MAXWELL KONNARIS

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EDUCATION

Ph.D in Bioinformatics & Genomics, Pennsylvania State University 2022 – Present

Advisors: Dr. Justin Silverman and Dr. Nicole Lazar
Committee: Dr. Jordan Bisanz, Dr. David Koslicki
Option: Statistical Genomics
Department: College of Information Sciences and Technology, Dept of Statistics
Overall Graduate Coursework: 47 Credits, GPA: 3.86/4.00
Coursework:
- Applied Bioinformatics
- Genomics
- Population Genetics
- Algorithms and Data Structures in Bioinformatics
- Statistical Genomics
- Ethics Rigor and Reproducibility
- Mathematical Statistics
- Probability Theory
- Matrix Algebra
- Theory of Statistics I and II
- Stochastic Processes and Monte Carlo
- Statistical Computing
- Data Mining I
- Metabolomics
- Network Science

B.S. in Exercise Science, Ithaca College 2013 – 2016

Advisor: Dr. Jeffrey Ives
Concentration: Medical Sciences Emphasis
Overall Undergraduate Coursework: 161 Credits, GPA: 3.50/4.00

Certificates:

Fundamentals of Deep Learning (NVIDIA)	2023
Linear Algebra Certificate (Georgia Institute of Technology, EdX)	2020
IBM Data Science Professional Certificate (9 course certification)	2020
Complete Python Bootcamp: Go from zero to hero in Python 3	2020
Research Phlebotomy	2020
CPR/AED	2020
Introduction to R programming (Weill Cornell Medical College)	2019

TECHNICAL SKILLS

Analytical:

- Multivariate statistical modeling
- Supervised, unsupervised, and semi-supervised machine learning
- Deep learning
- Network analysis
- Partially identified models
- Bayesian statistics
- Generative artificial intelligence

Computational:

- Programming Languages: R, Python, SQL, C++, HTML5, CSS, Bash/Unix, Slurm
- Software and Tools: GitHub/Git, Nextflow, Snakemake, Prism, QuPath, FlowJo, JMP, Adobe Photoshop, Adobe Illustrator, Microsoft Powerpoint, Microsoft Excel
- Healthcare IT: EPIC, eClinical Works, REDcap
- Use of high-performance computing clusters

Biological:

- Specimen Handling: Human and mouse specimen collection, storage, handling, and processing
- Cell Culture: Primary cell culture techniques
- Microscopy and Imaging: Confocal imaging, Immunofluorescence, Histomorphometry
- Molecular Biology: PCR, DNA/RNA isolation and extraction, molecular sequencing techniques
- Analytical Methods: ELISA, Flow cytometry, FACS cell sorting, NanoString, Gram stain, Endotoxin testing, Histology

Clinical:

- Diagnostic and Testing Procedures: EKG/ECG, VO2 max testing, OBLA testing, EMG, Motion analysis, Phlebotomy, Clinical rapid and point of care testing
- Patient Care: Exercise prescription, Cardiac rehabilitation, Strength and movement testing, Wound care, Vitals, Phlebotomy certified, History of present Illness and patient review of systems

- Emergency Response: AED/CPR certified
- Regulatory Knowledge: Familiar with FDA regulatory standards, clinicaltrials.gov, Human subjects IRB processes

CLINICAL EXPERIENCE

Shift Supervisor and Medical Scribe - CityMD Urgent Care Jun 2017 – Dec 2018
Manager: Benjamin Chaim

- Supervised over 20 employees in the urgent care setting while overseeing operations of up to 140 patient interactions in a single shift
- Acted as a senior scribe and medical assistant documenting up to 5 patient visits simultaneously (up to 35 patients daily)
- Gained hands on clinical experience by asking past medical history, history of present illness, documenting physical examinations, assisted, ordered, and performed clinical testing under the supervision of a medical provider

Medical Intern and Assistant - Cayuga Medical Center and Island Health & Fitness Jan – May 2016
Mentor: Andrew Getzin, MD

- Measured vitals in exercise setting of patients aged 20-80, monitored telemetry units, provided Exercise Rx, and assisted in ultrasound-guided injections and care of orthopedic injuries under supervision of an EP-C and medical provider

Varsity Crew Strength and Conditioning Intern - Ithaca College Aug 2015 – May 2016
Mentor: Becky Robinson, PhD

TEACHING EXPERIENCE

Genomics Teaching Assistant - Penn State University Aug - Dec 2023
Professors: Santhosh Girarijan, MBBS PhD and Christian Huber, PhD

- Developed graduate level curriculum, taught lectures, graded assignments covering all aspects of genomics

Data Reproducibility Bootcamp Teaching Assistant - Penn State University Aug 2023
Professors: George Perry, PhD and David Koslicki, PhD

- Developed curriculum and taught lectures on the rigor and reproducibility principles of biomedical data analysis with a focus on genomic analytic software tools, high performance

computing clusters, python, snakemake, and other useful packages such as PyTest https://bootcamp.biostars.io/

Programming Teaching Assistant - Global Code at Cape Coast University Jun - Jul 2018
Managers: Sam Moorhouse and Mark Walsh

- Developed high school curriculum and taught software engineering focused lectures through arduino and raspberry pi platforms

STEM Education Fellow and Teaching Assistant - E.L.I.T.E. Education at Urban Assembly Academy for Future Leaders Jan - May 2017
Managers: Chelsey Roebuck and Philip Gonzalez

- Developed middle school curriculum and taught engineering focused lectures through arduino and raspberry pi platforms

STUDENTS MENTORED

1. Darlene Cruz - Wesleyan University (Harlem RBI/DREAM Mentorship Program) Fall 2020 - Spring 2022

2. Daniela Salguero - CUNY Hunter College (CUNY Mentorship Program) Fall 2018 - Spring 2021

RESEARCH EXPERIENCE

PhD Dissertation/Thesis Research - Pennsylvania State University May 2024 – Present
Advisors: Justin Silverman, MD PhD and Nicole Lazar, PhD

Focus on rigor and reproducibility of biological sequencing analytics through the development of statistical methods/models

- Modeling covariance and correlation networks of high dimensional survey data accounting for scale bias in partially identified system
- Collaborated and consulted on analysis and study design of genomic/transcriptomic data collection with Dr. Spencer Szczesny's research group

PhD Research Rotation Student - Pennsylvania State University Jun 2023 – May 2024
Rotation advisor: Ilias Georgakopoulos-Soares, PhD

- Worked on several studies utilizing variations of k-mers to discover biomarkers and predict biological mechanisms, classify taxa or patient disease, and establish markers of evolution

- Developed machine learning applications and data mining methods from several sequencing modalities such as PhIP-seq, shotgun metagenomics, and whole genome sequencing.
- Conceptualized “Kmer-set enrichment analysis”
- 6 publications and 2 provisional patents to date, several in preparation, focused on biomarker derivation using k-mers
- Independently collaborated and completed projects with Dr. Spencer Szczesny conducting two separate exploratory RNA-seq analysis and contribute to R01 grant focused on:
    - Discovering biological differences of ACL samples due to sex and mechanical load utilizing a rabbit knee model
    - Discovering biological differences of tendon samples due to fetal development utilizing a chicken embryo model

PhD Research Rotation Student - Pennsylvania State University Apr - May 2023
Rotation advisor: Yogasudha Veturi, PhD

- Utilized TrinetX EHR relational datasets of disease trajectories to discover human phenotypes between rural and urban patients with Alzheimer’s disease

PhD Research Rotation Student - Pennsylvania State University Jan - Apr 2023
Rotation advisor: Stefan Canzar, PhD

- Researched algorithms to integrate single cell multi-omics data for more accurate representations of sketching methods

PhD Research Rotation Student - Pennsylvania State University Oct - Dec 2022
Rotation advisor: Daijiang Liu, PhD

- Developed a python function to subset and estimate genetic heritability of monozygotic, same sex dizygotic, and opposite sex dizygotic twins across multiple functional and relational databases in MarketScan EHR Dataset

Volunteer Biostatistics Research Assistant - Weill Cornell Medical College Oct 2021 – Jun 2022
Advisor: Samprit Banerjee, PhD

- Applied machine learning models to integrate mHealth, electronic health record, and medical claims databases to predict partially labeled adherence outcomes
- Generated a stress marker as a convex combination of multiple features through longitudinal spline functions

Postbaccalaureate Research Fellow - Hospital for Special Surgery Dec 2018 – Jun 2022
Advisors: Miguel Otero, PhD and Scott Rodeo, MD
Core project areas:

1. Machine learning applications for orthopedic and rheumatic biomedical discovery

- Developed machine learning models using clinical, imaging, and biological features for both supervised and unsupervised analysis.
- Applied advanced clustering techniques (Agglomerative Hierarchical Clustering, K-Means, Gaussian Mixture Models) to clinical and imaging data to differentiate patient subsets within Osteoarthritis and Rheumatoid Arthritis populations.
- Implemented robust statistical methods including bootstrapping, heuristic model evaluation, and generalized linear models. Enhanced model accuracy using modified distance metrics and regularization techniques (L1 and L2 penalization).
- Developed an immunocytochemistry image analysis pipeline employing supervised machine learning to analyze human synovial fibroblasts' responses to TGFβ.
- Contributed to the development of a multi-label deep learning convolutional neural network for classifying and segmenting histological images of rheumatic murine knees, leveraging QuPath software.
- Authored a comprehensive review paper discussing the integration of computational and machine learning techniques in histomorphometry.

2. Management of clinical trials for therapeutics

    - Managed a Phase III clinical trial for Stromal Vascular Fraction Cell (SVFCs) as a potential autologous stem-cell therapeutic for improved repair and recovery from rotator cuff tears
        - Wrote standard operating regulatory protocols for FDA compliance
        - Handled medical device equipment and testing intraoperatively
        - Collaborated in patient enrollment, data collection, and data analysis
        - Developed protocols and processed human cell suspension/tissue samples performing flow cytometry, ELISA, and primary cell culture
        - Contributed to studies of similar nature as needed (E-CEL UVEC® cells as an Adjunct Cell Therapy for the Arthroscopic Rotator Cuff Repair)

    - Synthesized literature review, analyzed data, and performed serum ELISA to characterize the effect of HGH on the recovery from anterior cruciate ligament reconstructive repair

3. Analysis of longitudinal observational studies for orthopedic recovery from surgical intervention

    - Managed a longitudinal observational study for the characterization of meniscal injuries to develop serum biomarkers and subtypes of responders/non-responders to treatment

    - Analyzed longitudinal strength, patient reported outcome, and serum/plasma biomarker differences in patients with femoroacetabular impingement

4. Contributed to the development, design, and budgeting of a technological spin off company: New York Testing Solutions, LLC

- Published multiple investigations of the impact of Sars-CoV-2 virus on musculoskeletal health and health systems

Volunteer Engineering Research Assistant - New York University Feb – Jul 2017
Advisor: Kalle Levon, PhD

- Assisted an engineering team in the development of a sweat lactate sensor/wearable device in an organic biosensors laboratory

PATENTS

1. **Genetic Frequentmers** - Pennsylvania State University 2023
Serial No: 63/513,663 (provisional patent)

2. **Nucleic Quasi-primes** - Pennsylvania State University 2023
Serial No: TBD (provisional patent)

VOLUNTEERING AND OUTREACH

Letters to a Pre-Scientist - www.prescientist.org STEM Professional Pen Pal Aug 2024 - Aug 2025

Soccer Coach - Centre Soccer Association, Adult Coed Summer Scramble 2024 Jun - Aug 2024

Student Leadership Panel - Huck Graduate Orientation at Pennsylvania State University Aug 2024

President - GenoMix Graduate Organization at Pennsylvania State University Jun 2023 – Present
Advisor: David Koslicki, PhD

- Developed 8 resource documents to consolidate information available for graduate students to overcome inequalities and unfair advantages as well as improve quality of life.
- Obtained and raised funding for social and professional events.
- Integrated students interested in genomic analysis from graduate programs and student organizations across Pennsylvania State University through social and professional events.
- Established and hosted a scientific debate among research professionals for Bioinformatics and Genomics Annual Retreat.
- Introduced and hosted outside industry, government, and academic professionals as speakers to GenoMix students.
- Contributed to DNA day, an outreach event to engage high school and undergraduate students in genomic career paths
- Presented to over 150 incoming graduate students informing about logistics of operation and opportunities available related to genomic analysis

Medical Volunteer - Sekondi Takoradi Hospitals of Catholic Diocese Ghana Jun – Jul 2018
Manager: Rev. Dr. Kwasi Eliasson

Volunteer Leader - New York Road Runners Leadership Program Jan – Nov 2017
Manager: Harrison Silver

Volunteer Surgical Aide - Lenox Hill Orthopaedic Sports Medicine May – Aug 2017
Advisor: Gregory Galano MD

Volunteer Kitchen Aide - Loaves and Fishes Soup Kitchen Ithaca Jan – May 2016

Physical Therapy Volunteer Intern - Peak Physical Therapy Newburgh Jun - Jul 2015

Physical Therapy Volunteer Aide - ProMotion Physical Therapy and Wellness Center May 2015

Volunteer Mentor - Buddy Workout Program, Ithaca Youth Bureau Jan – May 2015

Volunteer Youth Soccer Coach - Snoopy Soccer, Goshen, NY Aug 2012 – Jul 2013

HONORS AND AWARDS

1. **NIH T32 Integrative Analysis of Metabolic Phenotypes** - Pennsylvania State University 2024
2. **Travel Award** - International Society for Computational Biology 2024
3. **Huck Distinguished Fellowship** - Pennsylvania State University 2022
4. **Graham Award** - Pennsylvania State University 2022
5. **Huck Institute Fellowship** - Pennsylvania State University 2022
6. **Ithaca College Business Idea Competition** - Ithaca College 2015
    - Team Award Winner for Founder and Team Leader of “UPick”
    - Best Presenter Award Winner for “UPick” Pitch
7. **Men’s Varsity Soccer Letterman** - Ithaca College 2013 – 2015
8. **Men’s Varsity Soccer Captain and Letterman -** Ulster County Community College 2012 – 2013

PEER REVIEWED PUBLICATIONS

* Contributed Equally

1. Moeckel, C, Mareboina, M*, **Konnaris, MA***, Chan, CSY, Mouratidis, I, Montgomery, A, Chantzi, N, Georgakopoulos-Soares, I. A Survey of K-mer Methods and Applications in Bioinformatics. Computational and Structural Biotechnology Journal. 2024. (Accepted)

2. Mouratidis, I*, **Konnaris, MA***, Chantzi, N*, Chan, CSY*, Montgomery, A, Baltoumas, F, Mareboina, M, Pavlopoulos, G, Chartoumpekis, D, Georgakopoulos-Soares, I. Nucleic Quasi-Primes: Identification of the Shortest Unique Oligonucleotide Sequences in a Species. bioRxiv. 2023. https://doi.org/10.1101/2023.12.12.571240 Genome Research. 2024. (Accepted)

3. Zhao, J, Baltoumas, FA, **Konnaris, MA**, Mouratidis, I, Liu, Z, Sims, J, Agarwal, V, Pavlopoulos, GA, Georgakopoulos-Soares, I, Ahituv, N. MPRAbase: A Massively Parallel Reporter Assay Database. bioRxiv. 2023. https://doi.org/10.1101/2023.11.19.567742. Genome Research. 2024. (Passed Review)

4. Bell, RD, Brendel, M, **Konnaris, MA**, Xiang, J, Fontana, MA, Accelerating Medicines Partnership Rheumatoid Arthritis and Systemic Lupus Erythematosus (AMP RA/SLE), DiCarlo, E, Anolik, J, Donlin, L, Orange, O, Kenney, HM, Schwarz, EM, Ivashkiv, LB, Wang, F. Automated multi-scale computational pathotyping (AMSCP) of inflamed synovial tissue. medRxiv. 2023. https://doi.org/10.1101/2023.05.21.23290242. Nature Communications. 2024. (Accepted)

5. Mouratidis, I*, Baltoumas, FA*, Chantzi, N, Chan, C, Montgomery, A, **Konnaris, MA**, Georgakopoulos, GC, Kovac, J, Pavlopoulos, G, Georgakopoulos-Soares, I. kmerDB: A Database Encompassing the Set of Genomic and Proteomic Sequence Information for Each Species, bioRxiv. 2023. https://doi.org/10.1101/2023.11.13.566926. Computational and Structural Biotechnology Journal. 2024. (Accepted)

6. Chantzi, N, Mareboina, M, **Konnaris, MA**, Montgomery, A, Patsakis, M, Mouratidis, I, Georgakopoulos-Soares, I. The determinants of the rarity of nucleic and peptide short sequences in nature. NAR Genomics and Bioinformatics, Volume 6, Issue 2, June 2024, lqae029, https://doi.org/10.1093/nargab/lqae029.

7. Mouratidis, I, Chantzi, N, Khan, U, **Konnaris, MA**, Mareboina, M, Moeckel, C, Georgakopoulos-Soares, I. Frequentmers - a novel way to look at metagenomic next generation sequencing data and an application in detecting liver cirrhosis. *BMC Genomics*. 24, 768 (2023). https://doi.org/10.1186/s12864-023-09861-w.

8. **Konnaris, MA**, Junginger, LM, Sibilsky Enselman, ER, Bell, RD, Maerz, T, & Bedi A. Patient-Perceived Outcomes Improve Faster Than Hip Strength in Recovery After Surgical Correction for Symptomatic Femoroacetabular Impingement. HSS Journal: The Musculoskeletal Health Journal of Hospital for Special Surgery. 2022. doi: https://doi.org/10.1177/15563316221093614.

9. **Konnaris, MA**, Brendel, M, Fontana, M, Otero, M, Ivashkiv, L, Wang, F, & Bell, RD. Computational Pathology for Musculoskeletal Conditions: Advances, Trends, and Challenges. Arthritis Research and Therapy. Arthritis Res Ther 24, 68 (2022). https://doi.org/10.1186/s13075-021-02716-3.

10. LeBrun, DG, **Konnaris, MA**, Ghahramani, GC, Premkumar, A, DeFrancesco, CJ, Gruskay, JA, Dvorzhinskiy, A, Sandhu, MS, Goldwyn, EM, & Ricci, WM. Increased Comorbidity Burden Among Hip Fracture Patients During the COVID-19 Pandemic in New York City. Geriatric Orthopaedic Surgery & Rehabilitation. 2021. Pre-release Epub. doi: https://doi.org/10.1177/2151459321104061.

11. LeBrun DG, **Konnaris MA**, Ghahramani GC, Premkumar A, DeFrancesco CJ, Gruskay JA, Dvorzhinskiy A, Sandhu MS, Goldwyn EM, Mendias CL, Ricci WM. Hip Fracture Outcomes During the COVID-19 Pandemic: Early Results From New York. J Orthop Trauma. 2020 Aug;34(8):403-410. doi: https://doi.org/10.1097/BOT.0000000000001849. PMID: 32482977; PMCID: PMC7302077.

12. Mendias CL, Enselman ERS, Olszewski AM, Gumucio JP, Edon DL, **Konnaris MA**, Carpenter JE, Awan TM, Jacobson JA, Gagnier JJ, Barkan AL, Bedi A. The Use of Recombinant Human Growth Hormone to Protect Against Muscle Weakness in Patients Undergoing Anterior Cruciate Ligament Reconstruction: A Pilot, Randomized Placebo-Controlled Trial. Am J Sports Med. 2020 Jul;48(8):1916-1928. doi: https://doi.org/10.1177/0363546520920591. Epub 2020 May 26. PMID: 32452208; PMCID: PMC7351248.

13. Disser NP*, De Micheli AJ*, Schonk MM, **Konnaris MA**, Piacentini AN, Edon DL, Toresdahl BG, Rodeo SA, Casey EK, Mendias CL. Musculoskeletal Consequences of COVID-19. J Bone Joint Surg Am. 2020 Jul 15;102(14):1197-1204. doi: https://doi.org/10.2106/JBJS.20.00847. PMID: 32675661; PMCID: PMC7508274.

14. Gruskay JA, Dvorzhinskiy A, **Konnaris MA,** LeBrun DG, Ghahramani GC, Premkumar A, DeFrancesco CJ, Mendias CL, Ricci WM. Universal Testing for COVID-19 in Essential Orthopaedic Surgery Reveals a High Percentage of Asymptomatic Infections. J Bone Joint Surg Am. 2020 Aug 19;102(16):1379-1388. doi: https://doi.org/10.2106/JBJS.20.01053. PMID: 32516279.

SELECTED ABSTRACTS AND CONFERENCE PRESENTATIONS

* Indicates Presenter

1. Paschall, L*, **Konnaris, MA**, Dhawan, A, Tabdanov, E, Georgakopoulos-Soares, I, Szczesny, S. Female Anterior Cruciate Ligaments Exhibit A Minimal Mechanobiological Response to Mechanical Loading. 2024. (Poster Presentation) *Summer Biomechanics, Bioengineering and Biotransport Conference.* Lake Geneva, WI, USA

2. **Konnaris, MA***, Mouratidis, I, Chantzi, N, Chan, CSY, Montgomery, A, Baltoumas, F, Mareboina, M, Pavlopoulos, G, Chartoumpekis, D, Georgakopoulos-Soares, I. Nucleic Quasi-Primes: Identification of the Shortest Unique Oligonucleotide Sequences in a Species. 2023. (Poster Presentation) *8th Annual MidAtlantic Bioinformatics Conference at University of Pennsylvania, Philadelphia, PA, USA*

3. Rodeo, SA, Stamatos, NJ, Edon, DL, Carballo, C, Melancon, S, **Konnaris, MA**, Sneag, DB, Tan, ET, Nolan, DJ. A Phase 1 Open-Label Investigator Initiated Trial of Allogeneic Gene-Modified Human Umbilical Vein Endothelial Cells as an Adjunct Cell Therapy for Arthroscopic Rotator Cuff Repair. 2023. (Podium Presentation).

4. Mehta, B, **Konnaris, MA***, Bell, R, Pannellini, T, Dicarlo, E, Jannat-Khah, D, Gibbons, J, Nwawka, O, Lee, S, Sculco, P, Parks, M, Fontana, M, Figgie, M, Donlin, L, Orange, D, Sculco, T, Robinson, W, Goodman, S, & Otero, M Knee Osteoarthritis Subtypes Identified by Integration of Histology and Ultrasound Datasets Using Unsupervised Clustering Approaches. 2021. (Poster Presentation) *10th Musculoskeletal Repair and Regeneration Symposium at Albert Einstein College of Medicine, New York, USA*

5. Brendel, M, Xiang, J, **Konnaris, MA**, Fontana, M, Otero, M, Schwarz, E, Ivashkiv, L, Wang, F, & Bell, R* A Novel Computational Pathology Model Phenotypes Inflammatory Arthritis at the Tissue and Cellular Level. 2021. (Poster Presentation) *2022 Orthopaedic Research Society*, Tampa, Fl, USA

6. Mehta, B, **Konnaris, MA***, Bell, R., Pannellini, T., Dicarlo, E., Jannat-Khah, D., Gibbons, J., Nwawka, O., Lee, S., Sculco, P., Parks, M., Fontana, M., Figgie, M., Donlin, L., Orange, D., Sculco, T., Robinson, W., Goodman, S., & Otero, M. Knee Osteoarthritis Subtypes Identified by Integration of Histology and Ultrasound Datasets Using Unsupervised Clustering Approaches. 2021. (Poster Presentation) *2022 Orthopaedic Research Society*, Tampa, Fl, USA

7. Pannellini, T., Lessard, S.*, Oliver, D., Singh, P., Rourke, B., **Konnaris, MA**, Kirksey, M., Koff, M., Wright, T., Sculco, T., Sculco, P., & Otero**,** M. Changes in DNA Methylation and Chromatin Structure in Fibroblasts Isolated from Patients with Arthrofibrosis Following Total Knee Arthroplasty. 2021. (Poster Presentation) *2022 Orthopaedic Research Society*, Tampa, Fl, USA

8. Mehta, B., **Konnaris, MA***, Bell, R., Pannellini, T., Dicarlo, E., Jannat-Khah, D., Gibbons, J., Nwawka, O., Lee, S., Sculco, P., Parks, M., Fontana, M., Figgie, M., Donlin, L., Orange, D., Sculco, T., Robinson, W., Goodman, S., & Otero, M. Knee Osteoarthritis Subtypes Identified by Integration of Histology and Ultrasound Datasets Using Unsupervised Clustering Approaches. 2021. (Poster Presentation) *10th Musculoskeletal Repair and Regeneration Symposium at Albert Einstein College of Medicine*, New York, USA

9. **Konnaris, MA***, Bell, R., Pannellini, T., Dicarlo, E., Gibbons, J., Nwawka, O., Lee, S., Sculco, P., Parks, M., Figgie, M., Donlin, L., Orange, D., Sculco, T., Robinson, W., Goodman, S., Otero, M., & Mehta, B. Unsupervised Clustering of Histology and Ultrasound Scores Identifies Knee Osteoarthritis Subtypes. 2021. (Poster/Rapid Fire Presentation) *2021 American College of Rheumatology Convergence*, USA

10. Pannellini, T., Lessard, S.*, Oliver, D., Singh, P., Rourke, B., **Konnaris, MA**, Sculco, T., Sculco, P., & Otero**,** M. Arthrofibrotic fibroblasts are epigenetically primed to respond to pro-fibrotic signals. 2021. (Poster Presentation) *2021 American Academy of Orthopaedic Surgeons Annual Meeting*, San Diego*,* USA

11. **Konnaris, MA***, Brendel, M., Fontana, M., Otero, M., Schwarz, E., Wang, F., Ivashkiv, L., & Bell, R. Comparison of two machine learning classification models for automated histomorphometry. 2021. (Poster/Rapid Fire Presentation) *2021 OARSI Virtual World Congress* (Virtual Event), USA

12. Rourke, B.*, Singh, P., Lessard, S., Chen, T., Oliver, D., **Konnaris, MA**, Brantner, C., Mandl, L., Figgie, M., Sculco, P., Sculco, T., Rodeo, S., Pannellini, T., DiCarlo, E., Wright, T., Van der Meulen, M., Goodman, S., Mehta, B., & Otero, M. Transcriptomic analyses in human and murine infrapatellar fat pads identify common profibrotic changes in osteoarthritis. 2021. (Poster/ Rapid Fire Presentation) *2021 OARSI Virtual World Congress*, (Virtual Event), USA

13. Bell, R.*, **Konnaris, MA**, Fontana, M., Otero, M., Schwarz, E., & Ivashkiv, L. Machine Learning Pipeline for Automated Histomorphometry. 2021. (Podium Presentation) *Orthopaedic Research Society*, (Virtual Event), USA

14. Singh, P.*, Rourke, B., Oliver, D., Lessard, S., **Konnaris, MA**, Brantner, C., Mandl, L., Figgie, M., Sculco, P., Sculco, T., Rodeo, S., Pannellini, T., DiCarlo, E., Goodman, S., Mehta, B., & Otero, M. Transcriptomic analyses in infrapatellar fat pad retrieved from osteoarthritis patients undergoing total knee replacement surgery. 2021. (Poster Presentation) *Orthopaedic Research Society*, (Virtual Event), USA

15. **Konnaris, MA***, Junginger, LM., Sibilsky Enselman, ER., Maerz, T., Mendias, CL, & Bedi A. Hip Strength and Patient Reported Outcomes After Surgical Correction for Symptomatic Femoroacetabular Impingement in the Short-Term Recovery. 2020. (Poster Presentation) *Orthopaedic Research Society*, Arizona, USA

16. **Konnaris, MA***, Junginger, LM, Sibilsky Enselman, ER, Maerz, T., Mendias, CL, & Bedi A. An Integrated Assessment of Hip Strength Recovery and Patient Reported Outcomes After Surgical Correction for Symptomatic Femoroacetabular Impingement. 2020. (Poster Presentation) *American Orthopaedic Society for Sports Medicine*, Washington, USA

17. **Konnaris, MA***, Junginger, LM, Sibilsky Enselman, ER, Maerz, T., Mendias, CL, & Bedi A. Hip Strength Recovery and Patient Reported Outcomes for Symptomatic Femoroacetabular Impingement Surgical Correction Patients. 2019. (Poster Presentation) *VIII Musculoskeletal Repair and Regeneration Symposium at Albert Einstein College of Medicine*, New York, USA

PUBLIC PRESENTATIONS

1. **Annual GenoMIX Seminar at Bioinformatics and Genomics Retreat**, Pennsylvania State University, August 2024

2. **Huck Orientation Graduate Panelist and Student Organization Recruiting**, Pennsylvania State University, August 2024

3. **Guest Lecturer: Functional Bioinformatics and Genomics Techniques**, Pennsylvania State University, September 2023

4. **Annual GenoMIX Seminar at Bioinformatics and Genomics Retreat**, Pennsylvania State University, August 2023

5. **Data Reproducibility in Bioinformatics**, Pennsylvania State University, August 2023

6. **Unsupervised Clustering and Data Driven Approaches to Determine Patient Subtypes of Osteoarthritis**, Hospital for Special Surgery Research Institute, March 2022.

7. **UPick: 2016 Finger Lakes Business Competition**, Ithaca College, December 2016.

MEMBERSHIPS

1. Member, Centre Soccer Association (CSA)
2. Penn State Center for Computational Biology and Bioinformatics (CCBB), Org. Committee
3. GenoMix, University Recognized Graduate Student Run Organization, President
4. Center for Socially Responsible Artificial Intelligence (CSRAI)
5. International Society for Computational Biology (ISCB)
6. Nittany Artificial Intelligence Society (NAIS)
7. Institute for Computational Data Science (ICDS)
8. Orthopedic Research Society (ORS), International
9. New York Academy of Sciences (NYAS)
10. American College of Rheumatology (ACR)

REFEREES

1. **Justin Silverman, MD PhD:** Assistant Professor, Bioinformatics and Genomics. Department of Information Sciences and Technology, Department of Statistics, College of Medicine. Faculty Fellow of the Institute for Computational and Data Science. Pennsylvania State University.
   Email: justinsilverman@psu.edu Phone: +1 814-863-8304
2. **Nicole Lazar, PhD:** Professor of Statistics, Bioinformatics and Genomics. Department of Statistics. Fellow of the Institute of Mathematical Statistics, Fellow of the American Statistical Association Elected Member of the International Statistical Institute. Pennsylvania State University.
   Email: nfl5182@psu.edu Phone: +1 814-865-1348

3. **Jordan Bisanz, PhD:** Assistant Professor, Biochemistry and Molecular Biology. Department of Biochemistry and Molecular Biology. Molecular, Cellular, and Integrative Biosciences. One Health Microbiome Center Affiliate. Pennsylvania State University.
   Email: jordan.bisanz@psu.edu Phone: +1 814-863-1625
4. **David Koslicki, PhD:** Associate Professor of Computer Science and Engineering, Biology, and the Huck Institute of the Life Sciences. Program Director of Bioinformatics and Genomics PhD Program. Pennsylvania State University.
   Email: dmk333@psu.edu Phone: +1 814-865-1611
5. **Richard Bell, PhD:** Post-Doctoral Fellow, Arthritis and Tissue Degeneration Program, Lionel Ivashkiv Laboratory, Hospital for Special Surgery
   Email: BellR@hss.edu Phone: +1 919-314-7335
6. **Miguel Otero, PhD:** Assistant Scientist, Orthopedic Soft Tissue Research Program, Co-Director, Derfner Foundation Precision Medicine Laboratory, Hospital for Special Surgery; Assistant Professor of Cell and Developmental Biology in Orthopedic Surgery, Weill Cornell Medical College
   Email: OteroM@hss.edu Phone: +1 212-774-7561
7. **Scott Rodeo, MD:** Attending Orthopedic Surgeon, Hospital for Special Surgery & Weill Cornell Medical College; Director, HSS Center for Regenerative Medicine, HSS; Co-Director OSTR, HSS; Co-Chief Emeritus, Sports Medicine Institute, HSS; Professor of Orthopedic Surgery, WCMC; Head Team Physician, New York Giants Football
   Email: RodeoS@hss.edu Phone: +1 212-606-1513
8. **Kalle Levon, PhD:** Professor of Polymer Chemistry, Tandon School of Engineering, Department of Chemical and Biomedical Engineering, New York University. Email: kalle.levon@gmail.com Phone: N/A
9. **Jeffrey Ives, PhD:** Professor, Exercise Science and Athletic Training, Ithaca College
   Email: Jives@ithaca.edu Phone: +1 607-274-1751