

Stephen P. Christian Kocsis
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EDUCATION

Johns Hopkins University, Baltimore, MD, USA

M.S. in Bioinformatics (2025)

- 3.73 GPA

University of North Florida, Jacksonville, FL, USA

B.S. in Biology (2020)

- President's List Fall 2017
 - Dean's List Spring 2018
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WORK EXPERIENCE

Mayo Clinic, Jacksonville, FL, USA

Senior Program Coordinator, lab of Dr. DeLisa Fairweather, PhD
(January 2025 – Present)

- Promoted from Research Technologist based on contributions to high-impact research projects.
- Continue to lead high-dimensional omics data analyses, including bulk and single-cell RNA sequencing across multiple research disciplines.
- Expand mentorship responsibilities, training lab members in bioinformatics methodologies and advanced data science techniques.
- Collaborate with clinicians, bioinformaticians, and external research partners on multi-institutional studies.
- Oversee research finances and administrative operations, ensuring compliance with funding and institutional guidelines.

University of Florida, Gainesville, FL, USA

Volunteer Researcher, lab of Dr. Katelyn Bruno, PhD
(December 2024 – Present)

- Assist lab by leading next-generation sequencing data analysis projects.

Mayo Clinic, Jacksonville, FL, USA

Research Technologist, lab of Dr. DeLisa Fairweather, PhD
(July 2022 – January 2025)

- Conducted next-generation sequencing (NGS) data analysis, applying statistical modeling, dimensionality reduction, and machine learning techniques.
- Developed and optimized computational pipelines for RNA-seq and single-cell RNA-seq data processing.
- Led data mining projects, analyzing publicly available bulk RNA-seq and single-cell RNA-seq datasets to uncover novel biological insights.
- Provided technical training and mentorship, guiding students and staff in bioinformatics workflows and functional enrichment analysis.
- Managed and optimized multi-omics data integration for translational research applications.
- Promoted from Special Project Associate II based on outstanding performance in both research and administrative responsibilities.
- Served as the primary administrative liaison for the Fairweather Lab.
- Coordinated bulk RNA-seq and single-cell RNA-seq projects for both discovery and clinical research applications.
- Worked closely with clinicians and research teams on translational projects, including sequencing data analysis, epidemiological study design, and clinical data analysis.
- Contributed to direct patient care changes through clinical sequencing data analysis.
- Led the development and optimization of Nextflow-based NGS pipelines for sequencing data analysis including the pre-processing of raw fastq files and downstream analysis.
- Trained lab members in bulk RNA-seq workflows, including differential expression and functional enrichment analysis.
- Mentored a SPARK student in a statistics-driven clinical data analysis project.
- Managed research funding accounts and financial operations, ensuring compliance with Mayo Clinic and grant funding regulations.
- Ensured adherence to IACUC and IRB guidelines, facilitating collaboration between laboratory and clinical research teams.

Mayo Clinic, Jacksonville, FL, USA

Special Project Associate II, labs Dr. Ke Zhang, PhD and Dr. Veronique Belzil, PhD
(January 2021 – July 2022)

- Conducted experimental and computational research in Neuroscience and Cardiovascular Medicine.
- Led NGS data analysis projects, contributing to the analysis of Answer ALS bulk RNA-seq and proteomics data.
- Collaborated with bioinformatics teams to perform multi-omics analyses for various research applications.
- Presented research findings at lab meetings and delivered a poster presentation on Answer ALS proteomics data analysis at the Midwest Motoneuron Consortium (2021).
- Developed comprehensive expertise in biomedical research, computational biology, and multi-omics data analysis.

University of North Florida, Jacksonville, FL, USA

Directed Independent Study Researcher, lab of Dr. Terri Ellis, PhD

(May 2019 – February 2020)

- Ensured laboratory compliance with safety protocols and maintained equipment functionality for experimental workflows.
- Conducted microbiological research on *Klebsiella pneumoniae*, analyzing mutation patterns over incubation periods.
- Documented experimental progress, data collection, and analysis, contributing to a deeper understanding of bacterial adaptation.

PUBLICATIONS (4 + 1 preprint)

1. Darakjian AA*, Wilson FC*, **Kocsis SPC***, Fliess JJ[%], Murphy EF[%], Weigel GJ, Whelan ER, Puls AM, Hartmoyer CJ, Hamilton C, Perona EE, Strandes MW, Gehin JM, Garajawala S, Munipalli B, Shufelt CL, Atwal PS, Knight DRT\$, Bruno KA\$, Fairweather D\$# (2025) Distinct blood immune phenotype distinguishes hypermobile Ehlers-Danlos syndrome from hypermobility spectrum disorders. *Manuscript in preparation*. *co-first authors, %co-second author, \$co-senior authors, #corresponding author

2. **Kocsis SPC**^{1*}, Fairweather D^{1-3*}\$#, Hamilton C¹, Bruno KA^{1,4}\$ (2025) Single cell sequencing analysis of pediatric myocarditis PBMCs identifies mitochondrial dysfunction. *Manuscript in preparation*. *co-first authors, \$co-senior authors, #corresponding author.

3. Di Florio DN*, Fliess JA*, McCabe EJ*, Hartmoyer CJ*, **Kocsis SPC**, Hamilton C, Weigel GJ, Puls AM, Murphy EF, Strandes MW, Hodge DO, Wolfram J, Coronado MJ, Chini EN, Fairweather D# (2025) Extracellular vesicles containing virus and mitochondria induce myocarditis in mice. *Manuscript in preparation*. *co-first authors, #corresponding author

4. Fairweather D#†, Bruno KA† Darakjian AA#, Wilson FC#, Fliess JJ, Murphy EF, **Kocsis SC**, Strandes MW, Weigel GJ, Puls AM, Hartmoyer CJ, Hamilton C, Whelan ER, Gehin JM, Menton SM, Sledge H, Hodge DO, Gajarawala S, Munipalli B, Shufelt CL, Atwal PS, Knight DRT†* (2025) Localized and historical hypermobility spectrum disorders share self-reported symptoms and comorbidities with hEDS and HSD. *Front Med- Rheumatology*. *Manuscript submitted*. #co-first authors, †co-senior authors, *corresponding author

5. Whelan ER, Di Florio DN, Fliess JJ, Perona EE, **Kocsis SPC**, Jain A, Weigel GJ, Watkins MM, Malavet JM, Beetler DJ, Giresi P, Carvalho DM, Herchko SM, Hoppe BS[^], Fairweather D[^]# (2025) Novel translational model of radiation-induced heart disease in male BALB/c mice. *International Journal of Radiation Oncology, Biology, Physics*. *Manuscript submitted*. [^]co-senior authors, #corresponding author

6. Beetler DJ, Giresi P, Di Florio DN, Fliess JJ, McCabe EJ, Watkins MM, Xu V, Auda ME, Bruno KA, Whelan ER, **Kocsis SPC**, Edenfield BH, Walker SA, Macomb LP, Keegan KC, Jain A, Morales-Lara AC, Chekuri I, Hill AR, Farres H, Wolfram J, Behfar A, Stalboerger PG, Terzic A, Cooper LT Jr[^], Fairweather D[^]# (2025) Therapeutic effects of platelet-derived extracellular vesicles on viral myocarditis correlate with biomolecular content. *Front Immunol*. Jan

6;15:1468969. doi: 10.3389/fimmu.2024.1468969. ^co-senior authors, #corresponding author (IF: 5.700). [PMID: 39835120; PMCID: PMC11743460]

7. Di Florio DN[^], Weigel GJ[^], Gorelov DJ, McCabe EJ, Beetler DJ, Shapiro KA, Bruno KA, Chekuri I, Jain A, Whelan ER, Salomon GR, Khatib S, Bonvie-Hill NE, Fliess JJ, Giresi PG, Hamilton C, Hartmoyer CJ, Balamurugan V, Darakjian AA, Edenfield BH, **Kocsis SC**, McLeod CJ, Cooper LT Jr, Audet-Walsh ES, Coronado MJ\$, Sin J\$, Fairweather D\$# (2024) Sex differences in mitochondrial gene expression during viral myocarditis. *Biol Sex Diff*. Dec 18;15(1):104. doi: 10.1186/s13293-024-00678-0. [PMID: 39696682, PMCID: PMC11657264] ^co-first author, \$co-senior author, #corresponding author

8. Darakjian AA*, Bhutani M*, Fairweather D*\$, **Kocsis SC**, Fliess JJ, Khatib S, Weigel GJ, McCabe EJ, Balamurugan V, Perona EE, Gehin JM, Whelan ER, Jain A, Sledge H, Hodge DO, Rozen TD, Farraye FA, Soyer O, Cheung J, Grach SL, Shirey Jr D, Gajarawala S, Munipalli B, Shufelt CL, Knight DRT\$, Bruno KA\$# (2024) Similarities and differences in self-reported symptoms and comorbidities between hypermobile Ehlers-Danlos syndrome and hypermobility spectrum disorders. *Rheumatol Adv Pract*. Nov 4;8(4):rkae134. doi: 10.1093/rap/rkae134. [PMID: 39660107; PMCID: PMC11630848] *co-first author, \$co-senior authors, #corresponding author

9. Knight DRT*\$#, Bruno KA*\$, Singh A*, Munipalli B, Gajarawala S, Solomon M, **Kocsis SC**, Darakjian AA, Jain A, Whelan ER, Kotha A, Gorelov DJ, Phillips SD\$, Fairweather D\$ (2024) Cardiac defects of hypermobile Ehlers-Danlos syndrome and hypermobility spectrum disorders: A retrospective cohort study. *Front Cardiovasc Med*. Mar 18; 11:1332508. doi: 10.3389/fcvm.2024.1332508. [PMID: 38562189; PMCID: PMC10982405] *co-first authors, \$co-senior authors, #corresponding author

PREPRINTS

Di Florio DN, Gorelov D, McCabe E, Beetler D, Shapiro K, Bruno K, Chekuri I, Jain A, Whelan E, Salomon G, Khatib S, Bonvie-Hill N, Giresi P, Balamurugan V, Weigel G, Fliess J, Darakjian A, Edenfield B, **Kocsis C**, McLeod C, Cooper L, Audet-Walsh ES, Coronado M\$, Sin J\$, Fairweather D\$# (2023) Sex differences in mitochondrial gene expression during viral myocarditis. *Res Sq [preprint]*. Dec 19;rs.3.rs-3716881. doi: 10.21203/rs.3.rs-3716881/v1. [PMID: 38196574; PMCID: PMC10775395] \$co-senior, #corresponding author

SKILLS

Bioinformatics and Data Science

- Omics Data Analysis: Bulk and single-cell RNA sequencing, multi-omics integration
- Statistical and Computational Modeling: Differential expression analysis, gene co-expression networks, regression modeling
- Machine Learning and Data Mining: Feature selection, clustering, dimensionality reduction (PCA, UMAP, t-SNE), random forests, neural networks, decision trees
- Functional Enrichment Analysis: Gene set enrichment (GSEA, KEGG, Reactome), pathway overrepresentation analysis

- High-Throughput Sequencing Data Processing: Quality control, alignment, quantification, variant calling, differential splicing analysis
- Data Visualization and Interpretation: Graphical data exploration, network visualization, statistical plotting, publication-ready figures

Programming and Workflow Optimization

- Languages: Proficient in R, Python, and Bash scripting; minimal experience with C++, JavaScript, and SQL
- Data Manipulation and Analysis: Pandas, NumPy, SciPy, dplyr, data.table, statsmodels
- Version Control and Reproducibility: Git/GitHub, RMarkdown, Jupyter Notebooks

Research and Project Management

- Cross-Disciplinary Collaboration: Experience working with clinicians, bioinformaticians, and research teams
- Scientific Writing and Communication: Manuscript preparation, grant applications, conference presentations
- Mentorship and Training: Guiding students and lab members in bioinformatics workflows and statistical methods
- Lab and Research Administration: Budget management, compliance with IRB/IACUC guidelines

PROFESSIONAL ORGANIZATIONS

- American Heart Association (AHA)
- International Society for Computational Biology (ISCB)