

KUTTAM KOÇ UNIVERSITY RESEARCH CENTER FOR TRANSLATIONAL MEDICINE

https://kuttam.ku.edu.tr





- KUTTAM was founded with the aim of making about the biomedical device production, and maximization of the university-industry cooperation in respect of producing innovative products and cutting-edge technological medical devices with high-added value in Turkey.
- The purpose of KUTTAM is to promote the development of high valueadded biomedical devices based on basic scientific research and domestic possibilities, and to encourage and support the work to be carried out in the relevant area.
- KUTTAM aims to be a national leader in the field by influencing the world with translational research in the health sector. In this context, KUTTAM infrastructure provides with unparalleled opportunities for integrated research in pharmacology, biochemistry, molecular biology and genetics and material sciences.

Executive Committee



Mehmet Kaya Director



Murat Hasanreisoğlu

Associate Director





Hakan Ürey Associate Director



Müjdat Zeybel



Seda Kızılel



Yasemin G. Özdemir



Alper Kiraz



Ayişe Karadağ



Funda Yağcı Acar



Scientific Advisory Board

- Prof. Dr. Umran İnan Elektrik Elektronik Mühendisliği
- Prof. Dr. İrşadi Aksun Elektrik Elektronik Mühendisliği
- Prof. Dr. Özgür Barış Akan Elektrik Elektronik Mühendisliği
- Prof. Dr. İhsan Solaroğlu Beyin ve Sinir Cerrahisi
- Prof. Dr. Şükrü Dilege Genel Cerrahi
- Prof. Dr. Rahmi Öklü- Vasküler ve Girişimsel Radyoloji
- Prof. Dr. Levent Demirel Kimya
- Prof. Dr. Fikri Karaesmen Endüstri Mühendisliği
- Prof. Dr. Fuat Balcı Psikoloji
- Prof. Dr. Can Erkey Kimya ve Biyoloji Mühendisliği
- Prof. Dr. Metin Sitti Elektrik Elektronik Mühendisliği
- Prof. Dr. Bruno Reversade Tibbi Genetik
- Prof. Dr. Alphan Sennaroğlu Fizik ve Elektrik Elektronik Mühendisliği
- Doç. Dr. Nurhan Özlü Moleküler Biyoloji ve Genetik
- Dr. Öğr. Üyesi Hale Yapıcı Eser Psikiyatri



CORE LABORATORIES

KUTTAM FACILITIES

Rumelifeneri: 3,500 m2

Koç University Hospital: 5,100 m2

- Molecular Medicine
- Cellular and Molecular Imaging
- Omics
- Motion Analysis and Cognition
- Biostatistics, Bioinformatics and Data Management
- Nano-Scale Technology and Prototype
- Neurodegeneration Research (NDAL)
- Biomechanics and Endurance
- Rodent and Zebrafish Facilities



KUTTAM 2022

Postdoc: 40

- √ #24 Supported by KU
- √ #16 Supported by TUBITAK

Graduate Students: 237

Publications in 2021: 262



KUTTAM 2022

Total number of students funded by KU / Projects / TUBITAK using KUTTAM laboratories

Program	Master's	PhD	Total	KU Fund
Cellular and Molecular Medicine	9	66	75	31
Neuroscience	14	35	49	22
Immunology	8	8	16	9
Molecular Biology and Genetics	4	2	6	6
Biomedical Sciences and Engineering	2	0	2	2
Medical Physiology	1	0	1	1
Medical Microbiology	4	0	4	2
Reproductive Biology	3	0	3	3
Reproductive Medicine	0	7	7	4
Total:	45	118	163	80

KUTTAM 2022

Ongoing Projects Supported by TUBITAK: 29

TB.00563	Covid-19 patogenezinde reaktif oksiyen	HASAN BAYRAM	120N806
TB.00589	İnsan Üç Boyutlu Hava Yolu	HASAN BAYRAM	121N164
TB.00544	In Vitro Üç-Boyutlu Ko-Kültür	KEMAL BAYSAL	120S977
TB.00557	PIK3CA-İlişkili Aşırı Büyüme Sendromları	HÜLYA KAYSERİLİ KARABEY	220S492
TB.00585	Indüklenmis Adipoz Doku	MURAT HASANREİSOĞLU	1215211
TB.00581	İnflazom aracılı onoenflamatuvar	SEDA KIZILEL	20AG042
TB.00577	İnsan interaktom projesi : Genom ölçeğin	ZEHRA ÖZLEM KESKİN ÖZKAYA	120C120
TB.00606	Atp7b Geninin Transkripsiyonel	CEYDA AÇILAN AYHAN	121Z296
TB.00553	PCM1 Glutamat Modifikasyonunun	ELİF NUR FIRAT KARALAR	120N693
TB.00572	Primer silyum, silyopatiler ve mikrotübü	ELİF NUR FIRAT KARALAR	120C148
TB.00575	Nöronal Fonksiyon üzerindeki kardiyovas.	ATTİLA GÜRSOY	220N252
TB.00550	Yüksek G Ölçümüne Yönelik Nanote	BURHANETTİN ERDEM ALACA	120E347
TB.00576	Nesnelerin interneti teknolojileri için	BURHANETTİN ERDEM ALACA	120N361
TB.00574	Genotip ve tüm ekzom/genom dizileme	HAMZAH SYED	121E028
TB.00578	Holografik ekran teknolojisi ve artırılm	HAKAN ÜREY	120C145
TB.00545	Spin Akımları Kullanarak Elmas-Nv	MEHMET CENGİZ ONBAŞLI	120F230
TB.00546	Nano Nesnelerin İnterneti İçin İki	MURAT KUŞCU	120E301
TB.00592	Kanserin Moleküler Izlerinin	NURCAN TUNÇBAĞ	121E245
TB.00568	Tümör makro-ortamında etkin kanser	SERKAN KIR	120C128
TB.00593	Üç Boyutlu Baskı Ile Aerojel	ALPER KİRAZ	121M497
TB.00543	Histon 3 Lizin 36 (H3K36) Üç Metil	TEVFİK TAMER ÖNDER	120Z461
TB.00595	Pluripotent Kök Hücrelerin	TEVFİK TAMER ÖNDER	121Z292
TB.00619	Kemoterapi Dirençli Üçlü-Negatif Meme Ka	TUĞBA BAĞCI ÖNDER	221S419





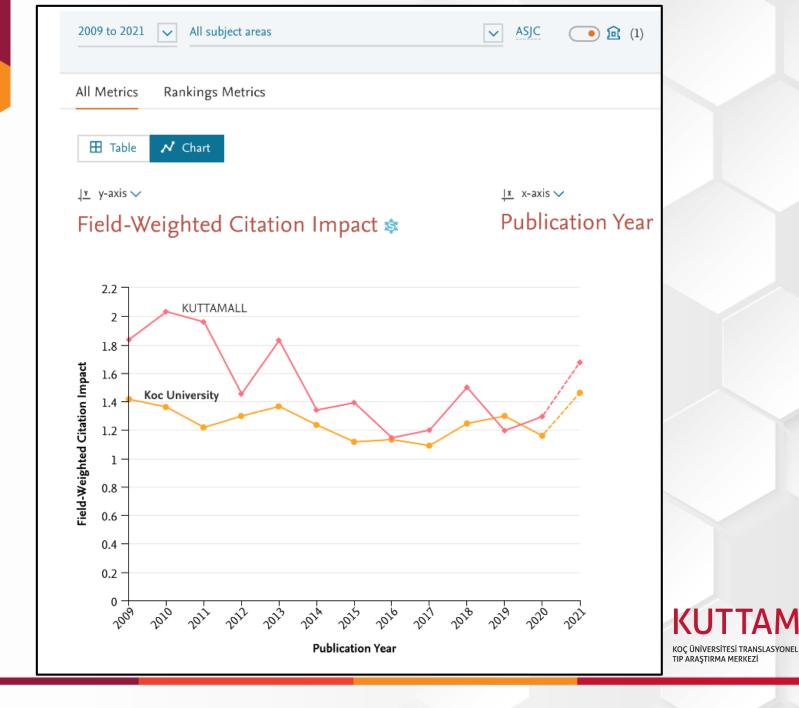


Ongoing Supported External Projects: 9

Proje Kısa Metni	Proje Yürütücüsü (PY)	Fon Kuruluşu
TÜSEB_2019Yİ01_4012	CEYDA AÇILAN AYHAN	TÜSEB (Bakanlık)
TÜSEB_2020Yİ02_7018	CANSIN SAÇKESEN	TÜSEB (Bakanlık)
KUSİM	ELİF NUR FIRAT KARALAR	ISTKAISTANBUL KALKINMA AJANSI (İSTKA)
MODELLEME VE DİJİTAL İKİZ GELİŞTİRME	İSMAİL LAZOĞLU	FORD-OTOSAN
Mobil Lab-on-a-Chip Cihaz Geliştirlimesi	HAKAN ÜREY	TARABIOS SAĞLIK TEKNOLOJILERI A.Ş.
Selenoid Valf Sistemi Performans Etkisi	İSMAİL LAZOĞLU	ARÇELİK
Tekstilde Kullanılacak Vakum Pompası Tasarım	İSMAİL LAZOĞLU	ARÇELİK
ImplantGuvenligiIcinAlgoritmaGelistrl	İSMAİL LAZOĞLU	YENI DOKU SAĞLIK SAN. VE TİC. LTD.Ş
Tunel ve Gecıtlerde Sıcaklık Sensoru Gls	MEHMET CENGİZ ONBAŞLI	SAMM TEKNOLOJI İLETIŞIM SAN. VE TIC

Ongoing Supported International Projects: 8

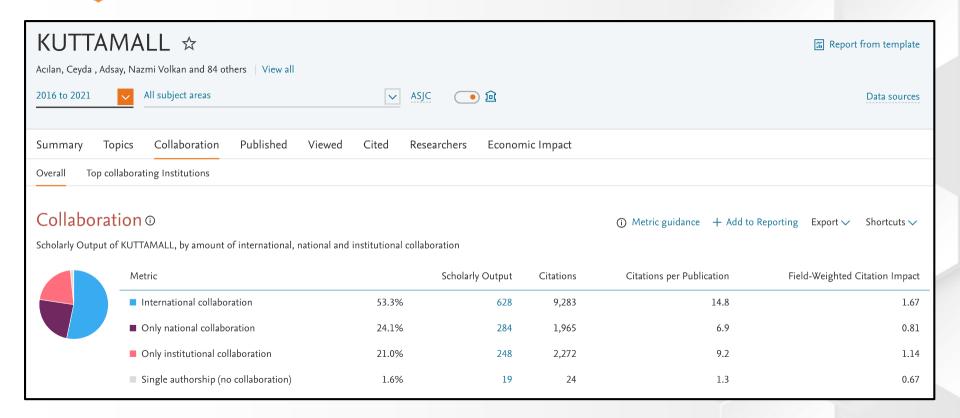
Proje Kısa Metni	Proje Yürütücüsü (PY)	Fon Kuruluşu
SKYNOLIMIT	MEHMET CENGİZ ONBAŞLI	EC-H2020 EUROPEAN COMMISSION
H2020-MSCA-IF-2020_101028935	MURAT KUŞCU	EC-H2020 EUROPEAN COMMISSION
MiTuMi	ECE ÖZTÜRK	EC-H2020 EUROPEAN COMMISSION
Cancer Therapy-Epigenetic Reg of Lysosom	CEYDA AÇILAN AYHAN	ICGEB
EMBO Installation Grant Proje No 3622-2	ELİF NUR FIRAT KARALAR	EMBO INSTALLATION GRANT
EMBO_YIP_Award	ELİF NUR FIRAT KARALAR	EMBO INSTALLATION GRANT
EMBO_YIP_Award	ELİF NUR FIRAT KARALAR	EMBO INSTALLATION GRANT
EMBO_YIP_Award	SERKAN KIR	EMBO INSTALLATION GRANT



Collaboration

	KU	TTAM		KU		
Metric	Field-	Weighted Citation Impact	Field-Weighted Citation Impact			
■ International collaboration	53.3%	1.67	43.7%	1.70		
Only national collaboration	24.1%	0.81	31.8%	0.82		
Only institutional collaboration	21.0%	1.14	16.8%	1.05		
■ Single authorship (no collaboration)	1.6%	0.67	7.8%	1.02		







KUTTAM Budgets

	Başkanlıkça Sağlanan Destek Kapsamındaki Harcama (TL) ^[1]					Vakıf Üniversitesi Tarafından Sağlanan Katkı İle Yapılan Harcama (TL)					Toplam (TL)							
	2016	2017	2018	2019	2020	2021 (1 Eylül)	2016	2017	2018	2019	2020	2021 (1 Eylül)	2016	2017	2018	2019	2020	2021 (1 Eylül)
Proje																		
personeli								499.209,55	1.504.658,20	5.279.450,13	7.072.360,18	5.491.335,2		499.209,55	1.504.658,20	5.279.450,13	7.072.360,18	5.491.335,2
giderleri																		
Sarf																		
malzemesi								395.382,26	1.562.914,79	3.028.987,85	276.062,84	339.669,13		395.382,26	1.562.914,79	3.028.987,85	276.062,84	339.669,13
giderleri																		
Seyahat								959,88	21.501,94	32.433,33	5.949,71			959,88	21.501,94	32.433,33	5.949,71	
giderleri								000,00	21.001,01	02.100,00	0.010,71			000,00	21.001,01	02. 100,00	0.010,11	
Hizmet alımı									81.248,29	203.524,16	481.800,7	277.686,71			81.248,29	203.524,16	481.800,7	277.686,71
Makine /																		
teçhizat		5.796.361,31	8.303.638.69		4.988.52	2.945.011,48		364.064,06	3.776.822,92	9.619.727,07	498.55	3.991.157.23		6.160.425,37	12.080.461.61	9.619.727,07	3.285.120	7.991.157,23
giderleri																		
Yapım işleri									177.634,51						177.634,51			
TOPLAM																		
(Yıllar		5.397.748,82	8.433.549,95		4.988.52	2.945.011,48		1.259.615,75	7.124.780,65	18.164.122,54	7.957.505,41	10.099.848,27		7.055.977,06	15.428.419,34	18.164.122,54	10.907.505,41	14.099.848.27
İtibarıyla)																		
GENEL		•	40.050	000 00	•	•			44 605	072.62					CO CEE	072.62		
TOPLAM			19.050.	.000,00			44.605.872,62				63.655.872,62							



Awards in 2021

Recipient	Award	Awarding Organization
Atay Vural	BAGEP Award	The Science Academy
Gözde Korkmaz	BAGEP Award	The Science Academy
Levent Berker	BAGEP Award	The Science Academy
Elif Nur Fırat Karalar	Tübitak Intencive Award	TUBITAK
Nurcan Tunçbağ	Tübitak Intencive Award	TUBITAK
Tuğba Bağcı Önder	Sedat Simavi Health Science Award	Turkish Journalists' Association
Gözde Korkmaz	GEBIP	Turkish Academy of Sciences
Savaş Taşoğlu	Research incentive award	ODTÜ Parlar Vakfı



Collaborations with Industry

- > Arçelik
 - ✓ Mobile EKG tracking system
 - ✓ Corensis self check-in
- StoParkinson
 - ✓ Earstim
- Inventram
 - ✓ Tarabios

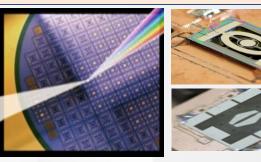


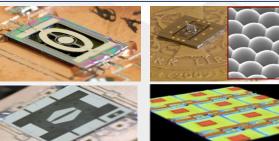
OPTICAL MEMS LABORATORY



Prof. Dr. Hakan Ürey

Micro-optics and MEMS Based Scanners, Spectrometers, Sensors





Applications and Technology Commercialization (50 Patents, 5 Spin-offs)





Holographic AR Glasses





Industry 4.0 HWDs









Parkinson Brain Stimulator











- ✓ Spinoff from Prof. Hakan Urey's Lab
- ✓ Received \$3.5M investment



Blood Analyzer

- ✓ Professor Hakan Ürey's project called TARABIOS, which continues in his laboratory within KUTTAM, is supported by Inventram and Koç Holding.
- ✓ In the project, a portable device (Lab-on-chip device) that can perform blood tests from a drop of blood is being developed.
- ✓ Thanks to CoaRight, patients will be able to directly share with their doctors their measurements of blood clotting time such as Prothrombin Time Test and INR (PT/INR) with a drop of blood taken from the finger.





Dr. Hakan Ürey (Electronic) and Dr. Afsun Şahin (Medicine - Ophthalmology)

- ✓ Objectives: Develop cataract simulator device, perform clinical validation in 3 clinics, organize workshops, and receive investment
- ✓ Technology is based on CGH, pupil tracker, and advanced algorithms and software
- ✓ Impact: Huge societal, clinical, and economic impact
- ✓ Duration: 2022 2025 (36 mo)
- ✓ Budget: 2M€ supported by The European Innovation Council (EIC) Transition Program



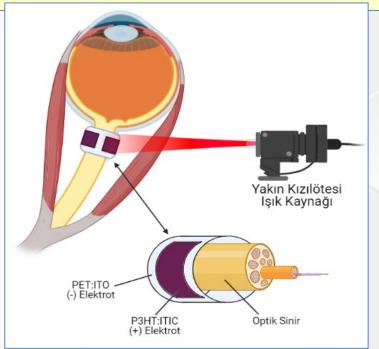




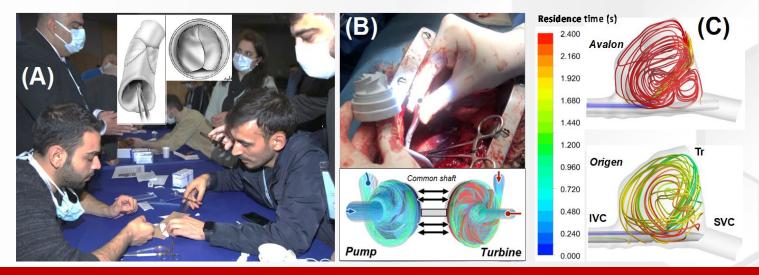


Dr. Sedat Nizamoğlu (Engineering) and Dr. Murat Hasanreisoğlu (Medicine/Ophthalmology)

- ✓ With the help of photosensitive organic polymer-based implants under development, extensive research is carried out to substitute the function of damaged retina and optic nerve and/or to regenerate damaged tissues.
- ✓ In this context, it is aimed to regain vision in diseases originating from the optic nerve.







Dr. Kerem Pekkan has developed a number of devices for the treatment of pediatric heart diseases in his cardiovascular mechanics laboratory.

- (A) Workshop organized by pediatric cardiac surgeons for the construction of right outflow tract heart valves designed in his laboratory (2022 National Congress of Pediatric Cardiac Surgery and Cardiology).
- (B) Non-motorized artificial right heart support pump blood flow calculations and the first animal experimentation (ERC project April 2022)
- (C) Right ventricular flow performance tests with double-walled neonatal by-pass cannula with high hemodynamic performance.



- ✓ Treatment of corneal keratoconus disease with visible light,
- ✓ Designing environment sensitive natural microparticles to provide corneal limbal stem cell regeneration and protection against immune attack.

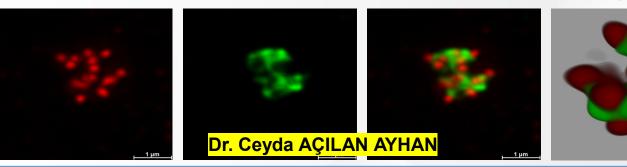
✓ Dr. Murat Hasanreisoğlu (Medicine/Ophthalmology), Dr. Seda Kızılel (Engineering);

- ✓ Diabetes and macular degeneration are the two most common causes of vision loss in the world.
- ✓ In this context, environment-sensitive biomaterials will be used to enable controlled intraocular drug release to provide a much more effective treatment and hence to alleviate the economic burden of these diseases.



The researchers from the Molecular Medicine Laboratory

PLK4 Centrin-2



- ✓ The researchers from the Molecular Medicine Laboratory conduct research on the molecular pathways and factors that affect treatment response in breast, brain, prostate, ovarian and lung cancers.
- ✓ Upon the emergence of COVID-19 pandemic, the research groups in this laboratory have started to carry out projects related to the disease, developed new Sars-CoV2 neutralizing recombinant proteins using a molecular engineering approach, and developed technologies that can be used as novel treatment modalities in the future.



High Impact Publications

PLASMA CELL-FREE DNA METHYLATION: A LIQUID BIOMARKER OF HEPATIC FIBROSIS

Yazar: Müjdat Zeybel



ENHANCEMENT OF THE LIPID PRODUCTIVITY AND FATTY ACID METHYL ESTER PROFILE OF CHLORELLA VULGARIS BY TWO ROUNDS OF MUTAGENESIS

Yazarlar: Halil Kavaklı, Can Erkey



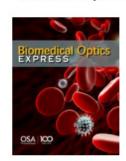
INHIBITION OF THE COACTIVATORS CBP/EP300 FACILITATE CELLULAR REPROGRAMMING

Yazar: Tamer Önder



APPLICATIONS OF AUGMENTED REALITY IN OPHTHALMOLOGY

Yazarlar: Hakan Ürey, Afsun Şahin



RSPO2 INHIBITION OF RNF43 AND ZNRF3 GOVERNS LIMB DEVELOPMENT INDEPENDENTLY OF LGR4/5/6

Yazarlar: Hülya Kayserili, Bruno Reversade



HUMAN CRY1 VARIANTS ASSOCIATE WITH ATTENTION DEFICIT/ HYPERACTIVITY DISORDER

Yazar: Ayse Nazlı Başak



