**/Modelling Immunotherapy Response and Toxicity in Cancer- WG1, WG2
- European Cooperation in Science and Technology (COST)- **CA21154**/Translational Control in Cancer European Network- WG1, WG5

- European Cooperation in Science and Technology (COST)- **CA22103/A** Comprehensive Network Against Brain Cancer (Net4brain)- WG2, WG3
- European Association for Cancer Research (EACR)
- Young European Federation of Immunological Societies (yEFIS)
- Turkish Immunology Association
- Molecular Cancer Research Association (MOKAD)
- Hemophilia Society of Türkiye

AREAS OF INTEREST

- Molecular Cancer Biology
- Tumor Immunology
- Specific Drug Development at Molecular Targeting in Cancer
- Nanoparticle Cancer Vaccine