



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

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**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

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**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

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- **December 2022**, “Investigation of the Effect of TGF- $\beta$  Signaling Regulation on Cytotoxic Activity of Irinotecan in Colorectal Cancer” (*Oral Presentation*), 8<sup>th</sup> 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*), 5<sup>th</sup> International Molecular Immunology & Immunogenetics Congress (MIMIC-V), Dokuz Eylül University, Izmir, Türkiye
- **October 2020**, “Coronary Artery Bypass Grafting in a Lipodystrophy”, 16<sup>th</sup> 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 Bırakanlar 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”, 7<sup>th</sup> Multidisciplinary Cancer Research & 1<sup>st</sup> 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 HL-60 Cell Lines”, III. International Congress on Experimental Hematology, Kayseri, Türkiye

## PRACTICAL COURSES AND LECTURES ATTENDED

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- **September 2023**, “WORKSHOP: TUBİTAK 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”, 7<sup>th</sup> Multidisciplinary Cancer Research and 1<sup>st</sup> 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

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- **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**, “3<sup>rd</sup> 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**, “7<sup>th</sup> Multidisciplinary Cancer Research and 1<sup>st</sup> Basic Oncology Congress”, İzmir, Türkiye
- **February 2017**, “II. Life Sciences Congress”, Abdullah Gül University, Kayseri, Türkiye
- **March 2017**, “Molecular Cancer Summit”, İstinye University, İstanbul, Türkiye
- **May 2016**, “3<sup>rd</sup> 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 3<sup>rd</sup> Anticancer Agent Development Congress”, Dokuz Eylül University, İzmir, Türkiye
- **May 2010**, “2<sup>nd</sup> Basic Immunology and Neuroimmunology Congress”, Abant İzzet Baysal University, Bolu, Türkiye

## PUBLICATIONS

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- **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- $\beta$ 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>
- **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., Yaylım 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., Mısırs S., **Ay E.N.**, Tunaoglu S., Süleymanoğlu M., Zeybek Ü., Kuruca S., Yaylım 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., Yaylım 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

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- **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- $\beta$  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- $\beta$  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- $\beta$  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- $\beta$  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**

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- **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**

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- **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**

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- **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

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

## TEXTBOOKS

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- **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

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- 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

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- 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**

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