GAZI UNIVERSITY

LIFE SCIENCES APPLICATION AND RESEARCH CENTER

APRIL-2023

HISTORY

The Life Sciences Application and Research Centre was established by merging the Molecular Biology Research and Application Centre, Nanomedicine Research and Application Centre, Advanced Technologies Research and Application Centre in accordance with a regulation published in the Official Gazette on July 9, 2013.

MISSION

Through joint studies in natural sciences such as health, engineering, chemistry, physics, and biology, our Centre aims to contribute to the national and international knowledge pool as a high-level research centre that seeks scientific answers to existing or potential questions in the field of life sciences. Our ultimate objective is to transform the acquired fundamental knowledge into patents and products and to disseminate these products in a way that will benefit the country and the world.

VISION

With its physical space, device infrastructure, and researcher features, to play a leading role in the disciplines of health, engineering, and basic natural sciences, both nationally and internationally.

CENTRE MANAGEMENT

▪ Prof. Dr. Orhan CANBOLAT	Director
▪ Prof. Dr. Mehmet Ali ERGUN	Vice Director
▪ Prof. Dr. Mustafa ARSLAN	Vice Director
▪ Associate Prof. Dr. S. Selcen BABAOGLU AYDAS	Coordinator
▪ Prof. Dr. Burcu ERTIT TASTAN	Coordinator

EXECUTIVE STEERING COMMITTEE

- Prof. Dr. Orhan CANBOLAT
- Prof. Dr. Mehmet Ali ERGUN
- Prof. Dr. Mustafa ARSLAN
- Prof. Dr. Fazlı POLAT
- Prof. Dr. Cigdem ELMAS
- Prof. Dr. Suleyman ÖZÇELİK
- Associate Prof. Dr. Serdar TORT

ADVISORY BOARD

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▪ Prof. Dr. Bulent ELBASAN	▪ Prof. Dr. Mustafa KAVUTCU
▪ Prof. Dr. Suleyman TEKELI	▪ Associate Prof.Dr. Hasan BOSTANCI

RESEARCH GROUPS

BIOCHEMISTRY - CHEMISTRY RESEARCH GROUP

- PROF. DR. ORHAN CANBOLAT
- PROF. DR. MUSTAFA KAVUTCU

TOXICOLOGY RESEARCH GROUP

- PROF. DR. HIKMET KATIRCIOGLU

ENVIRONMENTAL RESEARCH GROUP

- PROF. DR. SUAT KIYAK
- PROF. DR. ATILLA MURATHAN
- PROF. DR. ZEKI AYTAÇ
- PROF. DR. MEHMET YILMAZ
- PROF. DR. A. CAGLAN GUNAL

EXPERIMENTAL ANIMALS RESEARCH GROUP

- ASSOCIATE PROF. DR. KURSAT DIKMEN

CELL CULTURE RESEARCH GROUP

- PROF. DR. CIGDEM ELMAS
- ASSOCIATE PROF. DR. SEVCAN MAMUR

NANO SCIENCES RESEARCH GROUP

- PROF. DR. UGUR TAMER
- PROF. DR. HUSEYIN ÇELIKKAN
- PROF. DR. GONCA ÇAKMAK
- ASSOCIATE PROF. DR. SERDAR TORT

MICROBIOLOGY RESEARCH GROUP

- PROF. DR. GULENDAM BOZDAYI

REPRODUCTIVE MEDICAL RESEARCH GROUP

- PROF. DR. CENGIZ KARAKAYA
- PROF. DR. ALI ATAN
- ASSOCIATE PROF. DR. ISMAIL GULER
- MD. ERHAN DEMIRDAG
- MD. DUYGU DAYANIR
- MD. FUNDA AKDULUM

BIOTECHNOLOGY RESEARCH GROUP

- PROF. DR. BELMA ASLIM
- PROF. DR. ZEHRANUR YÜKSEKDAG
- ASSOCIATE PROF. DR. MINE TURKTAS

BIOINFORMATIC RESEARCH GROUP

- PROF. DR. SEREF SAGIROGLU
- ASSOCIATE PROF. DR. OKTAY YILDIZ
- PHD. YILMAZ ATAY
- PHD. MUJGAN TELLI OKUR

CELL IMAGING TECHNIQUES RESEARCH GROUP

- PROF. DR. CIGDEM ELMAS
- PROF. DR. ZEKIYE SULUDERE
- ASSOCIATE PROF. DR. MERVE SEYMEN

PHARMACOLOGY RESEARCH GROUP

- PROF. DR. CIMEN KARASU

CLINICAL SCIENCES RESEARCH GROUP

- PROF. DR. MEHMET AKIF OZTURK
- PROF. DR. HAYRUNNISA BOLAY BELEN
- PROF. DR. MUSTAFA ARSLAN

NANO-GENOTOXICOLOGY RESEARCH GROUP

- PROF. DR. FATMA UNAL
- PROF. DR. DENİZ YUZBASIOGLU

MOLECULAR MEDICINE AND GENETICS RESEARCH GROUP

- PROF. DR. MEHMET ALI ERGUN

PROJECT: 2020-2023

Project Code: 122Z742

Project Title: Developing microalgae-based sustainable CO2 reduction strategies and investigating the potential of microalgal biomass as a biodiesel, biodegradant and biosorbent-based green energy source.

Project Type: TUBITAK 1001 Project-2022-2024

Project Code: P TSG-2022-7930

Project Title: Investigation of the effect of synthetic Ribose 5 Phosphate and synthetic nucleoside analogs containing Ribose 5 Phosphate in their structure on PRPP synthetase enzyme, which is transported into the cell with special nano systems in Breast Cancer.

Project Type: Guided Project -2022-2024

Project Code: TCD-2023-8358

Project Title: Investigation of epigenetic mechanisms of cytidine deaminase and pyrimidine nucleotidase enzymes in cancer cells related to gemcitabine and intracellular metabolites of gemcitabine Effect of Lupeol.

Project Type: Multidisciplinary Research Project- 2023-2024

Project Code: TKB-2023-8525

Project Title: Determination of the effect of EF24 on the cell death response induced by Eribulin mesylate in A549 lung cancer cells.

Project Type: Career Start Project-2023-2023

Project Code: TKB-2023-8458

Project Title: Determination of the effect of EF24 on cisplatin-induced cell death response in triple negative breast cancer cells.

Project Type: Career Start Project-2023-2023

Project Code: TKB-2023-8564

Project Title: Effect of ozone therapy and vitamin C on heart tissue in myocardial ischemia reperfusion injury model in rats with diabetes mellitus by streptozotocin.

Project Type: Career Start Project-2023-2024

PROJECT: 2020-2023

Project Code: TCD-2023-7867

Project Title: Effect of pesticide application on siderophore gene expression level in Bacillus subtilis subsp inaquosorum DY5, which produces siderophores with agronomic and probiotic importance.

Project Type: Multidisciplinary Research Project

External Joint Research Project

Project Title: The relationship of cispatinin resistance or toxicity with apoptosis and autophagy processes and the role of glutathione metabolism in triple-negative breast cancer.

2023-2024

External Joint Research Project

Project Title: The relationship between cispatin resistance or toxicity in HELA cells, apoptosis and autophagy, and the role of free radical metabolism enzymes.

2023-2024

Project Title: Investigation of the Effect of Ultrasound on the Nucleic Acid Structure of Sarscov2, Scientific Research Project Supported by Higher Education Institutions

2021-2022

Project Title: In Vitro Cytotoxic and Genotoxic Effects of High Fructose Corn Syrup and Acesulfame Potassium Used as Sweetener in Foods, Scientific Research Project Supported by Higher Education Institutions

2020-2022

Project Title: Investigation of Electrochemical Behavior of Amaranth on Different Electrode Surfaces and Voltammetric Determination, Scientific Research Project Supported by Higher Education Institutions

2020-2023

PUBLICATIONS: 2020-2023

Karaboduk Kuddusi, Hasdemir Erdogan (2020).
Simultaneous Determination of Quercetin and Luteolin in Mate and White Tea Samples by Voltammetry. Revue Roumaine de Chimie, 65(4), 375-385.

Ekim Burcu, Calık Ali, Ceylan Ahmet, Sacaklı Pınar (2020).
Effects of Paenibacillus xylanexedens on growth performance, intestinal histomorphology, intestinal microflora, and immune response in broiler chickens challenged with Escherichia coli K88. Poultry Science, 99(1), 214-223., Doi: 10.3382/ps/pez460.

Karaboduk Kuddusi (2021).
Development of a voltammetric method for the determination of rapamycin in pharmaceutical samples at pretreated pencil graphite electrode.
Journal of the Chinese Chemical Society, 2021, 1-9

Karaboduk Kuddusi (2021).
Modification of screen-printed gold electrode with 1, 4-dithiothreitol: application to sensitive voltammetric determination of Sudan II. Food Quality and Safety, 5, 1-9.

Karaboduk Hatice, Kalender Yusuf (2021).
The Effects of Lead Nitrate and Mercury Chloride on Rat Liver Tissue. Fresenius Environmental Bulletin, 30, 2368 - 2379

Orhan Canbolat, (2021).
Anti Metabolite Theory, **GMJ**, 32(2):258-262.

Gulsah Congur, Ulkuye Dudu Gul, Burcu Ertit Tastan, (2022).
Fast, Cheap and Reliable Monitoring of Microalgae-Based Paracetamol Removal from Aquatic Environment Using Electrochemical Sensor Technology.
Journal Of The Electrochemıcal Socıety169 (11).

Burcu Ertit Taştan, Bahtiyar Bakır, Esra Yaylacı, Burcu Ekim (2022)
Investigation of Physiologic and Kinetic Effects of Chicken Fertilizers On Microalgae Growth And Biomass Productivity. International Journal of Natural and Engineering Sciences E-ISSN: 2146-0086 16(1): 41-52.

Sevcan MAMUR, Deniz Yüzbaşıoğlu, Sabire Nur Bülbül, Fatma Ünal, (2022).
Investigation of cyto-genotoxic effects of a food sweetener Acesulfame potassium, Food and Health, 8(4): 273-283.

Sevcan Mamur, (2022).
Geraniol a natural monoterpene, identifications of cytotoxic and genotoxic effects in vitro. Journal of Essentiol Oil Research, 34 (1): 54-64..

Sevcan Mamur, Esra Gunduzer, Melek Yaman, (2022).
Toxicological aspect of bioinsecticide pyrethrum extract and expressions of apoptotic gene levels in human hepotacellular carcinoma HepG2 cells. Toxicology Mechanisms and Methods, 32(5):373-384.

COURSES, SEMINARS AND CONFERENCES: 2021-2023

1st Gazi University And Kazakh National Medical University Named After S.D. Asfendıyarov Health Sciences Congress
1-2 December 2021, Ankara

International Seminars On Health Science, Webinar
"Molecular Mechanisms of Melatonin and Its Clinical Applications"
Speaker: Prof. Dr. Darío Acuña-Castroviejo
02.07.2021, Ankara

International Seminars On Health Science, Webinar
"How Cells Sense and Adapt to Oxygen Sensitivity"
Speaker: Prof. Dr. Joachim Fandrey (Medical Faculty - Vice Dean University of Duiburg-Essen)
08.06.2021, Ankara

Applied Basic Cell Culture Techniques Course
19-21 September 2022

Experimental Ischemia Reperfusion Models Course
2- 26-27 March 2022

Experimental Ischemia Reperfusion Models Course
1- 25-26 September 2021

2nd Gazi University And Asfendıyarov Kazakh National Medical University Health Sciences Congress
May 26-27, 2022, Almaty/Kazakhstan.

International Seminars On Health Science, Webinar
"Contribution of Genetic Variants to Early-Onset Breast Cancer"
Speaker: Dr. Zhunussova Gulnur
03.03.2022, Ankara

Life Sciences Application and Research Center 2022-2023 Academic Year Seminars
"Potential cancer biomarkers: Circular RNAs (circRNAs)"
Assoc. Dr. Hacer İlke Önen
01.11.2022

Life Sciences Application and Research Center 2022-2023 Academic Year Seminars
"The Role of Raman Spectroscopy in Life Sciences"
Assoc. Dr. Mehmet Yesiltas
19.10.2022

COURSES, SEMINARS AND CONFERENCES: 2021-2023

Life Sciences Application and Research Center 2022-2023 Academic Year Seminars
"Biofilm formation and removal"
Dr. Faculty Member Tuğba Kılıç
03.10.2022.

Life Sciences Application and Research Center 2022-2023 Academic Year Seminars
"Stem Cells in Dentistry"
Dr. Faculty Member Ayşegül Mendi
16.01.2023.

Life Sciences Application and Research Center 2022-2023 Academic Year Seminars
"The Role of Bacterial Quorum Sensing (QS) in Virulence and QS Inhibition"
Dr. Faculty Member Elif Burcu Bali
02.01.2023

Life Sciences Application and Research Center 2022-2023 Academic Year Seminars
"On Medicine"
Prof.Dr. Orhan Canbolat
23.03.2023

DEVICE INFRASTRUCTURE

NAME OF THE LABORATORY	DEVICE
Biochemistry Chemistry	1. GC-MS (Agilent) 2. GC-MS (Shimadzu) 3. HPLC (Agilent) 4. HPLC (Shimadzu) 5. DSC (Shimadzu) 6. TGA (Thermogravimetric Analyzer - Shimadzu) 7. FTIR Spectrophotometer (Shimadzu) 8. XRF (X-Ray Fluorescent Spectrophotometer- Shimadzu) 9. ICP-OES (Perkin Elmer) 10. AAS (Perkin Elmer) 11. Zetasizer (Malvern)
Molecular Biology	1. DNA Sequence Analysis Device (Applied Biosystems) 2. Real Time PCR Device (Applied Biosystems) 3. Real Time PCR Device (Qiagen) 4. Gradient PCR Device (Applied Biosystems) 5. Gradient PCR Device (Applied Biosystems) 6. Gradient PCR Device (Senso Quest) 7. Horizontal Electrophoresis 8. Vertical Electrophoresis 9. Gel Imaging and Analysis System (UVP)
Microbiology	Lyophilizer (CHRIST) Colony Counter (Synbiosis Brand) Pure Water and Ultra Pure Water Device Air Conditioning Cabinet Carbon Dioxide Incubator Bacteriological Oven
Microscopy and Spectroscopy	Atomic Force Microscope (AFM-WITec) RAMAN spectroscopy (WITec) Transmission Electron Microscope (TEM) (FEI TECNAI, 120Kv) Ultramicrotome Leica (EM UC6) Microtome (EM Trimmer- Leica) Cryostat Leica (CM1900) Light Microscope Automatic Tracker (Leica, TP 1020) Laser Scanning Confocal Microscope System Leica (TCS SP2) Inverted Microscope with Fluorescent Attachment (Leica, DMI4000B) Fluorescent Microscope (Leica, DMIL LED) Light (Binocular) Microscope Inverted Microscope (Leica, DMIL LED)
Centrifuge	High Speed Floor Type Centrifuge (Thermo Scientific Brand) Desktop Refrigerated Centrifuge System Centrifuges (for 0.2 ml tubes) Centrifuges (for 1.5-2.0 ml tubes)

CELL CULTURE LABORATORIES

There are two cell culture laboratories in our center. In these laboratories, studies are carried out on cells reproduced from a certain cell line in order to determine the effects and functions of a certain substance (nanoparticles, plant extracts, drugs, food additives and many chemical substances) by using current cytotoxicity test methods on healthy and cancer cell lines. In addition, DNA, RNA studies in cell culture and apoptosis and necrosis studies are also carried out to determine cell death.

1. Clean Room
2. Humidity Controlled Incubator
3. Biosafety Cabinet
4. Inverted Microscope
5. Binocular Microscope
6. Liquid Nitrogen Transport and Storage Unit

EXPERIMENTAL ANIMAL PRODUCTION AND RESEARCH LABORATORY

It has a work permit approved by the Ministry of Agriculture and Forestry for mice, rats, guinea pigs, rabbits and poultry. Experimental animals laboratory has a total area of 300 m2 and is divided into separate sections for poultry and rat-mouse-guinea pig-rabbit. Experimental animals are produced in its laboratories. There are study rooms to be used in research. At the end of each year, annual inspection reports are sent to the Ministry of Agriculture and Forestry and are inspected by the Ministry of Agriculture and Forestry.

LAPOROSCOPIC AND ROBOTIC SURGERY EDUCATI ON AND RESEARCH UNIT

There are five sophisticated operating rooms in the research unit. Laparoscopic and robotic surgery applications for experimental animals are possible.