

Asterios Arampatzis

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Education

PhD, Control Theory and Systems Biology

DEPARTMENT OF BIOSYSTEMS SCIENCE AND ENGINEERING

ETH Zurich

Jun 2022 - present

MSc, Biotechnology

DEPARTMENT OF BIOSYSTEMS SCIENCE AND ENGINEERING

ETH Zurich

Sep 2019 - Sep 2021

Doctor of Medicine (MD)

SCHOOL OF MEDICINE

AUTH

Sep 2013 - Jul 2019

Research Experience

Control Theory and Systems Biology Laboratory, D-BSSE

PHD STUDENT (SUPERVISOR: PROF. M. KHAMMASH)

ETH Zurich

Jun 2022 - present

- Engineering homeostatic synthetic gene circuits for immune system regulation

Laboratory for Biological Engineering, D-BSSE

MSc THESIS STUDENT - RESEARCH ASSOCIATE (SUPERVISOR: PROF. R. PLATT)

ETH Zurich

Jan 2021 - Mar 2022

- Engineered biosensors for short-chain fatty acids via directed evolution, towards gut monitoring
- Identified improved variants and characterized their performance with high-throughput time course assays
- Performed structural modeling with deep learning methods

Control Theory and Systems Biology Laboratory, D-BSSE

MSc STUDENT (SUPERVISOR: PROF. M. KHAMMASH)

ETH Zurich

Jul 2020 - Jan 2021

- Designed, cloned and characterized various genetic circuits for *in vivo* feedback control
- Implemented ODE-based disease models for different pathologies
- Modeled different control strategies using stochastic models
- Co-author of a research article in [PNAS](#)

AcubeSAT satellite mission

SCIENCE LEAD

SpaceDot

Oct 2018 - present

- Science lead of [AcubeSAT](#), a 3U CubeSat mission supported by the [European Space Agency \(ESA\) Education Office](#)
- Conceived, engineered and flight-qualified an autonomous satellite laboratory for high-throughput biology in space, integrating biology, microfluidics, imaging, sensing, and onboard experiment control
- Led the science/payload subsystem (~30 members over time) to achieve multiple milestones including:
 - Successful full environmental qualification ([vibration](#), [thermal-vacuum](#), [leak testing](#))
 - Characterization of yeast response to [radiation](#) exposure
 - System [design](#) maturation and compliance with ESA requirements
 - Submission and defense of the project proposal
- Selected as 1 of 3 teams in Europe (and first in Greece) for the [ESA Fly Your Satellite! 3 program](#)
- Featured in European Space Agency news, national TV (ERT3), and leading press outlets ([coverage](#))

Laboratory of Biological Network Characterization

RESEARCH INTERN (SUPERVISOR: PROF. S. MAERKL)

EPFL

Jul 2018 - Aug 2018

- Forward-engineering of an orthogonal cell-free circular DNA replication system
- Identified, cloned, and purified components of the RSF1010 replication machinery and tested *in vitro* replication assays
- Assessed binding affinities of RSF1010-encoded proteins using microfluidic platforms (MITOMI)

Team iGEM Greece 2017

TEAM LEADER/FOUNDER

AUTH

Oct 2016 - Nov 2017

- Engineered RNAi-based logic circuits as colorectal cancer therapeutics (pANDORRA project)
- Used kinetic modeling and genetic algorithms to optimize miRNA combinations and circuit topologies for cell-type classification
- Developed a modular and interoperable platform for mammalian genetic logic circuit assembly
- Optimized an *E. coli*-based delivery system and leveraged quorum sensing for cell-density-dependent invasion into cancer cells
- Led a multi-disciplinary group of 11 students spanning 7 departments across 2 universities
- Founded [Greece's first synthetic biology university team](#); awarded Gold Medal and nominated for Best Therapeutics Project
- Featured in national TV (SKAI) and leading press outlets

Wellcome Trust-MRC Cambridge Stem Cell Institute

AMGEN SCHOLAR (SUPERVISOR: DR. I. KAZANIS)

University of Cambridge

Jul 2016 - Sep 2016

- Isolated endogenous neural stem/progenitor cells from the cerebrospinal fluid and characterized their *in vitro* profile and expansion properties
- Optimized an isolation protocol of neural stem cells from the subventricular zone of live rats
- Profiled isolated postnatal neural stem cells and evaluated the effect of the choroid plexus secretome
- Co-author of a research article in [Stem Cell Reports](#)

- Assessed the anti-aging and antioxidative properties of mesenchymal stem cells overexpressing the proteasome catalytic beta 5 subunit
- Performed catalase and superoxide dismutase activity assays using Wharton's jelly-derived mesenchymal stem cells

Honors & Awards

2022	Jacobs Translational Medicine Fellowship , Jacobs Institute	Caltech
2019	Scholarship, ETH Master Scholarship Program	ETH Zurich
2018	Fellowship, School of Life Sciences Summer Research Program , 1 of 25 from 600+ applicants	EPFL
2017	Excellence Award , by the Dean of Faculty of Sciences	AUTH
2017	Gold Medal , iGEM Greece 2017	iGEM
2017	Nomination for "Best Therapeutics Project" , iGEM Greece 2017	iGEM
2017	Best Team Project , Volos Summer School of Human Genetics	VSS
2016	Scholarship, Amgen Scholars Program , University of Cambridge	Amgen Foundation
2015	Grant for attendance , FENS Featured Regional Meeting 2015	FENS
2015	Scholarship, International Summer Course "German for Medical Practitioners"	MGEPA NRW
2012	Scholarship, United World College Mostar	UWC

Publications

Peer-reviewed research

A genetic mammalian proportional–integral feedback control circuit for robust and precise gene regulation PNAS

FREI, T.*, CHANG, C. H.*, FILO, M., ARAMPATZIS, A., KHAMMASH, M. 2022

Isolation of neural stem and oligodendrocyte progenitor cells from the brain of live rats Stem Cell Reports

McCLENAHAN, F., DIMITRIOU, C., KOUTSAKIS, C., DIMITRAKOPOULOS, D., ARAMPATZIS, A., KAKOURI, P., KOURLA, M., OIKONOMOU, S., ANDREOPOULOU, E., PATSONIS, M., MERI, D.K., RASOOL, R.T., FRANKLIN, R.J.M., KAZANIS, I. 2021

Infantile respiratory distress syndrome and its probable links with parameters of the maternal patient history: A forensic case report The American Journal of Forensic Medicine and Pathology

GIANNITSIS, C., ARAMPATZIS, A., STEFANIDOU, M., ANESTAKIS, D., RAIKOS, N., PAVLIDIS, P. 2016

A classification and comparative study of European biobanks: An analysis of biobanking activity and its contribution to scientific progress Archives of Medicine

ARAMPATZIS, A., PAPAGIOUVANNI, I., ANESTAKIS, D., TSOLAKI, M. 2016

Preprints

Engineering cybergenetic cell-based therapies bioRxiv

CHANG, C.H.*, ARAMPATZIS, A.*, BALULA, S., HOU, M., FILO, M., CHEN, M., CELLA, F., KHAMMASH, M. 2026

Book chapters

Being a neural stem cell: A matter of character but defined by the microenvironment Stem Cell Microenvironments and Beyond

ANDREOPOULOU, E., ARAMPATZIS, A., PATSONI, M., & KAZANIS, I. 2017

Presentations (selected)

Towards a cell-free DNA replication system Lausanne, Switzerland

ARAMPATZIS, A., SWANK, Z., MAERKL, S. 2018

Poster at the EPFL SRP symposium, Lausanne, Switzerland

pANDORRA - Engineering & delivering modular RNAi-based logic circuits to treat colorectal cancer Boston, USA

ARAMPATZIS, A.*, GIANNITSIS, C.*, BALLHYSA, E., SANDALTZOPOULOU, E., NIKOLOPOULOS, T., 2017

SAMARAS-TSAKIRIS, K., PAPADIMITRIOU, A., THEOCHARIS, A., AKRITIDIS, K., KOMODROMOS, C., PAPAIOANNOU, N.

Oral and poster presentation at the iGEM 2017 competition final phase, "Giant Jamboree", Boston, USA

Developing novel diagnostic and therapeutic tools for colorectal cancer through the use of genetically engineered *E. coli*

Cambridge, UK

ARAMPATZIS, A.*, GIANNITSIS, C.*, BALLHYSA, E., NIKOLOPOULOS, T., SANDALTZOPOULOU, E., AKRITIDIS, K., PAPAIOANNOU, N., SAMARAS-TSAKIRIS, K., THEOCHARIS, A., PAPADIMITRIOU A., SARIGIANNIS, D., KOLIAKOS, G.

2017

Poster presented at the 4th International Synthetic & Systems Biology Summer School, University of Cambridge, UK

Isolation of endogenous neural stem/progenitor cells from the cerebrospinal fluid: Investigating their in vitro profile and expansion properties

Cambridge, UK

ARAMPATZIS, A., RASOOL, RT., MCCLENAHAN, F., KAZANIS, I.

2016

Poster presented at the Amgen Scholars Europe Symposium 2016, University of Cambridge, UK

A computational approach of temporal lobe epilepsy and the outcome of selective amygdalohippocampectomy utilizing a neural mass model

Patras, Greece

GIANNITSIS, C.*, ARAMPATZIS, A.*, KOSMIDIS E.K.

2016

Oral presentation at the 22nd Scientific Congress of Hellenic Medical Students - 10th International Forum of Hellenic Medical Students and Junior Doctors, Patras, Greece

Computational neuroscience: Mathematical modeling and simulation of neuronal activity in health and disease

Thessaloniki, Greece

ARAMPATZIS, A.

2016

Oral presentation during the 8th International Week Dedicated to Maths, Thessaloniki, Greece

From membrane potential oscillations to the Bayesian brain: Analyzing computational models of grid and place cells

Thessaloniki, Greece

GIANNITSIS, C.*, ARAMPATZIS, A.*, KOSMIDIS E.K.

2015

Poster presented at the FENS Featured Regional Meeting 2015, Thessaloniki, Greece

Teaching, Mentorship & Community

Control Theory and Systems Biology Laboratory, D-BSSE

ETH Zurich

STUDENT SUPERVISOR

Jun 2022 - present

- Supervised and co-supervised 6 MSc students (5 thesis projects, 1 3-month research project), mentoring them in experimental and computational research
- Students:
 - Mingzhe Chen (ETHZ Biotechnology)
 - Noemie Allet (ETHZ Biotechnology)
 - Gregor Prinz (TUM Biomedical Engineering and Medical Physics)
 - Ardian Mannhart (ETHZ Biotechnology)
 - Marie-Claire Indilewitsch (ETHZ Computational Biology and Bioinformatics)
 - David Jewanski (ETHZ Biotechnology)

AcubeSAT satellite mission

SpaceDot

SCIENCE LEAD

Oct 2018 - present

- Led an interdisciplinary science team of ~30 students across engineering and life sciences; contributed to program-level coordination of ~220 participants
- Enabled the generation of 12+ BSc/MSc theses and 5+ conference publications
- Established and maintained [open-source](#) software, hardware, and wetware repositories, adopted by multiple aerospace teams for development and training (e.g. Greek IOV teams)
- Raised more than 70,000€ in external sponsorship funding

Team iGEM Greece 2017

AUTH

TEAM LEADER/FOUNDER

Oct 2016 - Nov 2017

- Oversaw integrated human practices and public engagement activities, including stakeholder consultation and science outreach initiatives
- Organized a workshop for ~50 university peers about synthetic biology & modeling methods (InnovationLab, EMB IEEE Student Chapter AUTH)
- Delivered outreach workshops to ~20 students (ages 14–18) on synthetic biology concepts
- Mentored subsequent iGEM teams (e.g. iGEM Thessaloniki 2019/2021, Patras-Med 2023/2024)
- Secured more than 45,000€ in competitive sponsorship funding
- Contributed to the expansion of the Greek synthetic biology ecosystem, which has since produced [more than 45 teams](#) nationwide

“Train Your Brain” program, by Eduact

American Farm School

TEAM BUILDING COACH

Feb 2016 - Apr 2016

- Designed and delivered team-building workshops for ~25 high-school students, fostering collaboration and communication skills

School of Medicine

AUTH

TEACHING ASSISTANT - INSTRUCTOR

Feb 2014 - Jan 2016

- Instructed anatomy sessions for ~20 medical students (Courses: Descriptive Anatomy I & III)
- Conducted hands-on clinical skills training, including urinary and intravenous catheterization and vital signs assessment (Course: Clinical Skills Laboratory)

Volunteering & Clinical Experience

Thessaloniki's Polyclinic, Doctors of the World

VOLUNTEER - MEDICAL STUDENT

Thessaloniki, Greece

Oct 2015 - Dec 2015

- Provided primary health care to social groups with limited access to the National Health System

St. Ansgar Krankenhaus Hötter

CLINICAL INTERN IN NEUROLOGY

Hötter, Germany

Aug 2015

- Attended neurology ward rounds as a visiting medical student

Greek Association of Alzheimer's Disease and Related Disorders

VOLUNTEER - MEDICAL STUDENT

Thessaloniki, Greece

Oct 2014 - Jan 2015

- Assisted in conducting medical interviews and provided support to patients with dementia and their caregivers as part of a multi-disciplinary care team

Social Policy and Health Committee, AUTH

VOLUNTEER - MEDICAL STUDENT

Thessaloniki, Greece

Mar 2014

- Supported as an organiser a university-wide voluntary blood donation event

European Youth Parliament

ORGANIZER/JOURNALIST

Europe

Dec 2013 - Apr 2014

- Organizer (1 session in Greece)
- Journalist (2 sessions in Finland and Greece)
- Delegate (3 sessions in Greece and Serbia between 2011 and 2013)

Hellenic Medical Students' International Committee, AUTH

VOLUNTEER - MEDICAL STUDENT

Thessaloniki, Greece

Dec 2013 - Mar 2014

- Participated in 6 public awareness campaigns regarding public health issues (e.g. tuberculosis, HIV prevention)

Independent Projects

NeMo (Neural Motors) Project

CO-CREATOR

Thessaloniki, Greece

Feb 2015 - Sep 2015

- Created a Brain Computer Interface (BCI) by utilizing EEG-based signal analysis methods to wirelessly control an RC-car
- Attendee at Slush 2015, Helsinki, Finland
- Invited speaker (Tech-Alley at TEDxAcademy 2015 & 10th Hellenic Conference of Pharmaceutical Marketing, Athens, Greece) and speaker at Thessaloniki Science Festival, Thessaloniki, Greece
- Featured in national TV (ANT1 News) and 20+ media outlets

Extracurricular Training (selected)

Training Courses

Volos Summer School of Human Genetics (graduate-level; Volos, Greece, May 2017)

Seminars & Workshops

ESA Fly Your Satellite! 3 Phase D Training Week (remote, October 2022)

ESA Fly Your Satellite! 3 Critical Design Workshop (remote, November 2020)

ESA Fly Your Satellite! 3 Selection Workshop (ESA ESTEC, Netherlands, December 2019)

Scientific Conferences

Basel Cell Therapy Symposium 2025 (Basel, Switzerland, January 2025)

2023 International Mammalian Synthetic Biology Workshop (San Jose, USA, June 2023)

Hackathons & Competitions

Johns Hopkins CBID COVID-19 Design Challenge (remote, March 2020)

Arc Institute Virtual Cell Challenge (remote, 2025)

Languages

Greek

Native speaker

English

Proficient user (C2)

German

Independent user (B2)/Proficient user (C1) in medical practice

Greek Sign Language

Basic user with expertise in medical practice