

**Gunnur Deniz**, Gunnur Deniz graduated from Istanbul University, Faculty of Sciences, Department of Biology in 1985 and received her M.Sc. degree in Physiology in 1989. Between 1990-1994 she was granted by the Turkish Republic Higher Education Council (YÖK) with a PhD fellowship to study at the Department of Immunology, University of Liverpool and received her PhD degree in immunology in 1994. Following completion of her PhD in 1994, she returned to Istanbul University and continued her academic and research activities in the Institute of Experimental Medicine (Aziz Sancar DETAE), Department of Immunology. She is the chairman of the Immunology Department at Aziz Sancar DETAE since 2002 and has also been working as a director of Aziz Sancar DETAE since 2016. She is the past president of the Turkish Society of Immunology. She is the congress president of 6<sup>th</sup> European Congress of Immunology. Most of her research is focused on functional and phenotypical characterization of Natural Killer - NK cells. Active research topics include the characterization of NK cells especially in allergic diseases and studies in the field of haematological diseases and immune deficiencies. She has national and international publications and book chapters, and her H-factor is 32.



**Lecture: Intra cellular cytokine staining and proliferation:** Intracellular cytokine staining is a versatile technique used to analyze cytokine production in individual cells by flow cytometry. The recipient cells are analyzed *ex vivo* after isolation from the peripheral blood following either nonspecific stimulation or donor-specific stimulation. Flow cytometry is an ideal platform for measuring cell proliferation and enables us to study various unique cell types within a heterogeneous population. The most common approaches to monitoring cell proliferation by flow cytometry involve the use of fluorescent dyes such as carboxyfluorescein diacetate succinimidyl ester (CFSE) and PKH26 that incorporate into the cell cytosol, cell membranes and intracellular structures of living cells. A decrease in fluorescence occurs as dyes are evenly diluted into daughter cells with subsequent cell divisions representing the successive generations, and these are identified as distinct peaks during flow cytometry analysis. In this lecture, we will discuss flow cytometric methods for intra cellular cytokine staining and proliferation.

**Lab Module: Intra cellular cytokine staining and proliferation:** In this laboratory session, we will demonstrate intracellular cytokine staining and proliferative responses of T and B lymphocytes.

#### **Relevant Literature:**

1. Gunes U, Kucuksezer UC, Artun FT, Karagoz A, **Deniz, G.** Effects of *Cotinus coggygria* extract on human blood T and NK cells activity *in vitro*. *Discovery Phytomedicine*, 2022;9(1), 199-206.
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3. Engin A, Turna A, Esen F, Agkoc M, Cikman DI, Saglam OF, **Deniz G**, Aktas EC. Mediastinal lymph node removal ameliorates cytotoxic T-lymphocyte functions in patients with non-small cell lung cancer. *Tumori*. 2021 Dec 17:3008916211064643.
4. Gelmez MY, Cinar S, Cetin EA, Ozcit-Gürel G, Babuna-Kobaner G, Erdugan M, Gul A, Akdag-Kose A, **Deniz G**. Inflammatory status might direct ILC and NK cells to IL-17 expressing ILC3 and NK subsets in Behcet's disease. *Immunol Lett*. 2021 Jul 235:1-8.
5. Harb H, Benamar M, Lai PS, Contini P, Griffith JW, Crestani E, Schmitz-Abe K, Chen Q, Fong J, Marri L, Filaci G, Del Zotto G, Pishesha N, Kolifrath S, Broggi A, Ghosh S, Gelmez MY, Oktelik FB, Cetin EA, Kiykim A, Kose M, Wang Z, Cui Y, Yu XG, Li JZ, Berra L, Stephen-Victor E, Charbonnier LM, Zanoni I, Ploegh H, **Deniz G**, De Palma R, Chatila TA. Notch4 signaling limits regulatory T-cell-mediated tissue repair and promotes severe lung inflammation in viral infections. *Immunity*. 2021 Jun 8;54(6):1186-1199.e7.
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