



2021 ANNUAL REPORT
BEZMIALEM VAKIF UNIVERSITY
BEYKOZ INSTITUTE OF LIFE SCIENCES AND
BIOTECHNOLOGY

**TWO CENTURIES
OF EXPERIENCE
IN HEALTH**

TABLE OF CONTENTS

Summary

Report

1 Faculty Recruitment

2 Publications

3 Scientific Projects

4 Education And Other Scientific Activities

Tables

Concluding Remarks

2021 Annual Report
Bezmialem Vakıf University
Beykoz Institute of Life Sciences and Biotechnology



SUMMARY

Bezmialem Vakıf University Beykoz Life Sciences and Biotechnology Institute (BILSAB) was officially established in 2014. The aim of the institute; in keeping with the general mission of Bezmialem Vakıf University, was the creation of a pioneering Institute recognized, known and appreciated for its education, research and development efforts in the fields of biology, medicine and biotechnology. For this purpose, the physical infrastructure of BILSAB was worked on during the first 4 years. The physical structure of the Institute and its laboratories was completed with the intensive restoration and design efforts within the scope of a project supported by the joint funds of Bezmialem Vakıf University and the Department of Strategy and Budget, and the Institute was put into service in May 2018 and the researchers started to work in the laboratories. The Scientific Advisory Board (SAB) Meetings serve as a platform for BILSAB to present its activities yearly and the first meeting was convened in Beykoz in December 2019. Due to the COVID-19 pandemic, the 2nd and 3rd SAB meetings were held online. Bezmialem Institute of Life Sciences and Biotechnology Infrastructure Project, which was the foundation of the Institute and jointly supported by Bezmialem Vakıf University and the Department of Strategy and Budget, was completed in 2021 and the Final Report of the Project was submitted to the Department in July 2021. This has been a major accomplishment for BILSAB in this year.

In 2021 SAB Report, we have summarized the developments in the abovementioned final report and presented the activities since the last SAB Meeting of December 2020. The COVID-19 pandemic, the effect of which was still felt in all stages of life this year, has obviously affected our targeted activities. Despite the pandemic, BILSAB continued to work this year, as it did last year. The laboratories remained open and the tasks were completed.

In the report, the activities carried out throughout BILSAB will be presented under 5 main headings. These titles are; Faculty Recruitment, Publications, Projects, Education and other scientific activities. Also, the scientific activities carried out by each faculty are presented in more detailed tables.

1. Faculty Recruitment

In December 2020, the faculty members at Beykoz Institute of Life Sciences and Biotechnology (BILSAB) were Drs. Osman Akçakır, Cem Albayrak, Ahmed Aly, Mehmet Z. Doymaz, M. Aziz Hatibođlu, M. Asif Khan, A. Matten Rafiqi and Serdar Uysal (Table 1). Having completed his doctorate at Rockefeller University this year, Dr. Caner ađlar joined the Institute as a new faculty and Dr. Ahmed Aly left the Institute. Thus, the total number of faculty members remained 8 and the number of research staff reached to 47, with additional researchers, post-doctoral fellows and technicians joining the groups of these faculty members (Table 2). Dr. Caner ađlar, who was joined to BILSAB during the last year, had completed his undergraduate degree in Molecular Biology at Bilkent University and his master's and doctorate degrees at Rockefeller University. He, then, returned to Turkey. Dr. ađlar mainly works in the field of molecular neurophysiology. In his research to understand how the brain controls food-related behaviors, Dr. ađlar conducts neuronal and molecular studies and works to develop new therapeutic opportunities in metabolic disorders. Having completed his education in the world's leading laboratories in this field, we believe that ađlar will make a significant contribution to the academic quality and productivity at BILSAB.

Our current evaluation and assessments of the physical structure of BILSAB is such that we can employ additional faculty members to our laboratories. Therefore, we plan to recruit new faculty members to the Institute in the upcoming years. One such candidate is Dr. Maged M. Harraz. Continuing his studies as a research fellow at Johns Hopkins University, Dr. Harraz was invited to BILSAB. Our plan is to recruit Dr. Harraz under TUBITAK 2232 International Leading Researchers program. In this program, Bezmialem Vakıf University and BILSAB will serve as the host Institute for Dr. Harraz and the funds for the laboratory and the salary expenses for Dr. Harraz will be paid by TUBITAK. The application and evaluation process for Dr. Harraz is currently ongoing. The current list of faculties and post-doctoral fellows and their short biosketches are presented at Tables 3 and 4.

2. Publications

During the period of November 2020-December 2021, 13 publications were originated from BILSAB as accessed on Pubmed. Of these articles, 4 are from Khan Laboratory, 4 from Hatibođlu Laboratory, 2 from Aly Laboratory, 2 from Doymaz Laboratory and 1 from Matten Rafiqi laboratory. The publications were mostly published in journals that were on the Q1 and Q2 lists in their fields. When the publications are evaluated in terms of both the number and

quality, it is obvious that the publication target aimed at the establishment of BILSAB has largely been achieved. These publications are shown in detail in Tables at the end of this Report.

Maintaining this trend of success at BILSAB in scientific publications will continue to be one of the most important goals of the Institute in the upcoming years.

3. Scientific Projects

Currently, 90 scientific research projects are carried out in BILSAB. In addition, 51 projects have been completed since the establishment of BILSAB.

Among the scientific projects, there are studies funded by Scientific and Technological Research Council of Turkey (TUBITAK) and Turkish Institutes of Health (TUSEB) which are competitive platforms for projects open to all researchers across the country. In addition, a significant number of projects supported by the Bezmialem Vakıf University Scientific Research Projects Unit are present on the lists.

The complete list of the projects is given in the tables where each faculty member and their laboratories are provided. The results of the ongoing projects will be harvested in the upcoming years in the form of publications, posters and papers, and these will be significant contribution of BILSAB to Bezmialem Vakıf University and the scientific production of the country in general.

The most notable funded study this year is the project entitled ‘Development of Biomarkers and Advanced Technology Drugs for Diagnosis and Treatment of Inflammation Mediated Auto-Inflammatory Diseases’. This study was supported within the scope of TÜBİTAK 1004 Center of Excellence Support Programs. This project will be carried out under the leadership of Istanbul University. The other members of the consortium are Bezmialem Vakıf University, Koç University, Koçak Farma İlaç ve Kimya Sanayi A.Ş. and Onko Farma Industry and Trade Incorporated. BILSAB Faculty members Drs. Serdar Uysal and Cem Albayrak serve as co-investigators in the project. The aim of the project is to produce biotechnological biomarkers and drugs for Familial Mediterranean fever disease, which is considered as an autoinflammatory disease model. The project is an important financial resource for the Institute and is an excellent candidate for generation of knowledge and experimental experience for BILSAB. This project is also one of the demonstrative measure showing that BILSAB has increased its visibility and recognition in the short time since its establishment and has become one of the leading research institutions in the country. This has been one of the main aims of BILSAB in terms of in research activities that researchers at BILSAB should be able to take part as project partners in large-scale and multi-partner consortium projects with other leading research universities of the country.

4. Education and Other Scientific Activities

Currently, there are 21 graduate students receiving training at BILSAB and 6 of them are registered students at Health Sciences Institute of Bezmialem Vakıf University (Table 8). There are also 11 TUBITAK Scholars who are registered at various Universities in the country. All the

students take part in the projects in BILSAB Laboratories where they are employed and the projects they carry out will be part of their thesis work. During the trainings, the students receive an education at the level equal to the most developed countries of the world under the supervision of experienced faculty members in modern laboratories. To get an education at this level in the universities abroad would cost hundreds of thousands of dollars for each student. Therefore, there is a considerable gain for BVU and for the country from these education and training activities provided at BILSAB. One of the examples of such as success stories is the case with Dr. Elif Karaaslan who completed her doctoral education at Doymaz Lab at BILSAB on the immunological properties of the non-structural proteins of the Crimean Congo Hemorrhagic Fever Virus. In June of 2021, Dr. Elif Karaaslan started as a postdoctoral researcher at Center for Diseases Control and Prevention in Atlanta Georgia, which is considered the world's leading institution in the field of infectious diseases. Working in Biosafety Level 4 Laboratories of CDC, Dr. Karaaslan is the first example of what BILSAB could achieve in the field of education and training of young scientists.

BILSAB also hosts students who are registered at Bezmialem Vakif University or from other Universities or even high schools as intern/volunteer students in every term. For these ambitious students, BILSAB experience makes a significant contribution to their future scientific outlook and education. In 2021, a total of 11 students had opportunity to take part in research projects and gain hands on laboratory experience at BILSAB.

'Beykoz Conferences/Seminars', which BILSAB continues regularly every month, are among the activities carried out in the field of education and trainings. These conferences provide students and academics, not only at the Institute, but throughout the University, with the opportunity to learn first-hand the most advanced and latest developments from leading researchers in their fields throughout the country and the world, and to get exposure to the results of the research as well as to the researchers. Despite the COVID-19 restrictions, these conferences, some online and some in person, were continued in 2021 and will continue in 2022 (Table 5). These seminars provide excellent platforms and opportunities for the researchers at BILSAB get connected with the leading laboratories and develop future projects with the leaders in the fields.

The 2-week 'Summer School' for high school students, the first of which was held in 2019 and held during the summer term, has not been held for the last two years due to COVID-19. For the summer of 2022, the summer school is planned to continue.

5. The following Up the Last Year's Meeting

During the last year's SAB meeting several points that needed to be followed up were raised by the members of Scientific Advisory Board.

One of the chief issues was that BILSAB needed a housing unit for graduate students and researchers. Since the Institute is located relatively far from the city's offerings of public transportation, the closeby housing becomes all the more critical. This year, we made dormitory arrangements with a neighboring university and secured 4 slots for female graduate students at Turkish-German University Student Dormitories. Obviously, this solution will not remedy all the dorm or housing needs of BILSAB, but it will alleviate some of the immediate problems.

Another issue that was suggested at last years meeting was that the PI's were to be active in engaging in research and scientific activities with other researchers in universities in the city and around the country. The projects developed this year and publications originating from BILSAB indicate that these types of activities are increasing and the suggestions of SAB are followed.

Another suggestion was that internal meetings such as educational seminars and journal clubs should be followed strictly within the Institution. This year, the Institute was keen on following this particular suggestion.

One of the suggestion where the success was not forthcoming was the financial support in the form of donations from private and public entities. Obviously, this issue is an important one and in the face of the insurmountable financial burden of running research laboratories in a country where the inflation and foreing currency rates are unpredictable.



Table 1. Departments and the Faculty at the Institute

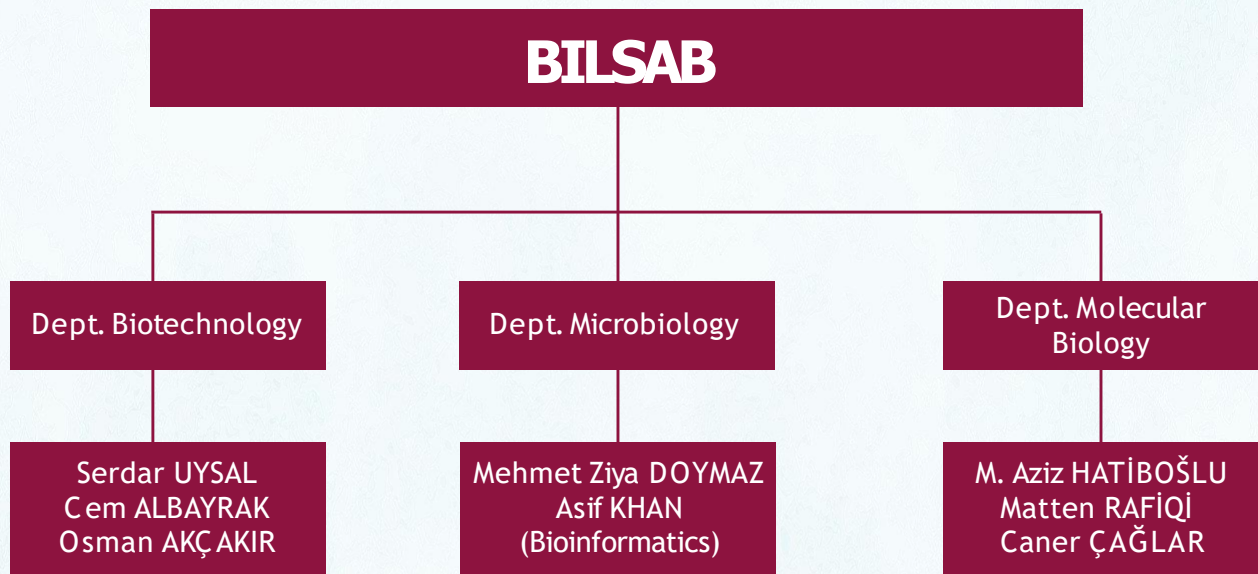


Table 2. The list of Personnel at the Institute

Name	Position	Stard Dates
Osman Akçakır	Faculty	22.12.2017
Cem Albayrak	Faculty	04.11.2020
Caner Çağlar	Faculty	01.06.2021
M. Aziz Hatiboğlu	Faculty	04.09.2013 (BVU)
Mehmet Z. Doymaz	Faculty	24.09.2012 (BVU)
M. Asif Khan	Faculty	01.01.2020
Matteen Rafiqi	Faculty	12.02.2018
Serdar Uysal	Faculty	02.06.2014 (BVU)
Lena Mahmud Azar	Postdoctoral fellow	02.07.2018
Mohd Kamil	Postdoctoral fellow	22.10.2018
Pricilla Gomez Polo	Postdoctoral fellow	22.10.2018
Ehsan Sarayloo	Postdoctoral fellow	15.07.2021
Imran Khan	Postdoctoral fellow	13.03.2019
Ayesha Fatima	Postdoctoral fellow	29.03.2021
Ayşegül Prinçal	Postdoctoral fellow	15.11.2021
Laila Kianifard	Postdoctoral fellow-TUBITAK	01.11.2019
Mauricio Alarcon	Postdoctoral fellow- TUBİTAK	03.05.2021
Gözde Deveci	Research Assistant	12.03.2018
Nesibe Selma Çetin	Research Assistant	10.07.2015
Merve Yazıcı	Research Assistant	06.08.2018
Sercan Keskin	Research Assistant	08.06.2020
Ümit Yaşar Kına	Research Assistant	19.03.2018
Elif Karaman	Research Assistant	25.06.2018
Nihan Sultan Milat	Research Assistant	18.11.2019
Büşra Karaçam	Research Assistant	26.11.2019

Table 2. The list of Personnel at the Institute

Name	Position	Stard Dates
Esra Büşra Işık	Research Assistant	18.02.2021
Birgül Çolak	Research Assistant	18.02.2021
Özlem Bakangil	Research Assistant	13.09.2021
Selin Turan	Research Assistant -TUBITAK	15.07.2021
Hilal Hekimoğlu	Research Assistant -TUBITAK	26.10.2020
Muhammet Çelik	Research Assistant -TUBITAK	02.10.2020
Adnaane Bawa	Research Assistant -TUBITAK	09.08.2021
Li Chuin Chong	Research Assistant -TUBITAK	01.03.2020
Rashid Mukaila	Research Assistant -TUBITAK	01.12.2020
Beste Tunalı	Research Assistant -TUBITAK	15.07.2021
Diclehan Gündüz	Research Assistant -TUBITAK	01.10.2021
Gamze Bek	Research Assistant -TUBITAK	25.09.2021
Fatma Zehra Çağıl	Research Assistant -TUBITAK	15.03.2021
Özgür Zelal Durmuş	Research Assistant -TUBITAK	12.06.2021
Nurşah Öztunç	Technician	
Esmahan Avcı	Technician	23.03.2020
Burcu Nur Aydın	Technician	02.11.2020
Cennet Dama	Technician	25.10.2021
Övgü Dağdeviren	Technician	27.10.2021
Kadir Lütfi Çelebi	Technician	01.03.2021
Yağmur Ersoy	Technician	01.09.2021
Elif Kurt	Technician	23.03.2020
Esmâ Bendez	Institute Secretary	13.12.2020
Osman Şimşit	Secretary	01.08.2021
Adem Yıldız	Support Personnel	27.08.2018
Berrin Düzgit	Support Personnel	25.06.2018

Tablo 3. The list of Faculty and their Bioskeches

Faculty	Education and Training	Field
Osman AKÇAKIR, PhD	<ul style="list-style-type: none"> •BSc; University of Toronto, •MSc; University of Waterloo, •PhD; Univ. Illinois-Urbana Champagne, •Post-Doc; Univ. Michigan 	Biophysics
Cem ALBAYRAK, PhD	<ul style="list-style-type: none"> •BSc; Massachusetts Institute of Technology, •MSc; Stanford University •PhD; Stanford University •Post Doc; ETH Zurich - Swiss Federal Institute of Technology •Assist. Professor; Koç University, Istanbul 	Biotechnology
Caner ÇAĞLAR, PhD	<ul style="list-style-type: none"> •BSc: Bilkent University •MSc; Rockefeller University •PhD; Rockefeller University 	Neurology
Mehmet DOYMAZ, PhD	<ul style="list-style-type: none"> •BSc; Ankara University, •MSc+PhD; University of Tennessee, •Post-Doc; Mount Sinai Sch Med. •Fellowship; UCLA 	Microbiology
M. Aziz HATİBOĞLU, MD	<ul style="list-style-type: none"> •MD; Ankara University •Residency; S.B. Okmeydanı E.A. H. •Fellowship; The University of Texas, M.D. Anderson Cancer Center, 	Neurosurgery
M. Asif KHAN, PhD	<ul style="list-style-type: none"> •BSc; National University of Singapore, •MSc; National University of Singapore •PhD; National University of Singapore •Post Doc; Johns Hopkins, Singapore & National University of Singapore •Assist. Professor; Perdana University 	Bioinformatics
Matteen RAFIQI, PhD	<ul style="list-style-type: none"> •BSc; SK University of Ag. Sci & Tech •MSc; Vaginen Univ. •PhD; Max Planck Ins. Univ. Chicago, •Post-Doc; McGill University 	Developmental Biology
Serdar UYSAL, PhD	<ul style="list-style-type: none"> •BSc; Marmara Univ, İstanbul Technical University •MSc+PhD; University of Chicago, •Post-Doc; Harvard University 	Biochemistry

Table 4. The list of Post-Doctoral Fellows and their bioskeches

Post-Doctoral Fellow	Education and Training	Field
Lena MAHMOUDI AZAR, PhD	<ul style="list-style-type: none"> •BSc; Tabriz University, Tabriz, Iran. •MSc; Azad University Science and Research Branch, Tehran, Iran. •PhD; Hacettepe University 	Biochemistry
Mohd KAMIL, PhD	<ul style="list-style-type: none"> •BSc; Integral University Lucknow, India •MSc; Integral University Lucknow, India •PhD; Integral University Lucknow, India 	Molecular Parasitology
Laila KIANIFARD, PhD	<ul style="list-style-type: none"> •BSc; Urmia University, Iran •MSc; Urmia University, Iran •PhD; Urmia University, Iran 	Biochemistry
Pricilla Gomez POLO, PhD	<ul style="list-style-type: none"> •BSc; University of Santiago de Compostela •MSc; University of Leida, Spain •PhD; University of Leida, Spain 	Developmental Biology
Ayşegül Prinçal, PhD	<ul style="list-style-type: none"> •BSc; Dumlupınar University •MSc; Marmara University •PhD; Marmara University 	Molecular Virology
Ehsan SARAYLOO, PhD	<ul style="list-style-type: none"> •BSc; Iranian University of Science and Technology •MSc; Sharif University of Technology •PhD; Koç University, 	Biotechnology
Imran KHAN, PhD	<ul style="list-style-type: none"> •BSc; Integral University Lucknow, India, •MSc; VIT University, Vellore, India •PhD; Integral University Lucknow, India 	Biology
Ayesha FATIMA	<ul style="list-style-type: none"> •Lisans: Panjab University, School of Pharmacy, Pakistan •MSc: Universiti Sains Malaysia, Pharmacy, Pharmaceutics and Pharmaceutical Technology, Malaysia •PhD: Universiti Putra Malaysia, Institute of Biosciences, MAKNA Cancer Research Lab, Malaysia 	Pharmaceutical Technology
Mauricio ALARCON	<ul style="list-style-type: none"> •BSc; University of Concepcion, Chile •Msc; University of Concepcion, Chile •PhD; National Taiwan University, Taiwan 	Biology Zoology Entomology

Table 5. BILSAB Seminars

Speaker	Date	Title	Place
Prof. Dr. Batu ERMAN	24.12.2020	Self versus nonself: Molecular choice and sibling rivalry among the zbtb transcription factor family.	BILSAB Conference Room
Dr. Umut İnci ONAT	25.02.2021	Lipid induced endoplasmic reticulum stress in cardiometabolic syndrome: Novel mechanisms and therepeutic targets.	BILSAB Conference Room
Dr. Mehmet SOMEL	15.03.2021	Ancient DNA insights into human history and evolution in Anatolia	BILSAB Conference Room
Dr. Gitanjali YADAV	09.04.2021	Green carbon for food security: Genome to phenome	Webinar
Dr. Amita ROY	28.05.2021	Lessons learned from our computational drug devolopment effort against COVID-19	Webinar
Dr. Fikrettin ŞAHİN	02.07.2021	Boron-containing gel formulation promotes acute and chronic	BILSAB Conference Room
Dr. Emine ERTEKİN	27.08.2021	Drivers of diversity in rock dwelling microbial sommnunities from ectreme environments	BILSAB Conference Room
Dr. Dennis GRAB	24.09.2021	African trypanosome interactions with the human blood-brain barrier and beyond: Insight and revelations.	Webinar
Dr. Osman Uğur SEZERMAN	21.10.2021	Next generation sewuencing ap-plications in personalized medicine	BILSAB Conference Room
Dr. Piv GOPALASINGM	19.11.2021	Introduction to EMBL-EBI resources	BILSAB Conference Room



Laboratory of Osman AKÇAKIR

Research Area

Biomedical Optics, Quantitative Phase Microscopy, Diagnostic systems

Personnel

Technician Lütfi Kadir Çelebi

Projects

1. Malaria parasite infection diagnostics via Fourier ptychographic imaging (BILSAB).
2. Liver fibrosis staging by using quantitative phase imaging and machine learning (BILSAB, BVU Hospital, Istanbul Technical University)
3. Intracellular yeast cell protein expression quantification using quantitative phase imaging (BILSAB)
4. Deep Learning based classification of brain cancers from MRI scans (BILSAB)
5. Development of Bacillus microorganisms against vector-borne diseases by biotechnological and paratransgenesis methods (Co-PI, TÜBİTAK 1001)

Projects

1. Submitted a manuscript for publication to Biomedical Optics Express (11/21)
Title: Automated wide-field malaria parasite infection detection using Fourier ptychography on stain-free thin-smears
Authors: O. Akcakir, L.K. Celebi, Mohd Kamil, A.S.I. Aly



Laboratory of Cem ALBAYRAK

Research Area

Protein engineering, genetic code engineering

Personnel

1. Postdoctoral Fellow Ehsan Sarayloo
2. Technician Yağmur Ersoy
3. Research Assistant Beste Tunalı
4. Research Assistant Selin Turan

Projects

Ongoing Projects

1. TÜBİTAK Covid-19 Project; "Production of Recombinant IL-1Ra for Treating Cytokine Storm Related to Covid-19 Pneumonia". April 2020-January 2021. (Role: Researcher)
2. TÜBİTAK 2516 (South Korea Bilateral Cooperation Grant); "Studying Oxygen Tolerance of the Hydrogenase Enzyme at a Molecular Level", May 2019-November 2021. (Role: PI)
3. TÜBİTAK 1001; "Catalytic Biomaterial Synthesis by Selective Conjugation of Enzymes", November 2018-May 2022. (Role: PI)
4. TÜBİTAK 3501 Career; "Investigation of Vascularization using Bioactive Biomaterials with Conjugated Growth Factors". May 2018-November 2021. (Role: PI)
5. TÜBİTAK 1004 Center of Excellence Support Grant; "Biomarker and Drug Development for Monitoring and Treating Inflammasome-Mediated Autoinflammatory Diseases", May 2021-May 2025 (Role: Sub-PI*).*This is a consortium grant that supports 11 research projects. Each sub-PI manages one of these 11 research projects. The stated award amount is for the research project, not the entire consortium.

Completed Projects

1. Koç University Seed Research Fund (similar to BAP); "Cell-free synthesis of alternate affinity proteins". September 2018-September 2020. (Role: PI)
2. Catalytic biomaterial synthesis for producing glutathione
3. Studying oxygen tolerance of the hydrogenase enzyme
4. Creating a microfluidic platform for cell-free evolution of proteins

Graduate Student Thesis

1. Fulya Akşit MS Thesis Title: In Silico and Experimental Determination of IL1 β -Receptor Inhibitor Peptides. (completed at Koç University)

Publications

1. Nazeer MA, Karaoglu IC, Ozer O, Albayrak C, Kızılel S. 2021. Neovascularization of engineered tissues for clinical translation: Where we are, where we should be. APL Bioengineering 5(2): 021503 (2021).



Field

Immunology and molecular biology of malarial parasites

Personnel

1. Postdoctoral Fellow Mohd Kamil
2. Research Assistant Gözde Deveci
3. Research Assistant Ümit Yaşar Kına
4. Graduate Student Sinem Ünal
5. Graduate Student Sevim Nur Akyüz

Projects

Ongoing Projects

- 1.TÜBİTAK 1001; 'Karaciğer Evresindeki Sıtma Parazitleri Eksportom Proteinlerinin İşlevsel Karakterizasyonu'. January 2020- January 2023.
- 2.BAP; 'Cytolysins expressing liver stage parasites as novel live attenuated malaria vaccines.', 20201221
- 3.BAP; ' Development of whole blood stage vaccine for malaria treatment via CRISPR-gene editing technology.', 20201222
- 4.BAP; 'Detailed Spatial and Temporal Transcriptome Characterization of the Development of Virulence in Malaria Parasite Sporozoites' 20210419
- 5.BAP; 'Multiplex Targeting of CRISPR/Cas9 System by Using Ribozymes for Multiple Gene Editing in Rodent Malaria Parasites Plasmodium berghei and Plasmodium yoelii.', 12.2019/13. December 2019- December 2020.

6.BAP; 'Viral Vectored Pre- Erythrocytic Stage Malaria Vaccine', 12.2019/12. December 2019- December 2020.

7.BAP; 'Novel Enzyme Free Plasmonic Diagnostic System for SARS-CoV-2', 20200821. July 2020- July 2021.

8.BAP; 'Characterization of the antimalarial and antiviral efficacies of novel synthetic lead antimicrobial compounds' 20200820. July 2020- July 2021.

9.BAP; 'Genetic Characterization of dual use epitope and fluorescent tags for localization and pull-down assays of HSP90 proteins'. 8.2019/18. October 2019- October 2020.

Completed Projects

1.Recombinant protein expression of conserved plasmodium egress proteins as targets for the development of novel malaria therapy vaccines and diagnostic reagents. BVU BAP 9.2018/12, September 2018- September 2019.

2.Establishing the CRISPR/Cas9 platform to generate live attenuated malaria vaccines by deleting essential malarial genes. BVU BAP 6.2018/18, July 2018- July 2019.

3.Genetic Characterization of DNA Photolyase Gene in Rodent Malaria Parasite Using Crispr-Cas9 Genome Editing Technology. BVU BAP 6.2019/12, July 2019- July 2020

4.Development of Novel Phototransformable Fluorescent Transgenic Parasite Model System by Using CRIPR-Cas9. BVU BAP 9.2018/19, September 2019- September 2020.

5.Genetic Characterization of Autophagy Related Genes in Regulation of Malarial Autophagy. BVU BAP 12.2018/17, December 2018- December 2019.

6.TNPRC-NIH Pilot Studies Grant, DNA-Vaccination against Plasmodium Liver Stage Exported Proteins in Presence of Prior SIV Infection. Tulane University. July 2015- April 2018.

7.NIH-NIAID R21 Grant, Selection of the Determinants of Plasmodium Sporozoite Infectivity and Motility. Tulane University. July 2015- December 2017.

Graduate Student Thesis

1.Ümit Yaşar Kına PhD Thesis Title: Cytolysins expressing liver stage parasites as novel live attenuated malaria vaccines.

2.Gözde Deveci PhD Thesis Title: Development of whole blood stage vaccine for malaria treatment via Crispr-Gene editing technology.

Publications

1. "Synthetic DNA Vaccines Adjuvanted with pIL-33 Drive Liver-Localized T Cells and Provide Protection from Plasmodium Challenge in a Mouse Model." Reeder, SM, EL Reuschel, MA Bah, K Yun, NJ Tursi, KY Kim, J Chu, FI Zaidi, I Yilmaz, RJ Hart, B Perrin, Z Xu, L Humeau, DB Weiner and A. S. I. Aly, *Vaccines*. 2020 Jan 10;8(1). pii: E21.
2. "Phenotypic Analysis of Rodent Malaria Parasite Asexual and Sexual Blood Stages and Mosquito Stages Analysis of Rodent Malaria Parasite Asexual and Sexual Blood Stages and Mosquito Stages" A. S. I. Aly, G. Deveci, I. Yilmaz, A. Abraham, A. Golshan, R. J. Hart. *JOVE*, Published: May 30, 2019
3. "Administration of Nicotine Exacerbates the Quinine-induced Structural and Functional Alterations of Testicular Tissue in Adult Rats: An Experimental Study." Kianifard, D, SMM Shoar, A. S. I. Aly, L Kianifard, F Rezaee *Urology Journal*, 2019, 5 January 2019, Page 5884.
4. "Highly Sensitive and Rapid Characterization of the Development of Synchronized Blood Stage Malaria Parasites Via Magneto-Optical Hemozoin Quantification" Pukanicsik, M., P. Molnar, A. Orban, A. Butykai, L. Marton, I. Kezsmarki, B. G. Vertessy, M. Kamil, A. Abraham and A. S. I. Aly. *Biomolecules*. 2019 Oct 7;9(10):579. doi: 10.3390/biom9100579.
5. An HSV-1-derived malaria vaccine expressing pre-erythrocytic stage malaria proteins provides sterilizing protection from *P. yoelii* salivary gland sporozoite challenge Kamil M., Atmaca, H.N., Yilmaz I., Aly S.I., Manuscript Ready
6. Immunization with Axenically Developed Exoerythrocytic Forms of *Plasmodium yoelii* Induces Sterile Protection against Infectious Sporozoite Challenge Kamil M., Deveci G., Kina U.Y., Aly S.I., Manuscript Ready
7. Generation of Chloroquine drug resistant parasite and their genetic characterization to identify drug resistant loci Kamil M., Atmaca, H.N., Unal S., Kina U.Y., Aly S.I., Manuscript Ready
8. Assessing the influence of cycloastragenol on telomere/telomerase system of *Arabidopsis thaliana*. *Plant Cell Tiss Organ Cult* 146, 83–95 (2021). <https://doi.org/10.1007/s11240-021-02047-w> Ceylan, M., Kina, Ü.Y., Çakır, Ö. et al.
9. Hydrogen peroxide-induced oxidative stress upregulates ght5 gene belonging to hexose transporters in *Schizosaccharomyces pombe*. *Cellular and Molecular Biology*, 65(1), 41–45. <https://doi.org/10.14715/cmb/2019.65.1.7> Kina, U. Y., & Palabiyik, B. (2019)
10. "Direct synthesis of tetrazine functionalities on polymer backbones", *JOURNAL OF POLYMER SCIENCE PART A-POLYMER CHEMISTRY*, vol.56, pp.1-8, 2018 Sipahioglu Kara S., Ates M.Y., Deveci G., Cetinkaya A., Kahveci M.,



Laboratory of Caner ÇAĞLAR

Research Area

Neurology, Metabolism

Personnel

1. Technician Nurşah Öztunç

Projects

Ongoing Projects

- 1.1 Investigating the role of intra-tumor heterogeneity of mTOR activity in the development of GBM
2. Identifying the role of axonal projections of Ppp1r17 expressing neurons in Dorsomedial Hypothalamus and nitric oxide signaling pathway activity in these neurons in the control of binge eating behavior.- Tubitak 1001- Under review

Publications

1. The genetic structure of the Turkish population reveals high levels of variation and admixture PNAS - DOI:10.1073/pnas.2026076118
2. Restriction of food intake by PPP1R17-expressing neurons in the DMH PNAS - DOI:10.1073/pnas. 2100194118



Laboratory of Mehmet DOYMAZ

Research Area

Immunological and Virological Aspects of Crimean Congo-Hemorrhagic Fever Virus Proteins

Personnel

1. Postdoctoral Fellow Ayşegül Prinçal
2. Research Assistant Nesibe Selma Çetin
3. Research Assistant Merve Yazıcı
4. Research Assistant Sercan Keskin
5. Research Assistant Özlem Bakangil
6. Technician Esmahan Avcı
7. Technician Burcu Nur Aydın

Projects

Ongoing Projects

1. TÜBİTAK 1003, 'Development of nanoparticle based carrier systems containing immunochemotherapeutic agents against visceral leishmaniasis'. Sept. 2020. Co-investigative Project with Yıldız Technical University. Project No; 216S612
2. TUSEB; 'SARS-CoV-2 virüsüne karşı, virüs benzeri partiküller (virüs like particles - VLP) temelinde aşı üretilmesi'.
3. BAP; 'Investigation of antigenic similarities between Hazara virus nucleoprotein and Crimean Congo hemorrhagic fever virus nucleoprotein in terms of cellular response'. Project No; 4.2019/12. 01.05.19-31.12.20.
4. BAP; 'Hepatit B Virüsü Yüzey Antijeni (HBsAg)'nin Kopya Sayısının Arttırılmasının Pichia pastoris'te Üretim Miktarına Etkisinin Araştırılması'.

Completed Projects

- 1.Ministry of Development, 2015BŞV036. 'Establishment of the Infrastructure of Institute of Life Sciences and Biotechnology. 06.12.2021.
- 2.TÜBİTAK 1003; 'Development of serological diagnostic methods for Crimean-Congo Hemorrhagic Virus'. 36 months. Oct 2014-Oct 2018.
- 3.TÜBİTAK 1001; 'Analysis of immunological properties non-structural proteins of Crimean-Congo Hemorrhagic Fever Virus'. 24 Months. May 2018- May 2020.
- 4.BAP; 'Investigation of immunogenicity of Crimean Congo Hemorrhagic Fever Virus nucleoprotein coupled with IMX313 peptide'. Project No; 12.2018/12, 01.02.2019-13.02.2020.
- 5.BAP; 'Production of Crimean Congo hemorrhagic fever virus kelkit strain glycoproteins in eukaryotic expression system'. Project Number; 6.2017/28, 15.09.2017- 01.04.2019.
- 6.BAP; 'Production evaluation of activities of cetuximab as a biosimilar molecule' 23.1.2019-22.7.2020.
- 7.BAP; 'Production of Hazara JC280 nucleoprotein in eukaryotic P. pastoris.' Project No; 6.2017/27. 15.08.2017-14.02.2019.

Graduate Student Thesis

- 1.Merve Kalkan, PhD Thesis, Continuing, 'Investigation of Hazara virus as Model organism for Crimean-Congo Hemorrhagic Fever Virus'.
- 2.Nesibe Çetin, PhD Thesis, Continuing, 'Production of virus-like particles for Crimean-Congo Hemorrhagic Fever Virus'
- 3.Elif Karaaslan, PhD Thesis, Completed 'The non-structural proteins of Crimean-Congo hemorrhagic fever virus and their role in humoral immunity'.
- 4.Filiz Güney, MSc Thesis, Completed 'The expression of Gc glycoprotein of Crimean-Congo hemorrhagic Fever Virus in eucaryotic expression system'
- 5.Nesibe Çetin, MSc Thesis, Completed; 'Investigation of Delayed Type Hypersensitivity against Crimean Congo Hemorrhagic Fever Virus Nucleoprotein'.

Publications

1. Karaaslan, E, Çetin, N. S., Kalkan-Yazıcı M., Hasanoğlu, S, Karakeçili, F, Özdarendeli, A., Kalkan, A., Kılıç, A. O., Doymaz, M. Z. Immune Responses in Multiple Hosts to Nucleocapsid Protein (NP) of Crimean-Congo Hemorrhagic Fever Virus (CCHFV). Accepted for Publication. PLOS Neglected Tropical Diseases.

2.Kalkan-Yazıcı M, Karaaslan E, Çetin NS, Hasanoğlu S, Güney F, Zeybek Ü, Doymaz MZ. 2021. Cross-Reactive anti-Nucleocapsid Protein Immunity against Crimean-Congo Hemorrhagic Fever Virus and Hazara Virus in Multiple Species. *J Virol.* 2021 Jan 13;95(7):e02156-20. doi: 10.1128/JVI.02156-20. PMID: 33441341

3.Kalkan Yazıcı M, Koç MM, Çetin NS, Karaaslan E, Okay G, Durdu B, Sümbül B, Doymaz MZ. Discordance between Serum Neutralizing Antibody Titers and the Recovery from COVID-19. *J Immunol.* 2020 Nov 15;205(10):2719-2725.

4.Alm E, Broberg EK, Connor T, Hodcroft EB, Komissarov AB, Maurer-Stroh S, Melidou A, Neher RA, O'Toole Á, Pereyaslov D; WHO European Region sequencing laboratories and GISAID EpiCoV group; WHO European Region sequencing laboratories and GISAID EpiCoV group*. Geographical and temporal distribution of SARS-CoV-2 clades in the WHO European Region, January to June 2020. *Euro Surveill.* 2020 Aug;25(32):2001410.

5.Sumbul B, Doymaz MZ. A Current microbiological picture of Mycobacterium isolates from Istanbul, Turkey. *Pol J Microbiol.* 2020;69(2):1-7.



Laboratory of M. Aziz HATİBOĞLU

Research Area

Analysis of etiology, diagnostics and treatment modalities of glial tumors

Personnel

1. Postdoctoral Fellow Imran Khan
2. Research Assistant Büşra Karaçam
3. Technician Öykü Dağdeviren
4. Postdoctoral Fellow Researcher Sadaf Mahfooz (Türkiye Bursları)
5. Volunteer Sena Nur Söyler, Med student

Projects

Ongoing Projects

1. Turkish Genome Project- Sub-project-Genetic analysis of Turkish patients with brain tumors. Türkiye Sağlık Enstitüleri Başkanlığı. (Doç. Dr. Mustafa Aziz Hatiboğlu)
2. Glial tümörlü hastalarda klinik ve immünohistokimyasal özelliklerin incelenmesi ve prognoza etkisinin araştırılması. BVU BAP-6.2019/11.
3. Santral Sinir Sistem Lenfoma Hastalarının Tanısında Moleküler Özelliklerinin Değerlendirilmesi. BVU BAP-20200205.
4. Beyin Metastazı Nedeniyle Tedavi Edilen Hastaların Moleküler Özelliklerinin ve Prognoza Etkilerinin Değerlendirilmesi. BVU BAP-20200209.
5. Glioma kaynaklı ekzozom ve serbest-DNA'ların normal astrositleri tümöre dönüştürme potansiyellerinin incelenmesi. BVU BAP- 20200808.
6. Developing Gamma Knife treatment schema overcoming radio-resistance and identifying related mechanisms. BVU BAP- 20200810.

- 7.Gliomalı Hastalarda Tumor Mikrobiyomunun Araştirilmesi. BVU BAP.20200904
- 8.Anti-cancer effects of Phoenix dactylifera (Ajwa Date) against murine glioma 261 model BVU BAP- 20201202.
- 9.In vivo glioblastoma fare tumor modelinde etkin Gamma Knife radyocerrahisi doz ve tedavi semasının belirlenmesi, BVU BAP- 3.2019/3.
- 10.Santral Sinir Sistem Lenfoma Hastalarının Tanısında Molekuler Özelliklerinin Deđerlendirilmesi BVU BAP- 20200205.
- 11.Beyin Metastazı Nedeniyle Tedavi Edilen Hastaların Molekuler Özelliklerinin ve Prognoza Etkilerinin Deđerlendirilmesi, BVU BAP- 20200209.
- 12.In vivo glioblastoma fare tumor modelinde Gamma Knife radyocerrahisi ile iliřkili immün mekanizmaların araştirilmesi, BVU BAP- 20201201.
- 13.Glioma kaynaklı eksozom ve serbest-DNA'ların normal astrositleri tumöre dönüřtürme potansiyellerinin incelenmesi, BVU BAP-20200808
- 14.Gliomalı Hastalarda Tumor Mikrobiyomunun Araştirilmesi, BVU BAP- 20200904
- 15.Likid biyopsi ile meningiomalarda tanısai ve tedaviye yanıtta kullanılacak biyo-belirteçlerin araştirilmesi, BVU BAP- 20210405E
- 16.Deneysel Spinal Kort Yaralanması Modelinde Urolithin A'nın Mitofaji ve Apoptozis Üzerine Etkisi, BVU BAP- 20210417
- 17.Identification of novel therapeutic miRNA candidate for targeting the NOTCH signaling pathways in temozolomide resistant glioblastoma cells, BVU BAP-20210607
- 18.Kinüre yolađı ve NAD'ın glioblastoma patogenezindeki rolünün in vitro olarak araştirilmesi, BVU BAP- 20211008.

Completed Projects

- 1.Identifying the role of radiation dosing on the radio-resistance related biomarkers in glioma cell line. BVU BAP- 9.2018/22, September 2018- April 2019.
- 2.Bevacizumab ile tek fraksiyon veyahipofraksiyon Gamma Knifetedavisi ile kombinasyonunun U87 glioma hücre kültüründe etkinliklerinin karşılaştırılması, BVU BAP- 9.2018/23, September 2018- March 2020.
- 3.U87 glioma hücre hattında etkin kemoterapi kombinasyon tedavisinin araştirilmesi. BVU BAP- 11.2018/26, November 2018- June 2020.

4. Deneysel fare beyin tümörü modellerinde stereotaktik radyocerrahinin (Gamma knife) etkinliğinin araştırılması Thymoquinone'un radyosensitizer etkisinin incelenmesi. BVU BAP- 6.2015/22, June 2015- October 2016.
5. CURCUMİN'in glioblastoma hücreleri üzerine sitotoksik, genotoksik ve apoptotik etkilerinin araştırılması. BVU BAP- 9.2015/23, September 2015- February 2017.
6. Meningiomlu hastalarda Phh3 ve Pstat3 ekspresyonlarının incelenmesi, klinik ve radyolojik parametrelerle korelasyonu. BVU BAP- 12.2015/36, December 2015- April 2017.
7. Glioblastomlarda ve BRAF V600 E mutasyonu BRAF VE1 immunreaktivitesi. BVU BAP- 3.2016/8, March 2016- September 2017.
8. İn vitro glioma modelinde, gamma knife tedavisinin etkinliğinin thymoquinine ile arttırılmasının araştırılması. BVU BAP- 5.2016/16, May 2016- November 2017.
9. Medroksiprogesteron asetat ve gamma knife radyocerrahinin rat intrakraniyal glioma modelindeki antitümör özelliklerinin ve bu etkilere eşlik eden immünpatolojik değişimlerin incelenmesi. BVU BAP-6.2016/25, June 2016- December 2017.
10. Anvirzel ve gamma knife tedavilerinin glioma hücreleri üzerinde etkilerinin in vitro araştırılması. BVU BAP-1.2017/30, January 2017- May 2018.
11. Stereotaktik radyocerrahi ve tüm beyin ışınlamasını beyin tümörlü hastalarda uygulandığında sistemik immünite üzerine olan etkilerinin değerlendirilmesi ve karşılaştırılması. BVU BAP-1.2017/31, January 2017- June 2018.
12. Genistein'in in vitro glioma hücre kültürü üzerindeki radyosensitizer etkinliğinin değerlendirilmesi, BVU BAP-5.2017/5, May 2017- September 2018.
13. Identification of novel therapeutic miRNA candidate for targeting the NOTCH signaling pathways in temozolomide resistant glioblastoma cells, BVU BAP
14. Glioma kanser kök hücrelerinde tümör gelişiminde c-MET/FAS sinyal yolağının etkisinin araştırılması, BVU BAP- 4.2019/26
15. Glial tümörlerde 'tümör infiltre eden lenfosit'lerin elde edilmesi ve sistemik immün hücrelerle etkileşimini tespit ederek anti-tümör özelliklerinin araştırılması, BVU BAP- 4.2019/27
16. A preliminary study to investigate the genetic makeup of recurrent glioblastoma via high throughput next generation whole exome sequencing. BVU BAP- 4.2019/24
17. Investigating the molecular mechanism of NOTCH signaling in chemoresistant glioblastoma cell line model system. BVU BAP-4.2019/25.

18.A preliminary study to investigate the genetic makeup of recurrent glioblastoma via high throughput next generation whole exome sequencing. BVU BAP- 4.2019/24.

19.Glioma kanser kök hücrelerinde tümör gelişiminde c-MET/FAS sinyal yolağının etkisinin araştırılması. BVU BAP-4.2019/26.

20.Glial tümörlerde 'tümör infiltre eden lenfosit'lerin elde edilmesi ve sistemik immün hücrelerle etkileşimini tespit ederek anti-tümör özelliklerinin araştırılması. BVU BAP-4.2019/27.

21.Isolation of 'circulating tumor cells' and 'cell free DNA' from peripheral blood and cerebrospinal fluid in patients with glial tumors: Assessing their effect on the prognosis. BVU BAP-6.2019/15.

22.Isolation of 'circulating tumor cells' and 'cell free DNA' from peripheral blood and cerebrospinal fluid in patients with glial tumors: Their usage as bio- marker for diagnosis and treatment. BVU BAP-6.2019/18.

23.Glial tümörlü hastalarda klinik ve moleküler düzeyde sitokin miktarlarının belirlenmesi ve prognoza etkisinin araştırılması. BVU BAP-.6.2019/14

24.Glial tümörlü hastalarda klinik ve moleküler düzeyde virüs varlığının incelenmesi ve prognoza etkisinin araştırılması. BVU BAP-6.2019/17.

25.Isolation of 'circulating tumor cells' and 'cell free DNA' from peripheral blood and cerebrospinal fluid in patients with glial tumors: Their usage as bio-marker for diagnosis and treatment, BVU BAP- 6.2019/18

26.Identifying the role of radiation dosing on the radio-resistance related biomarkers in glioma cell line, BVU BAP- 9.2018/22

27.Glial tümörlü hastalarda klinik ve moleküler düzeyde virüs varlığının incelenmesi ve prognoza etkisinin araştırılması, BVU BAP- 6.2019/11

28.Glial tümörlü hastalarda klinik ve moleküler düzeyde virüs varlığının incelenmesi ve prognoza etkisinin araştırılması, BVU BAP- 6.2019/11

29.Glial tümörlü hastalarda klinik ve immünohistokimyasal özelliklerin incelenmesi ve prognoza etkisinin araştırılması, BVU BAP-6.2019/11

Publications

1. Khan I, Baig MH, Mahfooz S, Rahim M, Karacam B, Elbasan EB, Ulasov I, Dong JJ, Hatiboglu MA. 2021. Deciphering the Role of Autophagy in Treatment of Resistance Mechanisms in Glioblastoma. Int J Mol Sci. 2021 Jan 28;22(3):1318. Doi: 10.3390/ijms22031318.

2. Guler EM, Sisman BH, Kocyigit A, Hatiboglu MA. 2021. Investigation of cellular effects of thymoquinone on glioma cell. *Toxicol Rep.* 2021 Jan 4;8:162-170. Doi: 10.1016/j.toxrep.2020.12.026. eCollection 2021.
3. Khan I, Mahfooz S, Elbasan EB, Karacam B, Oztanir MN, Hatiboglu MA. 2021. Targeting Glioblastoma: The Current State of Different Therapeutic Approaches. *Curr Neuropharmacol.* 2021;19(10):1701-1715. Doi: 10.2174/1570159X19666210113152108.
4. Khan I, Hatiboglu MA. 2020. Can COVID-19 induce glioma tumorigenesis through binding cell receptors? *Med Hypotheses.* 2020 Nov;144:110009. Doi: 10.1016/j.mehy.2020.110009. Epub 2020 Jun 19.
5. Hatiboglu MA, Sinclair G. 2020. Coronavirus pandemic: how is neurosurgical-oncology practice affected? *Br J Neurosurg.* 2020 Jun 2:1-3. Doi: 10.1080/02688697.2020.1773398.
6. Islam M, Cooray G, Benmakhlof H, Hatiboglu M, Sinclair G. 2020. Integrating navigated transcranial magnetic stimulation motor mapping in hypofractionated and single-dose gamma knife radiosurgery: A two-patient case series and a review of literature. *Surg Neurol Int.* 2020 Feb 28;11:29. Doi: 10.25259/SNI_406_2019. eCollection 2020.
7. Khan I, Mahfooz S, Hatiboglu MA. 2020. Herbal Medicine for Glioblastoma: Current and Future Prospects. *Med Chem.* 2020;16(8):1022-1043. Doi: 10.2174/1573406416666200130100833.
8. Terzioglu-Usak S, Nalli A, Elibol B, Ozek E, Hatiboglu MA. 2020. AnvirzelTM regulates cell death through inhibiting GSK-3 activity in human U87 glioma cells. *Neurol Res.* 2020 Jan;42(1):68-75. Doi: 10.1080/01616412.2019.1709744. Epub 2020 Jan 3.
9. Hatiboglu MA, Kocyigit A, Guler EM, Nalli A, Akdur K, Sakarcan A, Ozek E, Uysal O, Mayadagli A. 2020. Gamma knife radiosurgery compared to whole brain radiation therapy enhances immunity via immunoregulatory molecules in patients with metastatic brain tumours. *Br J Neurosurg.* 2020 Dec;34(6):604-610. Doi: 10.1080/02688697.2019.1642445.
10. Hatiboglu MA, Kocyigit A, Guler EM, Akdur K, Khan I, Nalli A, Karatas E, Tuzgen S. 2019. Thymoquinone Enhances the Effect of Gamma Knife in B16-F10 Melanoma Through Inhibition of Phosphorylated STAT3. *World Neurosurg.* 2019 Aug;128:e570-e581. Doi: 10.1016/j.wneu.2019.04.205.

Posters / Presentations

1. Gliyal tümörlü hastalarda moleküler düzeyde HHV6/8, mikroRNA ve sitokinlerin varlığının incelenmesi ve prognoza etkisinin araştırılması (2020). Büşra Karaçam, Elif Burçe Elbasan, İmran Khan, Sadaf Mahfooz, Sadık Tokar, Ganime Çoban, Kerime Akdur, Ayten Şakarcan, Mustafa Namık Öztanır, Mehmet Ziya Doymaz, Mustafa Aziz Hatiboğlu. 14. Ulusal Tıbbi Genetik Kongresi.
2. Hipofraksiyon Gamma Knife radyocerrahinin nüks gliyal tümörlerde miR-17 ve miR-124 aracılığı ile anti-tümör etkisinin gösterilmesi (2020) (Poster). Mustafa Aziz Hatiboğlu, İmran Khan, Kerime Akdur, Elif Burçe Elbasan, Büşra Karaçam, Yusuf Cicek, Sadaf Mahfooz, Ayten Sakarcan, Güven, Engin, Fahri Akbas. 34. Türk Nöroşirürji Derneği Bilimsel Kongresi.

3.Likit Biyopsi ile Glial Tümörlü Hastalarda Kanda Serberst Bulunan DNA'nın Gösterilmesi (2020) (Poster), Mustafa Aziz Hatibođlu, Büşra Karaçam, Elif Burçe Elbasan, Kerime Akdur, Sadaf Mahfooz, Ayten Şakarcan, Sadık Tokar, Güven Gönen, Engin Can, Imran Khan. 34. Türk Nöroşirürji Derneđi Bilimsel Kongresi.

4.Expressions of Immune-Related Tumor Suppressor MicroRNAs in Glioma Patients Undergoing Hypo-Fractionated Radiotherapy (2019). Imran Khan, Arife Nalli, Kerime Akdur, Yusuf Cicek, Sadaf Mahfooz, Ayten Sakarcan, Fahri Akbas, Mustafa Aziz Hatiboglu. The Immuno-Oncology 2019 World Congress, Barcelona, Spain.

5.Thymoquinone enhances the sensitivity of B16-F10 melanoma cell line to Gamma Knife radiosurgery (2019). Mustafa Aziz Hatiboglu, Abdurrahim Kocyigit, Eray Metin Guler, Kerime Akdur, Imran Khan, Arife Nalli, Ersin Karatas, and Saffet Tuzgen. 14th Meeting of the European Association of Neuro-Oncology (EANO 2019)Lyon, France.



Laboratory of M. Asif KHAN

Research Area

Biological data warehousing and application of bioinformatics to the study of immune responses, vaccines, viruses, venom toxins, drug design, and disease biomarkers.

Personnel

1. Postdoctoral Fellow Ayesha Fatima
2. Research Assistant Esra Büşra Işık
3. Graduate Student Muhammet Çelik (Tübitak Scholar)
4. Graduate Student Hilal Hekimoğlu (Tübitak Scholar)
5. Graduate Student Gökçen Şahin (Tübitak Scholar)

Projects

Ongoing Projects

1. The development of a Viral Variome Analyzer (ViVA) with application to surveillance, diagnostics, drug design and vaccine target discovery. Main PI; TUBITAK 2232 International Fellowship for Outstanding Researchers Programme.
2. Cheminformatics-based, high-throughput virtual screening for candidate inhibitory peptides against the spike protein of Severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2). In-house joint effort with Dr Serdar Uysal; BAP funding from Bezmialem Vakif University.
3. Structure-based assessment of two known ACE2 inhibitors for repurposing as potential ligands for inhibition of Severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) spike protein. In-house joint effort with Dr Mehmet Ziya Doymaz; covered by collaborating PI.
4. Novel Coronavirus (nCoV): Acute Respiratory Infection Clinical Characterisation Data Tool Design. In-house joint effort; cost covered by collaborating PIs of Bezmialem Vakif University.

5. Investigating possible inhibitors against Factor H in relation to glioblastoma. In-house joint effort; cost covered by collaborating Pis of Bezmialem Vakif University
6. Large-scale analysis of B-cell epitopes on Severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) spike protein – implications for cross-reactivity of neutralizing antibodies. External joint effort; cost covered by University of Nottingham Ningbo, China.
7. LAMP-SARS-CoV-2 DNA vaccine design. External joint effort; cost covered by Institut Gustave Roussy, France; Immunomic Therapeutics, USA; and Perdana University, Malaysia.
8. Mapping and identifying sequences shared between coronaviruses and human proteomes: structural, functional and immunological implications. External joint effort; cost covered by Perdana University, Malaysia.
9. Dissecting the dynamics of Severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) protein sequence diversity. External joint effort; cost covered by Perdana University, Malaysia.
10. Mapping T-cell epitopes in the Severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) proteome. External joint effort; cost covered by Perdana University, Malaysia.
11. Bioinformatics-based selection of epitope-based vaccine targets for Severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2). External joint effort; cost covered by Perdana University, Malaysia.
12. Mapping and characterization of shared sequence between viral and human proteomes: a bioinformatics approach. External joint effort; cost covered by Perdana University, Malaysia.
13. Investigation of gut microbiome changes in neurodegenerative diseases using spinal muscular atrophy as a study model. External joint effort; cost covered by Perdana University, Malaysia.
14. Investigation on the roles of pathogenesis-related biofilm genes of *Burkholderia pseudomallei* in causing human infection. External joint effort; cost covered by Perdana University, Malaysia.
15. Development of AI-powered clinical decision-support system based on big-data analytics for molecular genetic diagnosis. External joint effort; cost covered by Perdana University, Malaysia.
16. Delineating shared transcriptomic profiles among heterogeneous cancer at single cell resolution. External joint effort; cost covered by Perdana University, Malaysia
17. Application and optimization of NoSQL stores for enhanced clinical genomics data mining. External joint effort; cost covered by Perdana University, Malaysia.
18. Comparative genomics analysis of the family Flaviviridae. External joint effort; cost covered by Perdana University, Malaysia.

19. Meta-ome for homology search. External joint effort; cost covered by Perdana University, Malaysia.
20. Mapping the minimal set of the viral peptidome. External joint effort; cost covered by Perdana University, Malaysia.
21. Dissecting the dynamics of Crimean-Congo haemorrhagic fever virus protein sequence diversity. In-house project; cost will be covered under the TUBITAK 2232 Programme.
22. Dissecting the dynamics of Lassa virus protein sequence diversity. In-house project; cost will be covered under the TUBITAK 2232 Programme.
23. Dissecting the dynamics of Zika virus protein sequence diversity. In-house project; cost will be covered under the TUBITAK 2232 Programme.
24. Dissecting the dynamics of Rabies lyssavirus protein sequence diversity. In-house project; cost will be covered under the TUBITAK 2232 Programme.
25. Dissecting the dynamics of Influenza A (H7N9) virus protein sequence diversity. In-house project; cost will be covered under the TUBITAK 2232 Programme.
26. Dissecting the dynamics of Ebolavirus protein sequence diversity. In-house project; cost will be covered under the TUBITAK 2232 Programme.
27. Dissecting the dynamics of Chikungunya virus protein sequence diversity. In-house project; cost will be covered under the TUBITAK 2232 Programme.
28. Dissecting the dynamics of Human orthopneumovirus virus protein sequence diversity. In-house project; cost will be covered under the TUBITAK 2232 Programme.
29. Dissecting the dynamics of Hepatitis B virus protein sequence diversity. In-house project; cost will be covered under the TUBITAK 2232 Programme
30. Dissecting the dynamics of Dengue virus protein sequence diversity. In-house project; cost will be covered under the TUBITAK 2232 Programme
31. Dissecting the dynamics of West Nile virus protein sequence diversity. In-house project; cost will be covered under the TUBITAK 2232 Programme
32. Dissecting the dynamics of Rotavirus A virus protein sequence diversity. In-house project; cost will be covered under the TUBITAK 2232 Programme
33. Dissecting the dynamics of MERS-CoV virus protein sequence diversity. In-house project; cost will be covered under the TUBITAK 2232 Programme
34. Dissecting the dynamics of Primate erythroparvovirus 1 virus protein sequence diversity. In-house project; cost will be covered under the TUBITAK 2232 Programme

35. Dissecting the dynamics of Japanese Encephalitis virus protein sequence diversity. In-house project; cost will be covered under the TUBITAK 2232 Programme

Publications/Posters

Journal Articles (Peer-Reviewed)

1. Raman HS, Tan S, August JT, Khan AM*. Dynamics of Influenza A virus (H5N1) protein sequence diversity. PeerJ. 2020, e7954 [*Corresponding author; Impact Factor 2019 = 2.38; Citations =3].

2. Jeon AJ, Kellogg D, Khan MA, Tucker-Kellogg G. Developing critical thinking in STEM education through inquiry-based writing in the laboratory classroom. Biochemistry and Molecular Biology Education. 2020, 49 (1), 140-150. <https://doi.org/10.1002/bmb.21414>; bioRxiv, 2019, 686022; doi: <https://doi.org/10.1101/686022>.

3. HJ Soe, R Manikam, CS Raju, MA Khan, SD Sekaran. Correlation of host inflammatory cytokines and immune-related metabolites, but not viral NS1 protein, with disease severity of dengue virus infection. PloS One. 2020, 15 (8), e0237141. <https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0237141>. [Impact Factor 2019 =2.740].

4. Tan S, Sjaugi MF, Fong SC, Chong LC, Abd Raman HS, Nik Mohamed NE, August JT, Khan AM*. Avian Influenza H7N9 Virus Adaptation to Human Hosts. Viruses 2021, 13, 871. <https://doi.org/10.3390/v13050871> [Impact Factor: 5.048; *Corresponding author].

5. Leang-Chung Choh, Guang-Han Ong, Eng-Guan Chua, Kumutha Malar Vellasamy, Vanitha Mariappane, Asif M. Khan, Micheal J. Wise, Kum-Thong Wongi, Jamuna Vadivelu. Absence of BapA type III effector protein affects Burkholderia pseudomallei intracellular lifecycle in human host cells. Process Biochemistry, 108, Pages 48-59. [Impact Factor: 3.757]

6. Chong LC, Lim WL, Ban KHK, Khan AM*. An Alignment-Independent Approach for the Study of Viral Sequence Diversity at Any Given Rank of Taxonomy. Biology 10, no. 9: 853. <https://doi.org/10.3390/biology10090853> [Impact Factor: 5.079; *Corresponding author]

7. James SA, Ong HS, Hari R, Khan AM*. A systematic bioinformatics approach for large-scale identification and characterization of host-pathogen shared sequences. BMC Genomics. 2021; 22 (Suppl 3):700. <https://doi.org/10.1186/s12864-021-07657-4> [Impact Factor: 3.969; *Corresponding author]

Conference Abstracts

1. Muhammet Celik, Kaushal Kumar Singh, Shan Tharanga, Asif M. Khan. MoSwA: Protein Sequence Diversity Motif Switch Analyser for Viruses. International Conference Intelligent Systems for Molecular Biology (ISMB)/ European Conference on Computational Biology (ECCB) 2021. July 25-30 2021 (General Computational Biology COSI)

Posters

1. Muhammed Miran Öncel, Elif Karaaslan, Nadir Emre Herdan, Nesibe Selma Çetin, Merve Kalkan-Yazıcı, Choi Sy Bing, Ayesha Fatima, Mohammad Asif Khan, Mehmet Ziya Doymaz.

Repurposing DX-600, an ACE2 inhibitor, against severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) spike protein. Poster Presentation, Intelligent Systems for Molecular Biology (ISMB) / European Conference on Computational Biology (ECCB) 2021. July 25-30 2021 (General Computational Biology COSI)

2.Esin Özkan, Muhammed Miran Öncel, Li Chuin Chong, Mohammad Asif Khan. A Quantitative Bioinformatics Approach to Rabies Lyssavirus Proteome Diversity. Poster Presentation, Intelligent Systems for Molecular Biology (ISMB) / European Conference on Computational Biology (ECCB) 2021, July 25-30 2021 (General Computational Biology COSI)

3.Hasiba Karimi, Li Chuin Chong, Eyyüb Selim Ünlü, Muhammed Miran Öncel, Mohammad Asif Khan. Studying the Dynamics of Ebola Virus (EBOV) Proteome Sequence Diversity. Poster Presentation, Intelligent Systems for Molecular Biology (ISMB) / European Conference on Computational Biology (ECCB) 2021, July 25-30 2021 (General Computational Biology COSI)

4.Nadir Emre Herdan, Muhammed Miran Öncel, Li Chuin Chong, Mohammad Asif Khan. Analysis of Zika Virus Protein Sequence Diversity. Poster Presentation, Intelligent Systems for Molecular Biology (ISMB) / European Conference on Computational Biology (ECCB) 2021, July 25-30 2021 (General Computational Biology COSI)

5.Eyyüb Selim Ünlü, Li Chuin Chong, Muhammed Miran Öncel, Mohammad Asif Khan. Mapping the Protein Sequence Diversity Dynamics of Chikungunya Virus. Poster Presentation, Intelligent Systems for Molecular Biology (ISMB) / European Conference on Computational Biology (ECCB) 2021, July 25-30 2021 (General Computational Biology COSI)

6.Muhammed Miran Öncel, Eyyüb Selim Ünlü, Mohammad Asif Khan. Dissecting the Dynamics of Lassa Virus Protein Sequence Diversity. Poster Presentation, Intelligent Systems for Molecular Biology (ISMB) / European Conference on Computational Biology (ECCB) 2021, July 25-30 2021 (General Computational Biology COSI)

7.Pendy Tok, Li Chuin Chong, Mohammad Asif Khan. Dynamics of Primate erythroparvovirus 1 Protein Sequence Change. Poster Presentation, Intelligent Systems for Molecular Biology (ISMB) / European Conference on Computational Biology (ECCB) 2021, July 25-30 2021 (General Computational Biology COSI)

8.Rashid Mukaila, Muhammed Miran Öncel, Hasiba Karimi, Ömer Erkam Engin, Hatice Dilara Karakuş, Faruk Üstünel, Esra Büşra Işık, Bedia Gülen, Bilge Gültepe, Kazım Karaaslan, Meliha Meriç Koç, Özlem Su Küçük, Fatma Nur Okyaltırık, Ramazan Özdemir, Teoman Aydın, İbrahim Tuncay, Mohammad Asif Khan, Rümeyza Kazancıoğlu. Harmonising The Integration Of Biomedical Data, A Case Study On COVID-19 Patients. Poster Presentation, Intelligent Systems for Molecular Biology (ISMB) / European Conference on Computational Biology (ECCB) 2021, July 25-30 2021 (General Computational Biology COSI)

9.Melike Karakaya, Li Chuin Chong, Asif M. Khan. Identification of highly conserved, HLA-A2, -A3, and -B7 supertype-restricted T-cell epitopes in the severe acute respiratory syndrome coronavirus 2 structural proteins. Poster Presentation, Intelligent Systems for Molecular Biology (ISMB) / European Conference on Computational Biology (ECCB) 2021, July 25-30 2021 (COVID-19 Track)

10. Muhammet Celik, Lim Wan Ching, Choi Sy Bing, Asif M. Khan, and Vladimir Brusic. Identification and characterisation of a neutralizing antibody epitope for severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) spike protein. Poster Presentation, Intelligent Systems for Molecular Biology (ISMB)/ European Conference on Computational Biology (ECCB) 2021, July 25-30 2021 (Covid-19 Track)

11. Chong Li Chuin, Mohammad Asif Khan. Mapping the Minimal Set of the Viral Peptidome across all Major Viral Taxonomies. Poster Presentation, Intelligent Systems for Molecular Biology (ISMB)/ European Conference on Computational Biology (ECCB) 2021, July 25-30 2021 (General Computational Biology COSI)

12. Muhammet Celik, Lim Wan Ching, Choi Sy Bing, Asif M. Khan, and Vladimir Brusic. Identification and characterisation of a neutralizing antibody epitope for severe acute respiratory syndrome coronavirus 2 spike protein. Poster Presentation, 23rd Annual Conference of the European Society for Clinical Virology (ESCV2021), September 15-17, 2021.

13. Chong Li Chuin, Mohammad Asif Khan. Mapping the Minimal Set of the Viral Peptidome across all Major Viral Taxonomies. Poster Presentation, 23rd Annual Conference of the European Society for Clinical Virology (ESCV2021), September 15-17, 2021.

14. Melike Karakaya, Pency Tok, Li Chuin Chong, Mohammad Asif Khan. Mapping HLA-A2, -A3, and -B7 supertype-restricted T-cell epitopes in the severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) structural proteins. Poster Presentation, 23rd Annual Conference of the European Society for Clinical Virology (ESCV2021), September 15-17, 2021.

15. Rashid Mukaila, Muhammed Miran Öncel, Hasiba Karimi, Ömer Erkam Engin, Hatice Dilara Karakuş, Faruk Üstünel, Esra Büşra Işık, Bedia Gülen, Bilge Gültepe, Kazım Karaaslan, Meliha Meriç Koç, Özlem Su Küçük, Fatma Nur Okyaltırık, Ramazan Özdemir, Teoman Aydın, İbrahim Tuncay, Mohammad Asif Khan, Rümeyza Kazancıoğlu. Integrating Biomedical Data For Health Analytics, A Case Study On COVID-19 Patients. Poster Presentation, 23rd Annual Conference of the European Society for Clinical Virology (ESCV2021), September 15-17, 2021.

16. Muhammed Miran Öncel, Elif Karaaslan, Nadir Emre Herdan, Nesibe Selma Çetin, Merve Kalkan-Yazıcı, Choi Sy Bing, Ayesha Fatima, Mohammad Asif Khan, Mehmet Ziya Doymaz. Repurposing DX-600, an ACE2 inhibitor, against severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) spike protein. Poster Presentation, 23rd Annual Conference of the European Society for Clinical Virology (ESCV2021), September 15-17, 2021.

17. Yongli Hu, Shan Tharanga, Olivo Miotto, Eyyüb Selim Ünlü, Muhammet A. Çelik, Muhammed Miran Oncel, Hilal Hekimoglu, Muhammad Farhan Sjaugi, Mohammad Asif Khan. DiMA: Protein Sequence Diversity Dynamics Analyser for Viruses. 14th International Symposium on Health Informatics and Bioinformatics (HIBIT2021), September 10-11, 2021.

18. Faruk Üstünel, Asif M. Khan. Protein Sequence Diversity of Human Respiratory Syncytial Virus. 14th International Symposium on Health Informatics and Bioinformatics (HIBIT2021), September 10-11, 2021.

19. Gizem Yılmaz, Li Chuin Chong, Hasiba Karimi, Eyyüb Selim Ünlü, Muhammed Miran Öncel, Asif M. Khan. Sequence Diversity of M Proteins of Influenza A (H7N9) Virus. 14th International Symposium on Health Informatics and Bioinformatics (HIBIT2021), September 10-11, 2021.

20. Gökçen Şahin, Li Chuin Chong, Erdem Aybek, Asif M. Khan. Sequence Diversity of Envelope Protein of Dengue Virus Serotype 1. 14th International Symposium on Health Informatics and Bioinformatics (HIBIT2021), September 10-11, 2021.

21. Pency Tok, Li Chuin Chong, and Mohammad Asif Khan. Protein Sequence Diversity Dynamics Of Primate Erythroparvovirus 1. 14th International Symposium on Health Informatics and Bioinformatics (HIBIT2021), September 10-11, 2021.

Oral Presentations

1. Speaker, Improving Health and Wellness Outcome Through AI-Driven, Health Analytics and Data Mining, Bezmialem Vakif University. Istanbul, Turkey, 21 Feb 2020.

2. Speaker, COVID-19 Clinical Data Collection, COVID-19 Salgınının Onlenmesi, Tani ve Tedavi Yaklaşımları (online), Bezmialem Vakif University. Istanbul, Turkey, 27 March 2020.

3. Moderator, AstraZeneca's 2 Million Genomes Initiative, DSxTalks, Perdana University, Malaysia. Speaker: Mr. Ong Chuang Kee, AstraZeneca UK. Online. 5 August 2020. <https://www.perdanauniversity.edu.my/dsx/event/astrazenecas-2-million-genomes-initiative/>

4. Invited Speaker, The Role of Bioinformatics on Accelerating COVID-2019 Research. The 8th Webinar Series 2020 IMERI, Indonesia - Bioinformatics Analysis Provides Insight for COVID-2019 Research. Online. 3 June 2020. https://www.youtube.com/watch?v=q1JNN_q8jLo

5. Keynote Speaker, Analysis of Viral Diversity: A Bioinformatics Approach. International Conference on Data Science in Biology (ICDSB2020) Webinar. Institute of Bioinformatics, Bangalore, India. Online, 08 Sept. 2020. <https://www.youtube.com/watch?v=wtqxQ-npbMQ>

6. Invited Speaker, Bioinformatics, a Key Driven of Green Approaches in Medicine. International Webinar - Green Approaches in Medicines, Chemicals, And Energy. Riau University, Indonesia. Online, 28 October 2020. <https://www.youtube.com/watch?v=WvskAOH3yqA&list=PLwfuEOzCAJoYNsJgOiyCJbxetTxnfvX86&index=1>

7. Invited Speaker, Bioinformatics, Big Data, and The Era of Precision Medicine: Opportunities Ahead. Bioinformatics and System Biology Seminar Series, Gebze Technical University. Istanbul, Turkey. 12 November 2020.

8. Invited Speaker, A Reverse Vaccinology Approach to Vaccine Target Discovery for COVID-19 Coronavirus. Satellite Symposium in Conjunction with the International Conference on Drug Discovery and Translational Medicine 2021. 17 November 2020.

9. Invited Guest, Asif M. Khan, In 'Sci'versation with Prash (Bioclues Organization). Discussing Science and Conscience with Open-Minded and Finest Scientists of India World. Online, 11 Dec 2020. <https://www.youtube.com/watch?v=1PjMKJ>

t4VE&list=PLwfUEOzCAJoYNsJgOiyCJbxetTxnfvX86&index=12

10. Invited Speaker, Mapping the minimal set of the viral peptidome. 4th International Symposium on Bioinformatics (InSyB 2020), held in Andhra Pradesh, India, in collaboration between Vignan's Foundation For Science Technology & Research (VFSTR) and APBioNET, December 21-22, 2020. <https://www.vignan.ac.in/pdf/InSyB.pdf>

11. Speaker, Towards a shared Supercomputing system linking ASEAN: an update, Workshop on Asia Pacific Research Platform (APRP), Asia Pacific Advanced Network (APAN) 51 meeting, Online, Islamabad, 1-5 February 2021.

12. Invited Speaker, Understanding Viral Diversity Dynamics. ISCB RSG Turkiye Webinar Series. Online, Istanbul, 30 March 2021.

13. Moderator, Green Carbon for Food Security: Genome to Phenome. BILSAB (Beykoz) Seminar Series. Speaker: Dr. Gitanjali Yadav, University of Cambridge, UK. Online. 9 April 2021.

14. Invited Speaker, Viral Informatics: Understanding Viruses by Use of Bioinformatics Approaches. Webinar. Bezmialem Vakif University. 29 April 2021.

15. Moderator, Lessons Learned from our Computational Drug Development Effort against COVID-19. BILSAB (Beykoz) Seminar Series. Speaker: Dr. Amitava Roy, NIH and University of Montana, USA. Online. 28 May 2021.

16. Featured Speaker, Bioinformatics in the Pandemic Era. Perdana Series, in conjunction with 10 year anniversary of Perdana University, Malaysia. 12 June 2021.

17. Invited Speaker, Towards a shared Supercomputing system linking ASEAN: An Update. Asia-Pacific Research Platform (APRP) Working Group. Asia Pacific Advanced Network (APAN52). Online meeting. Indonesia. 4 August 2021.

18. Invited Speaker, Issues with Data Reporting and Arguments in a Scientific Research. Ethical Issues in Research Methods. Online Workshop. Bezmialem Vakif University, 9 September 2021.

19. Invited Plenary Speaker, Biological Data Warehousing and Bioinformatics for Society 5.0. The 1st International Seminar of Science and Technology for Society and Development. Universitas Terbuka, Indonesia. Online. 14 October 2021.

20. Invited Keynote Speaker, Knowledge Discovery from Unstructured Biomedical Data: Data Science, Bioinformatics, and Precision Medicine. Webinar: Bridging the Gap between Data and Healthcare, HealthAI, Innovate for Health. International Medical University, Malaysia. 22 October 2021.

21. Invited Keynote Speaker, Data science competency for STEM. 8th Mathematics, Science, and Computer Science Education International Seminar (MSCEIS). Virtual Seminar. Universitas Pendidikan Indonesia. 23 October 2021.

22. Invited Speaker, Data Science, Big Data & Competency Framework. Perdana University International Conference, Malaysia. 17 November 2021.

23. Moderator, Introduction to EMBL-EBI Resources. BILSAB (Beykoz) Seminar Series. Speaker: Dr. Piv Gopalasingam, EMBL-EBI. Online. 19 November 2021.

Lectures/Workshops/Trainings

1. Invited Instructor, Viral Vaccine Target Discovery. Vaccineinformatics Workshop, 1st Bioinformatics and Biodiversity Conference (BBC2020), Indonesia. Online. 23 December 2020.

2. Instructor, Application of REDCap for clinical usage. Beykoz Institute of Life Sciences and Biotechnology (BILSAB) Trainings. Bezmialem Vakif University, 2 March 2021.

3. Instructor, Preparing a CV: some considerations. Beykoz Institute of Life Sciences and Biotechnology (BILSAB) Trainings. Bezmialem Vakif University, 23 March 2021.

4. Instructor, Paper writing. Beykoz Institute of Life Sciences and Biotechnology (BILSAB) Trainings. Bezmialem Vakif University, 27 April 2021.

5. Lecturer, Problem-based Programming. Beykoz Institute of Life Sciences and Biotechnology (BILSAB) Trainings. Bezmialem Vakif University, 13-week session, once per week starting from 7 July 2021.

6. Invited Instructor, Hands-on Training on Molecular Diagnosis of COVID-19 and Basic Bioinformatics. In-person meeting. Dhaka, Bangladesh. 7-11 November 2021

Meeting/Seminar/Conference/Workshop Organizer, Session Chair, Participant

1. Moderator, Single-cell transcriptomics - new opportunities for clinical medicine; Beykoz Conferences, Bezmialem Vakif University, Turkey. Speaker: Vladimir Brusic, 3 March 2020.

2. Participant, Johns Hopkins COVID-19 Pandemic Experience, Bezmialem Vakif University, Turkey. 11 June 2020.

3. Organising Committee, The Global Organisation for Bioinformatics Learning, Education and Training (GOBLET) Annual General Meeting (AGM) 2020, Online, 14-16 September 2020.

4. Co-Chair, Organising Committee, Steering Committee, and Programme Committee, International Conference on Bioinformatics (InCoB 2020; <https://incob.apbionet.org/incob20>), Online, 25-29 November 2020.

5. Advisory, Steering Committee, 4th International Symposium on Bioinformatics (InSyB 2020), held in Andhra Pradesh, India, in collaboration between Vignan's Foundation for Science Technology & Research (VFSTR) and APBioNET, December 21-22, 2020. <https://www.vignan.ac.in/pdf/InSyB.pdf>

6. Chair (BWF) and Advisor (MYBS2.0), Bioinformatics Workshop Fiest Colloquium, in conjunction with 2nd Malaysian Youth Bioinformatics Symposium 2.0 (MYBS). 25 July 2020. Online. <https://mybsboard.wixsite.com/mybs2-0>

7. Session Chair, Annual General Meeting 2020, Global Organisation of Bioinformatics Learning, Education and Training (GOBLET), September 14-16, 2020.

8. Steering Committee Member, Bioinformatics Workshop Fiesta (2020/21), offering 15 online workshops with a learning pathway. <http://www.ambis.org.sg/bwf-202021.html>

9. Working Committee Member, The 4th APAC HPC-AI Competition. HPC Advisory Council (<http://www.hpcadvisorycouncil.com/events/2021/APAC-AI-HPC/teams.php>).

10. Advisor, Steering Committee Member, 5th International Symposium on Bioinformatics (InSyB2021), to held at BILSAB, Istanbul, 15-17 December 2021.

11. Advisor, Steering Committee. The Global Organisation for Bioinformatics Learning, Education and Training (GOBLET) Annual General Meeting (AGM) 2022, Online meeting, Istanbul, Turkey.



Laboratory of Matteen RAFIQI

Research Area

Developmental and evolutionary biology, endosymbiosis and relationship between host-microbiom.

Personnel

1. Postdoctoral Fellow Priscila Gomez Polo
2. Postdoctoral Fellow Mauricia Alarcon (Tübitak Scholar)
3. Research Assistant Nihan Sultan Milat
4. Research Assistant Birgül Çolak Al
5. Graduate Student Zelal Durmuş (Tübitak Scholar)
6. Graduate Student Fatma Zehra Çağıl (Tübitak Scholar)
7. Volunteer Dr. Koray Kasan

Projects

Ongoing Projects

1. BVU Funds for Research Projects, Title: Establishment of insect colonies for the study of obligate endosymbiosis insects.
2. Identification of microbiome of Turkish populations, pilot study, BVU BAP Ab Matteen Rafiqi as PI
3. Development of microorganisms against vector borne diseases by biotechnological and paratransgenic Methods. TUBİTAK 1001. Serdar Uysal as main PI and A. M. Rafiqi as researcher.
4. Experimental studies on the effect of antibiotics on early development of Cicadellidae. BVU BAP Priscila Gomez Polo as PI

- 5.Characterization of fungal endosymbionts of bumble bees (*Bombus terrestris*) and their relations with pathogens. BVU BAP Priscila Gomez Polo as PI
- 6.Mechanism of segregation of endosymbiont between midgut epithelium and gonads. BVU BAP. Ab Matteen Rafiqi as PI
- 7.Canon Foundation Grant , "The role of endosymbionts in the developmental genetic networks of leafhoppers (Hemiptera: Cicadellidae). Priscila Gomez Polo as PI
- 8.The developmental genetics of obligate endosymbiosis and its effect on the evolution of insects. TÜBİTAK 2247-A, Ab Matteen Rafiqi as PI.
- 9.BMP signaling in *Camponotus floridanus* and its alteration in the presence of obligate endosymbionts İÜ BAP Ab Matteen Rafiqi as Supervisor
- 10.Karıncalarda Alternatif Transkript İzoformlarının Gelişimsel Gen Ekspresyonlarındaki Potansiyel Rolü Tübitak 2209-A, Ab Matteen Rafiqi as Supervisor

Publications

- 1.Origin and elaboration of a major evolutionary transition in individuality. Rafiqi AM, Rajakumar A, Abouheif E. Nature. 2020 Sep;585(7824):239-244
- 2.From egg to adult: a developmental table of the ant *Monomorium pharaonis* Pontieri L, Rajakumar A, Rafiqi AM, Stenbak LR, Abouheif E, Zhang G. Journal of Experimental Zoology Part B. Submitted
- 3.Embryonic, Larval and Pupal Development in the Carpenter Ant *Camponotus floridanus*. Chen TWL, Rafiqi AM, Fung BA, Lamouret T, Rajakumar A, Milat NS, Rajakumar R, Abouheif E. Journal of Experimental Zoology Part B. In preparation
- 4.Milat NS, Çelik M and Rafiqi AM. Taxonomic classification analysis of human gut microbiota using Kraken 2 [version 1; not peer reviewed]. F1000Research 2021, 10:695 (poster) (<https://doi.org/10.7490/f1000research.1118672.1>)
- 5.Alim Uysal, B. A., Kotan, G., Guneser, M. B., Dincer, A. N., Senturk, H., & Rafiqi, A. M. (2021). Investigation of the effect of different chelation solutions on penetration of resin-based and bioceramic sealers with a novel method. *Microscopy research and technique*, 10.1002/jemt.23717. Advance online publication. <https://doi.org/10.1002/jemt.23717>

Presentations

- 1.Origin of a complex life form revealed: How bacteria and carpenter ants became one. AM Rafiqi, Rajakumar A, Abouheif E. McGill University Bulletin
- 2.Origin of a complex life form revealed: How bacteria and carpenter ants became one. AM Rafiqi, Rajakumar A, Abouheif E. American Association for the Advancement of Science

3.Origin of a complex life form revealed: How bacteria and carpenter ants became one. AM Rafiqi, Rajakumar A, Abouheif E. Futurity Magazine, 4

4.Origin of a complex life form revealed: How bacteria and carpenter ants became one. AM Rafiqi, Rajakumar A, Abouheif E. Aljazeera Arabic.

5.Da due a uno: scoperte le origini di una simbiosi misteriosa. AM Rafiqi, Rajakumar A, Abouheif E. Le Scienze edizione italiana di Scientific American

6.A long road to Major Transitions. A Rajakumar, Rafiqi AM, Abouheif E. Nature Ecology and Evolution Community Blog



Laboratory of Serdar UYSAL

Research Area

Production of industrial enzymes and biosimilars in prokaryotic and eukaryotic hosts

Personnel

1. Postdoctoral Fellow Lena Mahmoudi Azar
2. Postdoctoral Fellow Leila Kianifard
3. Research Assistant Elif Karaman
4. Graduate Student Gamze Bek (Tübitak Scholar)
5. Graduate Student Diclehan Gündüz (Tübitak Scholar)
6. Technician Cennet Dama

Projects

Ongoing Projects

1. TÜBİTAK-1001; 'Development of Bacillus microorganisms against vector-borne diseases by biotechnological and paratransgenesis methods'. Project No: 218S724. 01.09.2019-01.09.2022. Overhead
2. TÜBİTAK-1001(Revised and re-submitted); 'Synthesis of BITE molecules specific for EGFRvIII and IL-13R β 2 antigens to be used for the treatment of glioblastoma'. 36 months.
3. TÜBİTAK-1004-Accepted, not started yet; 'Development of biomarkers and drugs for the monitoring and treating inflammasome mediated autoinflammatory diseases using advanced biotechnological methods (Development of antibody VHH libraries through immunizations)'. 36 months
4. BVU BAP; 'Determination of different ACE2 receptor sequences that bind with high affinity to the RBD protein effective in cell fusion of the SARS-CoV-2 virus'. 01. 11.2020-01. 11.2021.

Completed Projects

1.TEYDEB 1511; 'Creation of biotechnological tools for the production of alpha-amylase, pullulanase and glycoamylase food enzymes in modified microorganisms and their pilot production. (LIVZYM)

2.KOSGEB R & D, Innovation Application Program; 'Genetic Modification of Bacillus licheniformis bacteria for Industrial Enzyme Production by Basic Molecular and Microbiological Methods'- . (LIVZYM)

3.TEYDEB- SADE; 'Development of recombinant microorganisms for the production of imported enzymes for the food industry, optimization of production processes on a pilot and industrial scale'. (LIVZYM)

4.BVU BAP 'Recombinant production of CelTOS proteins of Plasmodium parasites for use in the development of anti-malaria biotechnological techniques. Project No; 11.2018/17. 21.12.2018-21.12.2019.

Thesis

- 1.Elif Karaman, PhD Thesis; Production of antibodies against CelTOS proteins of Plasmodium parasites as an anti-malaria and biotechnological approach by using phage display technique
- 2.Gizem İğdeli PhD Thesis, Development of Anakinra, which has more effective biochemical properties by changing the surface characteristics with phage display technology

Concluding Remarks

It has been 3.5 years since launching Beykoz Institute of Life Sciences and Biotechnology, and in this period, the Institute has grown by leaps and bounds. Although the COVID-19 pandemic, which affected the whole of 2020 and 2021, did not directly impact the studies at the Institute, it has a serious influence on research performance indirectly due to the increase in the prices of research supplies and reagents and delays in the reviews of projects and the release of research funds. It appears that this effect will be more pronounced in the future.

Despite all these negativities, the Institute is achieving its stated goals, especially with regard to recruitment of qualified investigators. Currently, the Institute has reached to the full number of faculty stated in the original plan.

The Institute is demonstrating an admirable productivity in publications and projects. This productivity is above of what would be expected from a relatively new Institute that has just completed its early phase. The scientific productivity will be one of the areas where the success of the Institute will be judged and it is imperative that this trend be continued in the coming years. One of the original goals of the Institute was to reach an appreciable success in the areas of patents, and intellectual outputs, and it is our belief that Institute's outputs will be accelerated in the future in this avenue and the Technology Transfer Office (TTO) established within the University will foster this growth.

The graduate education at the Institute in one of the fields where the fruits of the labor requires relatively long term investment. We have just begun to sending out our graduates for further studies to leading research centers around the World and hope to continue on this path.

Training graduate students will continue to be at the forefront of our endeavours and we hope to establish a successful track record in education.

In conclusion, we are striding to achieve success in the research and education that we are set out to do in the inception of the Institute. As always, we are grateful to the upper management, whose support we have always felt by our side since the establishment of BILSAB, and to the members of the Scientific Advisory Board for their assistance in directing the Institute by sparing time from their busy agenda.



BEZMIALEM VAKIF UNIVERSITY
BEYKOZ INSTITUTE OF LIFE SCIENCES AND BIOTECHNOLOGY (BILSAB)
Yalıköy Mah. Ali İhsan Kalmaz Sok. No:10
Beykoz / İstanbul / TURKEY

Phone: +90 212 523 22 88 - 4900 Fax: +90 212 533 23 26

bilsab@bezmialem.edu.tr