

**Date** September 2023

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**Contact Information**

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**Present Position**

2023 –present      Professor of Cell Biology and Physiology Washington University  
School of Medicine in St. Louis

**Education (degrees in forward chronological order)**

Year; degree; degree granting institution

- Undergraduate  
1999 BSc      Biochemistry, School of Chemistry, University of Belgrade, Serbia  
BSc thesis work under supervision of Prof. Dr. Vukic Soskic  
“Cloning and expression of the terminal intracellular region of human  
dopamine D1 and D5 receptors as fusion proteins in E. coli”
- Graduate  
  
2001 MSc      Biochemistry, School of Chemistry, University of Belgrade, Serbia  
MSc thesis work under supervision of Prof. Dr. Vukic Soskic  
“Cloning and expression of selected intercellular regions of the human  
D1 dopamine receptor and analysis of their interactions with subunits  
of G0, GS and Gi proteins”

- **Djuranovic S**, Predic J, Backovic M, Soskic V, Interaction of intracellular loops of dopamine D1 receptor with G protein subunits, 2002, Yugoslav Med. Biochemistry; 21:255-260 (published part of the thesis:  
[https://www.researchgate.net/publication/247873727\\_Interaction\\_of\\_intracellular\\_loops\\_of\\_dopamine\\_D-1\\_receptor\\_with\\_G\\_protein\\_subunits](https://www.researchgate.net/publication/247873727_Interaction_of_intracellular_loops_of_dopamine_D-1_receptor_with_G_protein_subunits))
  - 2006 PhD Biochemistry, Eberhard Karls University & Max-Planck Institute for Developmental Biology, Tübingen, Germany  
PhD thesis work under supervision of Prof. Dr. Andrei Lupas  
“Evolution of the double-psi-barrel fold. Structure and function of N-terminal domains of the AAA proteins”
    - Djuranovic S, Evolution der Substraterkennungsdomänen von AAA-Proteinen: Evolution of substrate recognition domains of the AAA proteins. PhD thesis 2006  
(<https://core.ac.uk/download/pdf/56755772.pdf>)
- Postgraduate
  - 2006 – 2007 Postdoctoral Research Fellow Max-Planck Institute for Developmental Biology, Tübingen, Germany (Andrei Lupas, PhD)  
Biochemistry and Structural Biology  
“Structure and function of 19S subunit of archaeal proteasome”
  - 2007 – 2012 Postdoctoral Research Fellow Howard Hughes Medical Institutes and Johns Hopkins University School of Medicine Baltimore, MD (Rachel Green, PhD)  
Biochemistry and RNA biology  
“Mechanisms of gene regulation by microRNAs. Regulation of mRNA translation and decay in eukaryotic cells.”

### **Academic Positions / Employment:**

- |             |   |
|-------------|---|
| 2001 – 2002 | Research Associate at Clinical Biochemistry Laboratory<br>Children’s Hospital at Clinical Center of Montenegro,<br>Montenegro |
| 2013 – 2019 | Assistant Professor of Cell Biology and Physiology<br>Washington University School of Medicine, St. Louis, MO                 |
| 2019 –2023  | Associate Professor (with tenure) of Cell Biology and<br>Physiology Washington University School of Medicine in St.<br>Louis  |

**University and Hospital Appointments and Committees**

2013 – present	PhD candidate interviewer for MSTP; Molecular Cell Biology program; Biochemistry, Biophysics, and Structural Biology program; Developmental, Regenerative and Stem Cell Biology program; Molecular Genetics and Genomics program and Computational and Systems Biology program
2013 – 2015	Organizer of Cell Biology and Physiology Departmental Retreat
2013 – present	Member of PhD Admissions Committee for Molecular Cell Biology program
2016 – present	Member of PhD Admissions Committee for Biochemistry, Biophysics, and Structural Biology program
2016 – 2022	Member of Cell Biology and Physiology Faculty Search Committee (successful recruitment of new faculty members Drs. Silvia Jansen, David Kast and Amber N Stratman)
2017 – present	Institute of Clinical and Translational Sciences liaison for Cell Biology and Physiology Department
2018 – 2023	Chairman of PhD Admissions Committee for Molecular Cell Biology program
2021 – 2023	Member of Strategic planning for Molecular Cell Biology PhD program and CBP Department
2022 – present	Siteman Cancer Center Health Equity Fellow, faculty for community outreach, community engagement, and health disparities. Program for the Elimination of Cancer Disparities (PECaD), advocating for the inclusion of community-engaged opportunities and research.
2022 – present	Advisory Board member of Siteman Cancer Center Diversity, Equity, and Inclusion Committee
2023 – present	Vice-Chair Elect for the Executive Committee of the Faculty Council

**Honors and Awards**

- 1994-1999 National Fellowship for Talented Students in Sciences and Arts, Ministry of Science, Montenegro
- 2002-2006 Doctoral Fellowship, Max-Planck Society, Germany
- 2006 Award for best presentation, American Society for Biochemistry and Molecular Biology, 2006 ASBMB/JBC centennial meeting, San Francisco, USA
- 2006 Summa Cum Laude, PhD with honors, Eberhard Karls University and Max-Planck Institute for Developmental Biology, Tübingen, Germany
- 2007-2012 Postdoctoral Fellowship, Howard Hughes Medical Institute & Johns Hopkins University School of Medicine, Baltimore, USA
- 2013-2019 Elected member of Center for Young Scientists, Montenegrin Academy of Science, Montenegro
- 2014 Organizer of Cell Biology and Physiology Retreat, Rend Lake Resort in Whittington, Illinois
- 2016 Invited speaker and lecturer, Ministry of Science of Montenegro, Summer School of Science, Podgorica, Montenegro
- 2017 Invited panelist, "Links between science and economy", South European and European Union Forum, Budva, Montenegro
- 2017 Children Discovery Institute and Zebrafish facility Award
- 2017 LEAP Inventor Challenge Award, Skandalaris Center and Washington University, St. Louis
- 2017 Elected representative of Serbian Biochemical Society for FEBS (The Federation of European Biochemical Societies)
- 2018 Finalist of the Burroughs Wellcome Fund Investigators in the Pathogenesis of Infectious Disease Award (PATH)
- 2018 Keynote speaker, Systems Biology Conference and workshop, St. Petersburg, Russia
- 2018 SBS plenary speaker and chair, From Molecules to Organisms meeting, FEBS 3+, Siofok, Lake Balaton, Hungary
- 2018 Session Chair mRNA turnover, Translation Control meeting, Cold Spring Harbor, USA

- 2019 LEAP Inventor Challenge Award, Skandalaris Center and Washington University, St. Louis
- 2019 Invited reviewer for Siteman Cancer Center
- 2019 Reviewer for NSF Gene expression grants, USA
- 2019 Reviewer for Wellcome Trust Grants, UK
- 2019 Member of Centre of Excellence for Biomedical Research in Montenegro
- 2020 Keynote speaker, Systems Biology Conference and Workshop, Melbourne, Australia
- 2020 Invited member of NIGMS Established Investigator R35/MIRA study section
- 2020 Awardee of Chan Zuckerberg Initiative for Collaborative Pair Pilot Project Awards on Neurodegeneration
- 2021 Siteman Investment Award
- 2021 Permanent member of NIH/NIGMS Molecular Genetics B Study Section (MGB)
- 2021 Permanent member of NIH/NIGMS Molecular Genetics Study Section (MG)
- 2022 Member of the Health Equity Fellowship within Siteman Cancer Center and the Program for the Elimination of Cancer Disparities (PECaD), advocate for inclusion of community-engaged opportunities and research.
- 2022 Chairman of the reviewing committee for Immunology Graduate program at DBBS Washington University
- 2022 Advisory Board member Siteman Cancer Center Internal Diversity, Equity, and Inclusion Committee
- 2022 Member of scientific advisory board of rBIO Biotech Company
- 2022 Co-chair for MG study section at NIGMS/NIH
- 2022 Awardee of Chan Zuckerberg Initiative for Collaborative Pair Awards on Neurodegeneration

- |      |   |
|------|---|
| 2022 | Reviewing editor for Frontiers in RNA Research  |
| 2023 | Scientific reviewer for MRC Toxicology Unit Department at the University of Cambridge, UK |
| 2023 | Editorial Board Member Journal of Biological Chemistry                                    |

## **Editorial Responsibilities**

### *Editorial board member*

Journal of Biological Chemistry

### *Reviewing editor*

Frontiers in RNA Research – section for non-coding RNA

### *Reviewer*

Nature  
Science  
Nature Communications  
Nature Structural and Molecular Biology  
Cell  
Molecular Cell  
Nucleic Acid Research  
eLife  
Cell Reports  
Cell Systems  
Current Biology  
Journal of Biological Chemistry  
Scientific Reports  
Cell Proliferation  
RNA journal  
WIRE's RNA  
Plos One  
Plos Pathogens  
Plos Genetics  
Cellular and Molecular Biology Letters  
ACS Chemical Biology  
Journal of Cellular and Molecular Medicine

### *Invited guest editor*

Methods in RNA (declined)

WIRE's RNA (declined)

### **National Scientific Panels**

- |           |  |
|-----------|--|
| 2017      | Links between science and economy", South European and European Union Forum, Budva, Montenegro             |
| 2017      | Evaluator for collaborative scientific projects between European Union and Montenegro                      |
| 2018      | Expert panel for Accreditation and Higher Education Institutions Reaccreditation, Government of Montenegro |
| 2019      | Member of reviewing panel for Siteman Cancer Center  |
| 2019/2022 | Reviewer for NSF Gene expression grants, USA   |
| 2020      | Member of NIGMS Established Investigator R35/MIRA study section  |
| 2021      | Permanent member of NIH/NIGMS Molecular Genetics B (MGB) and Molecular Genetics (MG) Study Section.        |
| 2023      | Member of NSF-MCB Genetic Mechanisms review panel  |

### **Community Service Contributions** (year-year of service)

- PhD candidate interviewer for MSTP; Molecular Cell Biology program; Biochemistry, Biophysics, and Structural Biology program; Developmental, Regenerative and Stem Cell Biology program; Molecular Genetics and Genomics program and Computational and Systems Biology program
- Organizer of the Cell Biology and Physiology Departmental Retreat
- Member of PhD Admissions Committee for Molecular Cell Biology program
- Member of PhD Admissions Committee for Biochemistry, Biophysics, and Structural Biology program
- Member of Cell Biology and Physiology Faculty Search Committee (successful recruitment of new faculty members Drs. Silvia Jansen, David J. Kast and Amber N. Stratman)

- Institute of Clinical and Translational Sciences liaison for Cell Biology and Physiology Department
  - Chairman of PhD Admissions Committee for Molecular Cell Biology program
  - Member of Curriculum Committee for Division of Biomedical and Biological Science (DBBS) programs at Washington University in St. Louis
  - Member of the Health Equity Fellowship within Siteman Cancer Center and the Program for the Elimination of Cancer Disparities (PECaD), advocate for inclusion of community-engaged opportunities and research.
  - Advisory Board member for Siteman Cancer Center Internal Diversity, Equity, and Inclusion Committee
  - Vice-Chair Elect for the Executive Committee of the Faculty Council
- **Professional Societies and Organizations**
    - Member of Serbian Biochemical Society
    - Member of The American Society for Biochemistry and Molecular Biology (ASBMB)
    - Center for Young Scientists, Montenegrin Academy of Science, Montenegro
    - Member of RNA Society
    - Siteman Cancer Center, School of Medicine, Washington University in St. Louis
    - Member of the American Association for Cancer Research (AACR)
    - Representative of Serbian Biochemical Society in FEBS
    - Hope Center, School of Medicine, Washington University in St. Louis
    - Member of Centre of Excellence for Biomedical Researches (CEBIMER) of Montenegro
    - Member of American Society of Gene & Cell Therapy (ASGCT)
    - Member of American Society for Microbiology



- **Media activities**

*On Argonaute miRNA studies*

<https://scienceblog.com/29634/argonautes-a-big-turn-off-for-proteins/>

<https://www.hhmi.org/news/researchers-reveal-new-details-about-how-argonaute-helps-halt-protein-production>

*On translation ramp and protein synthesis*

<https://www.labmanager.com/news/scientists-find-way-to-supercharge-protein-production-21281>

<https://phys.org/news/2019-12-scientists-supercharge-protein-production.html>

<https://www.genengnews.com/news/in-the-hurdle-race-to-boost-protein-production-dont-trip-over-codons-3-5/>

<https://www.outlookindia.com/newscroll/new-method-ramps-up-protein-production-by-thousandfold-study/1690184>

[https://www.business-standard.com/article/pti-stories/new-method-ramps-up-protein-production-by-thousandfold-study-119122000252\\_1.html](https://www.business-standard.com/article/pti-stories/new-method-ramps-up-protein-production-by-thousandfold-study-119122000252_1.html)

<https://m.dailyhunt.in/news/india/english/indiatvnews-epaper-intvnews/new+method+ramps+up+protein+production+by+thousandfold-newsid-n154379074>

<https://health.economictimes.indiatimes.com/news/diagnostics/new-method-ramps-up-protein-production-by-thousandfold/72897699>

<https://bioengineer.org/scientists-find-way-to-supercharge-protein-production/>

[https://www.techexplorist.com/supercharging-protein-production/28619/?utm\\_source=rss&utm\\_medium=rss&utm\\_campaign=supercharging-protein-production](https://www.techexplorist.com/supercharging-protein-production/28619/?utm_source=rss&utm_medium=rss&utm_campaign=supercharging-protein-production)

<https://6park.news/washington/hookworms-have-potential-to-protect-soldiers-from-chemical-and-biological-weapons-washington-university-school-of-medicine-in-st-louis.html>

*On creation of hypomorphic mutants using polyA tracts*

<https://coboscientific.com/genome-editing/tunr-flexible-gene-editing-system/>

<https://techstartups.com/2018/05/22/gene-editing-startup-canopy-biosciences-raises-2-4-million-series-financing-advance-development-research-tools/>

<https://medicine.wustl.edu/news/new-genetic-engineering-technique-help-design-study-biological-systems/>

<https://www.scientifictechnologynews.com/canopy-biosciences-licenses-novel-gene-editing-technology-washington-university-johns-hopkins-university/>

<https://canopybiosciences.com/our-news/page/3/>

<https://www.eurekalert.org/multimedia/pub/131133.php>

<https://www.prnewswire.com/news-releases/canopy-biosciences-licenses-novel-gene-editing-technology-from-washington-university-and-johns-hopkins-university-300432392.html>

<https://www.biotechniques.com/bioengineering-biophysics/a-faster-way-to-generate-hypomorphic-mutations/>

<https://igtrcn.org/rapid-generation-of-hypomorphic-mutations/>

[https://web.genewiz.com/webinar\\_hypomorphic\\_alleles](https://web.genewiz.com/webinar_hypomorphic_alleles)

<https://www.sciencedaily.com/releases/2017/01/170120091004.htm>

<http://www.mariakonovalenko.com/blog/2017/1/23/researchers-invent-a-method-to-produce-a-precise-amount-of-protein-on-demand>

<https://gmoanswers.com/studies/study-new-genetic-engineering-technique-could-help-design-study-biological-systems>

<http://www.frontlinegenomics.com/news/10901/canopy-biosciences-acquire-rights-gene-editing-technology/>

*On polyA research*

<https://www.the-scientist.com/daily-news/aaaaa-is-for-arrested-translation-35106>

*ASBMB*

<http://www.asbmb.org/uploadedFiles/ASBMBToday/Content/Archive/ASBMBToday-2006-7.pdf>

*In Serbo-Croatian language*

<http://www.rtcg.me/vijesti/ekonomija/182757/regionalna-konferencija-o-ekonomiji-u-budvi.html>

<http://www.mneresearch.ac.me/cg/vijest.php?id=64>

### **Major Invited Professorships and Lectureships**

- |      |  |
|------|--|
| 2005 | Invited speaker for colloquium of the MPI for Developmental Biology and Friedrich Miescher Laboratory, Tuebinge, Germany |
| 2006 | Speaker for ASBMB Annual Meeting, San Francisco, USA   |
| 2011 | Invited speaker for translational control interest meeting, Johns Hopkins University School of Medicine, Baltimore, USA  |
| 2011 | Speaker at Protein Synthesis and Translational Control Conference, EMBL Heidelberg, Germany                              |
| 2012 | Invited speaker at Department of Biochemistry, School of Medicine, University of Utah, Salt Lake City, USA               |
| 2012 | Invited speaker at Department of Biology, Johns Hopkins University, Baltimore, USA                                       |
| 2012 | Invited speaker at Department of Cell Biology and Physiology, School of Medicine, Washington University, St. Louis       |
| 2012 | Invited speaker for Symposium on Systems Biology at Max Delbrück Center for Molecular Medicine, Berlin, Germany          |

- 2012 Invited speaker and lecturer, Belgrade Food and Allergy International Conference, Horizons in Life Sciences, FCUB ERA, Belgrade, Serbia
- 2012 HHMI Science Meeting, Janelia Research Campus, Ashburn, VA
- 2013 Invited lecture at Siteman Cancer Center – Breast Cancer Research Program, St. Louis, USA
- 2013 Invited lecture at Department of Genetics, School of Medicine, Washington University, St. Louis, USA
- 2014 Invited lecture at Department of Molecular Microbiology, School of Medicine, Washington University, St. Louis, USA
- 2014 Invited speaker and lecturer, Prona Summer School of Science, Cetinje, Montenegro
- 2014 Speaker at Translational Control Meeting, Cold Spring Harbor, USA
- 2015 Invited lecture at Department of Biology, Western Ontario University, London, Ontario, Canada
- 2015 Invited speaker at Eukaryotic mRNA processing meeting, Cold Spring Harbor, USA
- 2015 Invited lecture at Department of Biology, University of Missouri St. Louis, USA
- 2016 Invited lecture at Department of Developmental Biology, School of Medicine, Washington University, St. Louis, USA
- 2016 Speaker at Post-Transcriptional Gene Regulation, Gordon Research Conference, Stowe, VT, USA
- 2016 Speaker at Translational Control Meeting, Cold Spring Harbor, USA (talk given by PhD student Laura Arthur)
- 2016 Keynote speaker for Biochemistry and CMB Program Retreat, Department Of Molecular Biophysics and Biochemistry, Washington University, New Heaven, MO, USA
- 2016 Invited Lecture at Department of Ophthalmology, Vision Science seminar, School of Medicine, Washington University, St. Louis, USA
- 2017 Invited lecture at Breast Cancer Panel Group, Department of Oncology, School of Medicine, Washington University, St. Louis, USA
- 2017 Speaker at Tropical Medicine and Parasitology Seminar, Department of Microbiology, School of Medicine, Washington University, St. Louis, USA
- 2017 Speaker at Translation Machinery in Health & Disease, Gordon Research Conference, Galveston, TX, USA (talk given by PhD student Kyle Cottrell)

- 2017 Speaker at RNA Society Meeting, Prague, Czech Republic (talk given by PhD student Laura Arthur)
- 2017 Invited lecture at Polish National Academy, Institute of Biophysics and Bioinformatics, Warsaw, Poland
- 2017 Speaker at Protein Synthesis and Translational Control Meeting, EMBL Heidelberg, Germany
- 2017 Speaker at Transgenic Technology Meeting, Snowbird resort, Salt Lake City, Utah, USA (talk given by Rachel Delston from Canopy Biosciences)
- 2017 Invited lecture at RNA Institute, School of Medicine, Case Western University, Cleveland, USA
- 2017 Invited lecture at Lady Davis Institute, SMBD Jewish General Hospital, McGill University, Montreal, Canada
- 2017 Invited webinar, Creation of Hypomorphic Alleles for Functional Gene Studies, Genewiz
- 2018 Keynote lecture, Systems Biology Conference and Workshop, St. Petersburg, Russia
- 2018 Plenary speaker, Keynote speaker and chair, From Molecules to Organisms Conference, FEBS 3+, Siofok, Lake Balaton, Hungary
- 2018 Session chair and invited speaker, mRNA turnover session, Translation Control Meeting, Cold Spring Harbor, USA
- 2019 Invited speaker for MBG Young Investigator Symposium 2019, Department of Molecular Biology and Genetics, Aarhus University, Denmark
- 2019 Invited lecture at Pharmaceutical Institute, University of Kiel, Dept. of Pharmaceutical and Medicinal Chemistry, Germany
- 2020 Invited speaker for Systems Biology Workshop at La Trobe University, Melbourne, Victoria, Australia
- 2020 Invited lecture Saint Louis University, Department of Biochemistry, Saint Louis, USA
- 2020 Invited Lecture UT Health San Antonio School of Medicine, Department of Biochemistry and Structural Biology, San Antonio, USA
- 2021 Invited speaker for Systems Biology Workshop at La Trobe University, Melbourne, Victoria, Australia
- 2022 Invited Speaker UC Riverside Molecular, Cell and Systems Biology Department, Riverside, USA
- 2022 Speaker at tRNA meeting at Columbus, OH, USA

- 2022 Invited Speaker for Ribosome Structure and Function meeting in Bordeaux, France
- 2022 Speaker at Translational Control Meeting, Cold Spring Harbor, USA
- 2022 Invited lecture at THINC RNA Biology and Discovery Center at Baylor College of Medicine, Houston, USA
- 2023 Invited lecture at Department of Genetics, School of Medicine, Case Western University, Cleveland, USA
- 2023 Invited lecture at Department of Oncology at Baylor College of Medicine, Houston, USA
- 2023 Invited speaker and panelist for RNA Biology session Neurodegeneration Challenge Network (NDCN) at Chan-Zuckerberg Annual Meeting, San Diego, USA
- 2023 Invited lecture at Fred Hutch Cancer Center and Department of Biochemistry, University of Washington, Seattle, USA
- 2023 Speaker at Eukaryotic mRNA Processing, Cold Spring Harbor, USA
- 2023 Invited lecture at Max-Planck Institute for Biology, Tübingen, Germany
- 2023 Invited lecture at Montenegro Academy of Science , Podgorica, Montenegro
- 2023 Invited lecture at XXX Meeting of the Balkan Clinical Laboratory Federation, Herceg Novi, Montenegro
- 2023 Invited lecture at Johns Hopkins University, School of Medicine, Department of Molecular Biology and Genetics
- 2024 Invited lecture at RNA Therapeutics Institute at UMass Medical School, Worcester, USA
- 2024 Invited speaker for RNA Regulation meeting at Stowers Institute for Medical Research in Kansas City, Missouri

## **Research**

### *Completed Research Support*

**IRG-58-010-58-2 Djuranovic (PI)**  
Siteman Cancer Center/American Cancer Society

01/01/15-31/12/15

Regulation of Genes by Ribosome Stalling in Cancer Cell Growth

The goals of this project are to investigate the notion that ribosome stalling effects gene regulation through polyA-motifs and to examine how deregulation of this pathway leads to tumorigenesis.

Role: PI

**LEAP Inventor Challenge Award, Djuranovic (PI)**

10/01/17-31/12/19

Fine tuning of gene expression by polyA tracks  
Project goal is to de-risk and further develop a technology that fine-tunes gene expression to desirable amounts using engineered poly adenosine tags.

**LEAP Inventor Challenge Award Djuranovic (PI)** 04/01/19-04/01/21

Use of N-terminal peptides for increase in protein expression.  
Project goal is to use N-terminal penta-peptides for optimization of the protein synthesis, stability and folding by use of short N-terminal peptides.

**LEAP Inventor Challenge Award Djuranovic (PI)** 01/07/19-01/07/21

Use of polybasic peptides and polymers as antimalarial agents.  
Project goal is to test and commercialize a new lead substance for the treatment of human malaria.

**Sponsored Research Funds (rBIO)** 20/05/21-20/11/21

Optimization of the bio pharmaceutically important proteins for expression in various translation systems.

Ongoing Research Support

**2R01 GM112824-01A, Djuranovic (PI)** 01/07/15-30/09/24

Mechanisms for Modulation of miRNA-Mediated Gene Silencing  
The main goal of this project is to define cellular mechanisms used to modulate the process of miRNA-mediated gene silencing. These studies will ultimately give insight into the complexity of gene regulation at the level of translation and will be relevant to the better understanding of alterations in these regulatory mechanisms that may lead to various pathological states.

**1R01GM136823-01A1, Djuranovic (PI)** 06/01/21 - 03/31/25

Plasmodium falciparum, a causative agent of human malaria, inflicts an enormous burden on global human health. Even though P. falciparum is a eukaryotic organism, there are vast differences in the mechanisms of mRNA translation and surveillance between P. falciparum and humans. This project will apply new approaches to understand better the evolution of the previously unexplored process of protein synthesis in the AT-rich genome of malaria parasites and exploit new parasite-specific drug targets.

**SIP Research Development Awards 823924, Djuranovic (PI)** 01/04/21 - 01/04/24

This project follows mutations in polyA track motifs of ZCRB1 and RNPC3 minor spliceosome genes and their impact on gene expression levels of multiple genes involved in tumor suppression and tumorigenesis. These mutations are thought to be silent; however the same mutations lead to gene dosage effects potentially causing tumorigenesis.

**1R01 MH116999, Djuranovic (5% Co-PI)** 10/01/19-09/30/24  
National Institute for Mental Health –NHM

Highly parallel analysis of 5' and 3' UTR variants in Autism Spectrum Disorders  
Studies on the role of mutations in non-coding regions of mRNA and their role in alleviating mechanisms of gene expression in Autism Spectrum Disorders (PI –Dougherty)

**Simons Foundation Autism Research Initiative, Djuranovic (2% Co-PI)**01/10/18-30/09/23  
(extended for an additional year)

SSC-ASC Whole Genome Sequencing Consortium: UTR Mutation Analysis  
Mutation analysis of non-coding mRNA regions in patients with behavioral diseases. (PI – Dougherty)

**Children Discovery Institute and Zebrafish facility Award Djuranovic 100%**

12/01/16-12/2023

Ribosome stalling and frameshifting in zebrafish model.  
Role of polyA track motifs, NGD and NMD pathways in the regulation of ribosome biogenesis during the early zebrafish embryogenesis.

**DoD/DARPA/Charles River Analytics Co-PI 8% Djuranovic) 15/04/2021-14/04/2026**

Personal Protective Biosystems – Membranes and Commensal Helminths (MaCH)  
Vectored prophylaxis and neutralization of the program specified chemical/biological (CB) agents. Gene optimization toolkit contribution of Djuranovic Lab.

**Sponsored Research Funds (rBIO)**

08/03/22-12/09/23

Optimization of the bio pharmaceutically important proteins for expression in various translation systems.

**Chen Zuckerberg Initiative (50% PI Djuranovic) phase I**

2020-2022

**Chen Zuckerberg Initiative (50% PI Djuranovic) phase II**

2022-2026

Increasing mRNA translation to treat neurodegeneration

To develop universal gene-targeting strategies that stimulate mRNA translation to understand and treat neurodegenerative diseases.

**RTW Charitable Foundation (co-PI with Dougherty, Kroll and Miller) 04/2024**

Develop ASOs to restore normal MYT1L levels  
Short term goals are to: (1) test the ability of in vivo massively parallel reporter assay technologies (MPRAs) to predict ASO targetable elements, and (2) identify a lead ASO compound for preclinical rescue studies. The long term goals are to conduct preclinical rescue studies in mouse and human models. The long term objectives of these goals are both to enable future clinical trials or n=1 studies for MYT1L Syndrome with the ASO developed here, and to develop a generalizable pipeline for identifying ASOs for any haploinsufficiency syndrome.

Pending and planned Research Support**Commercial Solutions Proposal DARPA**

01/06/23-31/05/24

Hookworm as drug production and delivery technology

Project for commercialization of DARPA grant covered technology

**HHMI 2024 Investigator Competition**



Regulation and systems biology of protein synthesis

**R01GM141288, Djuranovic (PI)** 01/06/23- 31/05/27  
NIH-NIGMS MSFC study section (33.0 percentile first submission)

Structural and functional studies of early elongation events in protein synthesis

The amount of newly synthesized protein is generally defined by rates of translation initiation and elongation. In this proposal we seek to understand the significance of starting penta-peptide sequences in the regulation of protein synthesis. The results of our work will give a comprehensive understanding of the mechanics of early elongation events and the degree to which the first five amino acids of a polypeptide chain and ribosome structure determine the output of protein synthesis.

**NICHD R01 planned submission** 01/07/23- 31/04/27

Continuation of the project on polyA track motifs of ZCRB1 and RNPC3 minor spliceosome genes and their impact on gene expression levels of multiple genes involved in tumor suppression and tumorigenesis.

**Sponsored research agreement (Perfect Day Company)**

Optimization of the dairy product related important proteins for expression in various translation systems.

**Trainee/Mentee/Sponsorship Record:**

Mentored PhD thesis (defended)

2013 – 2017 Dr. Kyle A Cottrell, PhD thesis title “Regulation of gene expression by RNA binding proteins and microRNAs”, successfully defended December 2017, postdoctoral work at the lab of Dr. Jason Weber

2014 – 2017 Dr. Laura L Arthur, PhD thesis title “Mechanism of Gene Regulation by Coding PolyA Tracks”, successfully defended September 2017, Staff scientist in the lab of Dr. Maxim Artyomov

2015 – 2020 Jessey Erath, PhD thesis title “Evolution of Ribosomes in an AU-Rich Transcriptome: Translational Tolerance of Poly(A) Motifs in *P. falciparum*.” postdoctoral work in the lab of Dr. Peng Yuan

2017 – 2023 Geralle Powell, PhD thesis title "Characterizing the significance of polyA tracks in gene regulation and disease". Postdoctoral work at WUSM.

2019 – present Courtney Jungers, proposed PhD thesis title “Modulation of miRNA-mediated gene silencing by AU-rich binding proteins”

Rotation students

Kyle Cottrell - Lab of Djuranovic, Sergej	Molecular Cell Biology
Laura Arthur - Lab of Djuranovic, Sergej	Molecular Genetics and Genomics
John Dean - Lab of Lodhi, Irfan	Molecular Cell Biology
Yansel Nunez - Lab of Pike, Linda	Molecular Cell Biology
Jessey Erath - Lab of Djuranovic, Sergej	Molecular Microbiology and Microbial Pathogenesis
Kellan Weston - Lab of Yi, Jason	Molecular Cell Biology
Geralde Powell - Lab of Djuranovic, Sergej	Molecular Genetics and Genomics
Ellie Wilson - Lab of Spencer, David	Molecular Genetics and Genomics
Cortney Jungers – Lab of Djuranovic, Sergej	Molecular Cell Biology
Jade Enright – Lab of	
Katherine Floyd – Lab of Daniel Goldberg	Molecular Cell Biology
Sarah Koester – Lab of Joe Dougherty	Molecular Cell Biology
Klaudio Fatmiri –lab of Andrea Sorrano	Biochemistry and Biophysics
Tessa Locketto - lab of Natali Niemi	Molecular Cell Biology
Kaylee O’Donell – lab of Katherine Weilbaecher	Molecular Cell Biology

Undergraduate Bio200/Bio500 program students

Felipe Bertazzo	(Successfully enrolled in Sao Paolo School of Dentistry)
Denise Rogers	(Successfully enrolled in JHU School of Public Health)
Manasvi Verma	(Currently in PhD program at Harvard University)
Natasha Recoder Roshan	(Currently in PhD program at Cornell School of Medicine)
Sivakumar	(Currently in empower through health NGO Uganda)
Miles George	(Currently in the MIT Biology program)
Eylul Horozoglu	(Currently in the WUSTL Genetics PhD program)
Ethan Tsao	(Currently in the UCSF medical school)
Danielle Kemper	(Currently in Djuranovic Lab)

**Patents and Publications**

- U.S. and international Patent, Serial No. PCT/US2017/041766 (converted to the full patent in 2017). “Gene Regulation and Rapid Generation of Hypomorphic Mutations Using PolyATracks.” Licensed to Canopy Biosciences.

- U.S. and International Patent Application Serial No. 62/540,897 (conversion to the full patent in August 2019, #016819/US-2) "Short N-Terminal Peptides for increasing production of recombinant proteins." (licensed to rBIO)
- US Provisional Patent Application Serial No. 62/696,868 (conversion to full patent expected February 2020) "Antimalarial Compositions and Methods of use thereof."
- U.S. Provisional Patent Application, Serial Number pending, "N-Terminal Peptides for Increasing Folding Kinetics, Chromophore Maturation, and Stability of Florescent Proteins with Beta-Barrel Scaffold."
- 2 additional patents on antisense oligonucleotide drugs for neurodegeneration treatment (co-owned with Tim Miller) and technology for treatment of haploinsufficiency related diseases (co-owned with Tim Miller and Joe Dougherty)

**Original, peer reviewed articles in refereed journals (\* corresponding or senior author, #co-first author)**

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Kemper D, Verma M, King E., Keedy EH, Zaher H, Goldfrab D, Szczesny P, **Djuranovic S\***, Mechanism and functional consequences of frameshifting on coding polyA track genes in *E.coli*, (2023) (submission to *Nature*)

Four additional publications in preparation and submission.

### Reviews, Chapters and Editorials, including invited publications

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Jungers CF, **Djuranovic S**. (2022) Modulation of miRISC-Mediated Gene Silencing in Eukaryotes. *Front Mol Biosci*. 2022 Feb 14;9:832916. doi: 10.3389/fmolb.2022.832916. PMID: 35237661; PMCID: PMC8882679. (Invited review)

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\*Pavlovic Djuranovic S, Erath J, Andrews JR, Bayguinov OP, Chung JJ, Chalker LD, Fitzpatrick JAJ, Moss NW, Szczesny P, Djuranovic S. PolyA tracks and poly-lysine repeats are the Achilles heel of Plasmodium falciparum, bioRxiv 420109; doi: <https://doi.org/10.1101/420109>

### **Abstracts - selected, high impact meeting abstracts**

Djuranovic S., Truffault V., Coles M., Zeth K., Martin J., Lupas A. N., Structure and activity of different N-terminal domains from AAA-proteins, 2005, FEBS Journal; 272(s1), A2-022P (Proceedings from FEBS 2005 conference)

Djuranovic S, Zeth K, Martin J, Lupas A, The beta-clam domain of the AAA protein family AMA has energy-independent chaperone activity and mediates hexamerization The FASEB Journal 20 (4), A488-A488

### **Audiovisual/Media**

Webinar at Genewiz:

[https://web.genewiz.com/webinar\\_hypomorphic\\_alleles](https://web.genewiz.com/webinar_hypomorphic_alleles)

Webinar at Cobo Scientific (by Rachel Delston)

<https://register.gotowebinar.com/recording/viewRecording/1146974636376922881/7153304293549703682/info@coboscientific.com?registrantKey=4511448331565343756&type=ATTENDEEEMAILRECORDINGLINK>

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