SABRİ ÜLKЕR SCIENCE AWARD
FROM PAST TO PRESENT
Established in memory of the late Sabri Ülker, the veteran of the Turkish food industry, our Foundation has been providing the society with reliable scientific information on healthy living and nutrition since 2009 and it continues to work with the aim of becoming Türkiye’s reference institution in healthy living and nutrition issues in collaboration with institutions that are accepted as references around the world.

All our effort is to share the most up-to-date information and latest researches in nutritional science in a way that can be used by all. All the work of our foundation is carried out with the contributions of the Sabri Ülker Science Committee Member, which consists of scientists who are experts in the areas of food, nutrition and health.

Since 2016, we have been supporting young scientists who conduct research on nutrition, metabolism and public health with the Sabri Ülker Science Award.

We would like to introduce you to the winners of the Sabri Ülker Science Award from past to present and remind you once again how important their contribution to science is through their work.

We will continue to work for the future of public health.

#forpublichealth
Nilay Yapıcı is an Assistant Professor in the Department of Neurobiology and Behavior at Cornell University and a Nancy&Peter Meinig Family Investigator. Dr. Yapıcı graduated from Boğaziçi University, Department of Molecular Biology and Genetics, and worked with Dr Barry Dickson at the Molecular Pathology Research Institute (IMP) for her doctoral degree from the University of Vienna in 2008. Dr Yapıcı completed her postdoctoral researches at Rockefeller University in New York with Dr Leslie Vosshall. In 2016, she transferred to Cornell University as an Assistant Professor. Her research focuses on understanding how animals integrate their physiological state and external sensory stimuli from the environment into their metabolic decision process. Her lab uses a variety of techniques, including the fly (Drosophila melanogaster), a genetically traceable model organism, and high-resolution quantitative measurements of behavior, multi-photon functional imaging, and neural circuit tracking. She is awarded the EMBO Long-Term Fellowship and the Human Frontiers (HFSP) Long-Term Fellowship as a postdoctoral fellow. Since becoming an independent researcher, she has been a research fellow at the Alfred P. Sloan Foundation, the Pew Scholars Biomedical Science Program, and the American Federation for Aging Research as a Junior Fellow.

**Research Focus**

Focusing on the biology of hunger, Assoc. Dr. Nilay Yapıcı researches how the neural networks in the brain that control food intake work. In her experiments in her laboratory, Assoc. Dr. Yapıcı conducts researches to find the nerve cells in the brain that govern food intake decisions and to understand how the activities of these cells change during the desire to eat. As a result of these researches, it is aimed to solve the mechanism that leads to excessive consumption of certain foods.

Dr Yapıcı’s lab; focuses on how animals make behavioral decisions by integrating their physiological states with external stimuli and how these decisions are regulated by organisms. In addition, recent research projects carried out in the laboratory are investigating how taste perception and the sense of hunger work at the level of genes, cells and neural networks.
Elif Nur Fırat Karalar

**KOÇ UNIVERSITY DEPARTMENT OF MOLECULAR BIOLOGY AND GENETICS**

Having completed her undergraduate education at Bilkent University, Department of Molecular Biology and Genetics, Associate Professor Elif Nur Fırat Karalar continued her doctoral researches at the University of California, Berkeley, and post-doctoral researches at Stanford University. Later, in 2014, she established a research lab at Koç University Molecular Biology and Genetics Department and continues her researches in this area. These basic mechanisms of cell biology show a wide range of disorders ranging from rare genetic diseases to cancer, and researches in this area shed light on new diagnostic and treatment methods. Dr. Karalar also continues to work in the “Cellular Skeleton Research” laboratory with the support of ERC, EMBO Installation Grant and Young Investigator Program. Dr. Karalar also continues her researches supported by ERC, EMBO Installation Grant and Young Investigator Program, Royal Society Newton Advanced Fellowship and TUBITAK in the “Cellular Skeleton Research” laboratory. Dr. Karalar is awarded the 7th Sabri Ülker Foundation Science Award, thanks to her contributions to the scientific world.

**RESEARCH FOCUS**

Continuing her scientific career in the area of Molecular Biology and Genetics, Associate Professor Elif Nur Fırat Karalar seeks answers to how cell structures known as centrosome and cilium, which play a critical role in cell division and communication, are formed and function. Dr. Karalar and her team believe that all the answers they will reach will allow the development of new methods for the diagnosis and treatment of disorders in these structures. Dr. Karalar and her team also aim to determine the causes of developmental and metabolic disorders such as kidney disorders, blindness, obesity and diabetes, and guide the diagnosis and treatment of these diseases, in their work that is awarded the Sabri Ülker Science Award.
Associate Professor Elçin Ünal, from the Department of Molecular and Cell Biology at Berkeley University, is a scientist who built her scientific career on the relationships between meiosis and aging. Dr. Ünal, who studied Molecular Biology and Genetics at Bilkent University, started to focus on meiosis while doing her doctorate at Johns Hopkins University in the USA. Ünal, who focused on meiosis at MIT, one of the best post-doctoral universities in the world, decided to investigate the effect of meiosis on aging by doing the opposite, while many researchers in the area were investigating the "effect of aging on meiosis". Aiming to define the principles of meiotic differentiation, Dr. Ünal joined the Department of Molecular and Cell Biology at the University of Berkeley in 2014 and continued her innovative research in the laboratory she founded under her own name. Stating that she will work on this subject in the future, Dr. Ünal says that she hopes to encourage other research and discoveries in science with her inventions. Dr. Elçin Ünal is a scientist who is awarded the Sabri Ulker Foundation Science Award in 2020, thanks to her contributions to the world of science.

Research Focus

Elçin Ünal is researching how to naturally treat the damage accumulated in cells as a result of aging. The main goal of Elçin Ünal and her team is to understand and reverse cellular aging. Dr. Ünal’s main area of research is a biological process, also known as gametogenesis, in which reproductive cells, called gametes, form a chain of life for the next generation. Because this process prevents age-related damage from being passed on to the next generation in cells, examining it offers a unique insight into the biology of aging and potential treatments to combat age-related diseases. Saying that healthy nutrition and lifestyle are also important in delaying aging, Dr. Ünal states that calorie limitation causes longevity in different organisms, and also that factors such as diet, exercise, sleep patterns, smoking, alcohol use and stress affect both cell and organism aging.
Tamer Önder, who received his BA in Molecular Biology and Genetics from Cornell University and his PhD in Biology from Massachusetts Institute of Technology; He continues his duty as an associate professor at Koç University, where he started working as an assistant professor in 2012. While shaping his researches on the molecular mechanisms of reprogramming of cells, he focused on designing new models with stem cell technology for rare genetic diseases such as Mediterranean fever. Tamer Önder, who won the TUSEB Aziz Sancar Young Researcher (Incentive) Award in 2018; in 2019, he won the Sabri Ulker Foundation Science Award and continues to contribute to the world of science.

**KOÇ UNIVERSITY FACULTY OF MEDICINE**

Based on the principle of developing cell-based treatment approaches, Tamer Önder continues his researches on disease models for rare metabolic diseases and developing methods consisting of new therapeutic strategies for them. This research established a novel liver organoid method derived from iPSC, which is highly reproducible, fast and efficient, mimicking liver development. It is predicted that the generation of iPSC-based organoids from various genetic metabolic and chronic diseases will significantly accelerate the development of new therapeutic strategies against such diseases. Patient-specific liver organoids have great potential in this regard. In a specific case, an iPSC-based model of a urea cycle disorder was created and demonstrated that hepatic organoids derived from patient-specific iPSCs can faithfully recapitulate the metabolic aspects of the disease.

**RESEARCH FOCUS**

Murat Ulker
Member of the Board of Directors

Ali Ulker
Chairperson of Yildiz Holding
ASSOC. PROF. DR.
ÖMER YILMAZ

MASSACHUSETTS INSTITUTE OF TECHNOLOGY (MIT)
INSTITUTE OF CANCER RESEARCH

Assistant Professor Ömer Yılmaz completed his education as a full scholarship student in the combined program of MD and Ph.D. at the University of Michigan. In 2007, the doctoral project of Assistant Professor Ömer Yılmaz, who is awarded the Harold M. Weintraub Award, the best international doctorate research in biology, was published in Cell, Nature, Blood, and Cancer Cell journals, which are among the most important medical journals in the world. Completing his specialization in pathology at Massachusetts General Hospital, the head hospital of Harvard Medical School, in 2011, Yılmaz has been working as an assistant professor at the Massachusetts Institute of Technology (MIT) Koch Institute since 2014. Assistant Professor Ömer Yılmaz, who continues his cancer research in the laboratory he founded in his name at the same university; He is awarded Sidney Kimmel Foundation, V Foundation and Pew Foundations, R01/NIH funding and AAAS Martin and Rose Wachtel Cancer Research awards for his research on how intestinal stem cells in adult humans are affected by environmental influences such as nutrition and food. Assistant Professor Ömer Yılmaz, who is awarded the 5th Sabri Ulker Science Award, with his research titled “The Relationship of Intestinal Stem Cells with Metabolism and Nutrition” revealed how the diets that cause obesity affect intestinal stem cells. In addition, the project he has been working on for five years to find out how obesity triggers bowel cancer revealed that the high-fat diet that causes obesity causes stem cells to mutate and multiply, and as a result, cancer increases. Yılmaz’s research titled “The Relationship of Intestinal Stem Cells with Metabolism and Nutrition” was also published in Nature, one of the most respected scientific journals in the world.

RESEARCH FOCUS

Intestinal stem cells (ISCs) are located at the base of intestinal crypts adjacent to Paneth cells, which contain a niche (or region) to support ISC biology. It is the focus of research to explain how different diets affect the biology of ISCs and how they affect support niche cells in regeneration and diseases such as cancer. In this research, which hopes to design diet-based strategies to maximize the regenerative and therapeutic effect and thus minimize the risk of cancer development, it has been proven that diet affects ISC biology through cellular extrinsic and intrinsic mechanisms and, unlike CR, a pro-obesity high-fat diet (HFD) directly affects the biology of ISCs.
Ebru Erbay has been working as an Assistant Professor in the Department of Molecular Biology and Genetics at Bilkent University (Ankara, Türkiye) since 2010 and as a Visiting Professor at the Institute for Cardiovascular Prevention at Ludwig Maximilians University (Munich, Germany) since 2006. She received her medical doctorate degree from Ankara University and completed her doctorate in Cell and Structural Biology at the University of Illinois (Urbana-Champaign). Dr Erbay completed his post-doctoral education with Prof. Dr. Gökhan Hotamışlıgil at Harvard University, School of Public Health. She is the first researcher to receive Installation Support in the area of Life Sciences from Türkiye. She was deemed worthy of various honorary certificates and awards, and graduated from Ankara University Faculty of Medicine with high honors. In 2017, she was awarded the Sabri Ülker Foundation Science Award for her work “Bioactive Lipids for Health”. Assistant Professor Ebru Erbay, who is awarded the 4th Sabri Ülker Science Award, revealed in her research that palmitoleic acid production in the body, which is thought to be harmful, has a protective effect contrary to what is known. Dr. Erbay, in her research on mice fed with very high-calorie foods; She also showed that palmitoleic acid, an unsaturated fat, removes saturated fats that damage cell structure, and prevents arteriosclerosis, which can lead to death. Her research titled “Bioactive Lipids for Health” was also featured in Science Translational Medicine, one of the respected scientific journals of its area.

### Research Focus

De novo lipogenesis (DNL) is the conversion of glucose and other substrates to lipids into lipids and is generally associated with ectopic lipid accumulation, metabolic stress, and insulin resistance in the liver. However, organ-specific DNL can also produce self-contained lipids with beneficial metabolic bioactivity that are of great interest for their use in the treatment of metabolic diseases. Palmitoleic Acid (PAO), one such bioactive lipid, regulates lipid metabolism in the liver and increases glucose utilization in skeletal muscle when produced de novo from obese adipose tissue. We show that oral supplementation with de novo lipogenesis (DNL) products such as Palmitoleic Acid can promote membrane remodeling related to lipid stress and metabolic resistances of intercellular organelles at the border of arteriosclerosis progression. These findings support therapeutic PAO supplementation as a potential protection approach against complex metabolic diseases such as arteriosclerosis and inflammatory diseases, enabling further research in humans.
After graduating from Ankara Bilkent University, Department of Molecular Biology and Genetics in 2004, Assistant Professor Dr. Kıvanç Birsoy completed his doctorate at Rockefeller University in 2009 and continues to work as a post-doctoral research assistant in 2015, as an assistant professor today. Kıvanç Birsoy, who has different publications on “Cell and Cancer Metabolism” and “Organism Metabolism” and has received different patents on the subjects he works with his innovative perspective, has been awarded multiple awards since 1999 for his contributions to science. In 2016, he won the Sabri Ülker Foundation Science Award with his work “The systematic identification of the food addiction of cancer cells” and reminded the scientific world of his name once again in capital letters.

ROCKEFELLER UNIVERSITY

Cancer cells often become dependent on certain food sources due to oncogenic changes. Limiting the intake or utilization of these nutrients has the potential to impair cancer cell proliferation and maintain survival without affecting normal cells. Thus, a powerful new intervention can be provided for the development of new targeted therapies. Integration of the food addiction map with available genomic information (gene expression, mutation, copy number changes) will shed light on the molecular basis for potential food addictions and also elucidate previously unidentified metabolic programs. Such an effort will also lay the foundation for new anti-cancer strategies. Using the methods developed here, data on the response of hundreds of cell lines for nutrient restriction can be rapidly processed simultaneously and correlated with each other, such as gene expression, genome sequencing, and copy number data, which are available to access. By identifying the nutritional dependencies of different cancers, the opportunity to develop new anti-cancer strategies may be provided.

RESEARCH FOCUS

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