Nigel Kurgan

Postdoctoral Research Fellow

Novo Nordisk Foundation Center for Basic Metabolic Research

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Exercise biologist with expertise in metabolism, proteomics, and bioinformatics. I'm interested in combining these approaches to better understand interorgan communication mediated by secreted proteins during exercise and in individuals with metabolic diseases. I am an avid R user for data processing, visualization, and communication/reports, and am passionate about open and reproducible science.

Current Appointments

Novo Nordisk Foundation Center for Basic Metabolic Research, University of Copenhagen — *København, Denmark*

Postdoctoral Research Fellow — *Sep 2022–Present*

- Functional Proteomics and Metabolism in the Deshmukh Group

Education

Brock University — *St. Catharines, Canada*

Ph.D. Health Biosciences — *2022*

- Conferred with Distinction and a Graduate Student Research Excellence Award
- Funded by Scholarships from NSERC (2017-21) and QEII-GSST (2021-2022)
- Thesis: Sclerostin influences body composition adaptations to exercise training

Brock University — *St. Catharines, Canada*

M.Sc. Applied Health Sciences — *2017*

- Funded by an Ontario Graduate Scholarship
- Thesis: Physical training, inflammation, and bone integrity in elite female rowers

Brock University — *St. Catharines, Canada*

B.Sc. Biomedical Sciences (Honours) — *2015*

- Conferred June 2015 with First-Class Standing
- Thesis: Mitochondrial function and phospholipid composition changes in mdx mice skeletal muscle

Research Experience

University of Copenhagen, Novo Nordisk Foundation Center for Basic Metabolic Research — *København, Denmark*

Postdoctoral Fellow — *2022-Present*

- Studying secretomics and inter-tissue communication with mass spectrometry-based and affinity-based proteomics

Brock University, Department of Biological Sciences — *St. Catharines, Canada*

Research Assistant, Coorssen Top-down Proteomics Lab — *2017-20*

- Top-down proteomic analysis, method development, and teaching

Brock University, Department of Biological Sciences — *St. Catharines, Canada*

Research Assistant, Tsiani Cell Signaling Lab — *2018-20*

- Optimized in vitro assays involving treatment of cancer cells with human serum

Brock University, The Department of Kinesiology

Research Assistant, Department of Kinesiology — *2015-20*

- VO2max and body composition monitoring in diverse populations

Canadian Sports Institute of Ontario — *London, Canada*

Laboratory Technician, Athlete Monitoring — *2016*

- Blood and saliva collection and analysis from professional female athletes

Brock University, The Department of Kinesiology — *St. Catharines, Canada*

Research Assistant, Brock-Niagara Center for Health and Well-Being — *2011-2015*

- Peer support for physical activity in special populations

Brock University, Department of Biological Sciences *St. Catharines, Canada*

Research Assistant, LebLanc Lab *2013-14*

- Optimication of mitochondrial isolations and respiration from skeletal muscle of mdx mice

Teaching and Supervision

In addition to the formal supervisory roles listed below, I am also actively involved in the supervision and mentorship of junior lab members.

Thesis Student Supervision *København, Denmark*

University of Copenhagen, NNF CBMR *2023-Present*

- Co-supervising an M.Sc. project on exercise-regulated peptides that influence metabolism

Thesis Student Supervision *St. Catharines, Canada*

Brock University, Kinesiology *2017-22*

- Co-supervised a M.Sc. project on a bone derived protein that influences muscle fibre type (2020-22)
- Co-supervised an undergraduate research project on cytokine response to acute exercise (2017-20)

Instructor *St. Catharines, Canada*

Brock University, Kinesiology *2019-20*

- KINE 2P09 – Human Physiology (2019-20)

Teaching Assisstant *St. Catharines, Canada*

Brock University, Health Sciences and Kinesiology *2016-21*

- KINE 2P09 – Human Physiology (2020-21)
- KINE 2P97 – Exercise Metabolism (2021)
- GERO 5P88 – The Process of Aging (2020)
- KINE 1P98 – Musculoskeletal Anatomy (2018-19)
- KINE 1P90 – Human Anatomy and Physiology (2017-18)
- HLSC 1F90 – Introduction to Health Sciences (2016-18)

Laboratory Demonstrator *St. Catharines, Canada*

Brock University, Biology and Health Sciences *2015-20*

- AHSC 7P96 – Top-Down Proteomics (2020)
- HLSC 4P95 – Human Pathology (2016)
- HLSC 3P02 – Introduction to Human Immunology (2015)

Leadership, Service and Community Engagement

Manuscript peer-review: Computational and Structural Biotechnology Journal (2), Archives of Physiology and Biochemistry (1), Physiological Reports (1).

Conference Planning: Brock University's Muscle Health and Education Forum (St. Catharines, Canada) *2021*

- Designed the program, recruited speakers, and chaired sessions

Conference Symposia Chair: Brock University's Muscle Health and Education Forum (St. Catharines, Canada) *2018-21*

- Free Communication chair – Health Science and Biotechnology, Mapping the New Knowledges Meetingx4 years

Conference Symposia Chair: Ontario Exercise Physiology Conference (Barrie, Canada) *2016*

- Sessional Chair – Powerhouse Physiology, Ontario Exercise Physiology Conference

Conference Symposia Chair: Brock University's Muscle Health and Education Forum (St. Catharines, Canada) *2015*

- Chair and Master of Ceremony – Brock's Math and Science Undergraduate Research Conference

President of The Math and Science Council: Brock University, Faculty of Math and Science (St. Catharines, Canada) *2011-15*

- Co-founded a council that developed mentorship programs and established an annual undergraduate research conference

Additional Training and Professional Development

Course in Laboratory Animal Science EU Function ABD (FELASA) (University of Copenhagen, Department of Experimental Medicine) *2023*

DDA Reproducible Research in R – an advanced workshop on creating collaborative and automated analysis for PhD Students and Postdocs (Danish Diabetes and Endocrine Academy (DDEA)) *2022*

Just Bash It (University of Copenhagen, Center for Health Data Science) *2022*

From Excel to R (University of Copenhagen, Center for Health Data Science) *2022*

DDA Postdoc Summit - Challenge (Danish Diabetes and Endocrine Academy (DDEA)) *2022*

Canadian Council of Animal Care and Use of Experimental Animals Certification (Brock University, ACC) *2020*

Skills and General Expertise

Laboratory	Physiological/Technical	Software/Tools
Proteomic Technologies	Metabolic Testing (humans and rodents)	R and Rstudio/Rmarkdown
Proteomic Sample Preperation (+Robot Automation)	Body Composition (humans and rodents)	Git/Github
Extracellular Vesicle Analysis	Phlebotomy	SPSS
Secretomics	Mouse Dissection	Delta2D
In Vitro Biochemical and Growth Assays	Dietary and Exercise Monitoring	MaxQuant, Perseus, Spectronaut, DIA-NN, MS Fragger

Awards and Funding

NSERC Postdoctoral Fellowship (University of Copenhagen): Awarded 90,000 CAD to study mechanisms of tissue crosstalk mediated by extracellular vesicles *2023-25*

Distinguished Graduate Student (Brock University): Awarded 100 CAD for being the most distinguished graduate from my graduate program *2022*

CSEP Graduate Student Oral Presentation Finalist (CSEP Conference): Awarded 250 CAD for being selected as a finalist for best graduate student oral presentation *2021*

QEII Graduate Scholarship in Science and Technology (Brock University): Awarded a 15,000 CAD scholarship for my Ph.D. work *2020-21*

Jack M Miller Excellence in Research (Brock University): Awarded 1,341 CAD in recognition of my excellence in research *2020*

NSERC Postgraduate Scholarship – Doctoral (Brock University): Awarded 63,000 CAD to study bone-secreted proteins during exercise *2017-19*

Dean of Graduate Studies Excellence Scholarship (Brock University): Awarded 21,000 CAD for my academic excellence *2017-19*

Dean of Graduate Studies Entrance Scholarship – Doctoral (Brock University): Awarded 2,000 CAD for my academic excellence *2017*

Ontario Graduate Scholarship – Masters (Brock University): Awarded 15,000 CAD to study bone health in elite female rowers *2016-17*

Dean of Graduate Studies Excellence Scholarship – Masters (Brock University): Awarded 2,500 CAD for my academic excellence *2016-17*

CSEP Poster Award Finalist (CSEP Conference): Selected as a finalist for best poster *2016*

Dean of Graduate Studies Spring Research Fellowship (Brock University): Awarded 4,000 CAD for my academic excellence *2016*

Dean of Graduate Studies Entrance Scholarship (Brock University): Awarded 2,500 CAD for my academic excellence *2015-16*

Graduate Studies Fellowship (Brock University): Awarded 7,000 CAD to study the bone response to acute exercise *2015*

Brock Returning Scholars Award/Deans Honour List (Brock University): Awarded 1,500 CAD for my academic excellence *2012-14*

Brock Entrance Scholars Award (Brock University): Awarded 2,500 CAD for my academic excellence *2010*

Publications

First Author Publications

1. Kurgan, N., Baranowski, B., Stoikos, J., MacNeil, A. J., Fajardo, V. A., MacPherson, R. E. K., & Klentrou, P. (2022). Characterization of sclerostin's response within white adipose tissue to an obesogenic diet at rest and in response to acute exercise in male mice [Journal Article]. *Front Physiol*, *13*, 1061715. https://doi.org/10.3389/fphys.2022.1061715
2. Kurgan, N., Bott, K. N., Helmeczi, W. E., Roy, B. D., Brindle, I. D., Klentrou, P., & Fajardo, V. A. (2019). Low dose lithium supplementation activates wnt/β-catenin signalling and increases bone OPG/RANKL ratio in mice [Journal Article]. *Biochem Biophys Res Commun*, *511*(2), 394–397. https://doi.org/10.1016/j.bbrc.2019.02.066
3. Kurgan, N., Islam, H., Matusiak, J. B. L., Baranowski, B. J., Stoikos, J., Fajardo, V. A., MacPherson, R. E. K., Gurd, B. J., & Klentrou, P. (2022). Subcutaneous adipose tissue sclerostin is reduced and wnt signaling is enhanced following 4-weeks of sprint interval training in young men with obesity [Journal Article]. *Physiol Rep*, *10*(6), e15232. https://doi.org/10.14814/phy2.15232
4. Kurgan, N., Logan-Sprenger, H., Falk, B., & Klentrou, P. (2018). Bone and inflammatory responses to training in female rowers over an olympic year [Journal Article]. *Med Sci Sports Exerc*, *50*(9), 1810–1817. https://doi.org/10.1249/mss.0000000000001640
5. Kurgan, N., McKee, K., Calleja, M., Josse, A. R., & Klentrou, P. (2020). Cytokines, adipokines, and bone markers at rest and in response to plyometric exercise in obese vs normal weight adolescent females [Journal Article]. *Front Endocrinol (Lausanne)*, *11*, 531926. https://doi.org/10.3389/fendo.2020.531926
6. Kurgan, N., Noaman, N., Pergande, M. R., Cologna, S. M., Coorssen, J. R., & Klentrou, P. (2019). Changes to the human serum proteome in response to high intensity interval exercise: A sequential top-down proteomic analysis [Journal Article]. *Front Physiol*, *10*, 362. https://doi.org/10.3389/fphys.2019.00362
7. Kurgan, N., Skelly, L. E., Ludwa, I. A., Klentrou, P., & Josse, A. R. (2022). Twelve weeks of a diet and exercise intervention alters the acute bone response to exercise in adolescent females with overweight/obesity [Journal Article]. *Front Physiol*, *13*, 1049604. https://doi.org/10.3389/fphys.2022.1049604
8. Kurgan, N., Stoikos, J., Baranowski, B. J., Yumol, J., Dhaliwal, R., Sweezey-Munroe, J. B., Fajardo, V. A., Gittings, W., Macpherson, R. E. K., & Klentrou, P. (2023). Sclerostin influences exercise-induced adaptations in body composition and white adipose tissue morphology in male mice [Journal Article]. *J Bone Miner Res*, *38*(4), 541–555. https://doi.org/10.1002/jbmr.4768
9. Kurgan, N., Tsakiridis, E., Kouvelioti, R., Moore, J., Klentrou, P., & Tsiani, E. (2017). Inhibition of human lung cancer cell proliferation and survival by post-exercise serum is associated with the inhibition of akt, mTOR, p70 S6K, and Erk1/2 [Journal Article]. *Cancers (Basel)*, *9*(5). https://doi.org/10.3390/cancers9050046
10. Kurgan, N., Whitley, K. C., Maddalena, L. A., Moradi, F., Stoikos, J., Hamstra, S. I., Rubie, E. A., Kumar, M., Roy, B. D., Woodgett, J. R., Stuart, J. A., & Fajardo, V. A. (2019). A low-therapeutic dose of lithium inhibits GSK3 and enhances myoblast fusion in C2C12 cells [Journal Article]. *Cells*, *8*(11). https://doi.org/10.3390/cells8111340

Co-Author Publications

1. Baranowski, R. W., Braun, J. L., Hockey, B. L., Yumol, J. L., Geromella, M. S., Watson, C. J. F., Kurgan, N., Messner, H. N., Whitley, K. C., MacNeil, A. J., Gauquelin-Koch, G., Bertile, F., Gittings, W., Vandenboom, R., Ward, W. E., & Fajardo, V. A. (2023). Towards countering muscle and bone loss with spaceflight: GSK3 as a potential target [Journal Article]. *iScience*, 107047. https://doi.org/https://doi.org/10.1016/j.isci.2023.107047
2. Beigpoor, A., McKinlay, B. J., Kurgan, N., Plyley, M. J., O'Leary, D., Falk, B., & Klentrou, P. (2021). Cytokine concentrations in saliva vs. Plasma at rest and in response to intense exercise in adolescent athletes [Journal Article]. *Ann Hum Biol*, *48*(5), 389–392. https://doi.org/10.1080/03014460.2021.1980105
3. Copeland, E. N., Watson, C. J. F., Whitley, K. C., Baranowski, B. J., Kurgan, N., MacNeil, A. J., MacPherson, R. E. K., Fajardo, V. A., & Allison, D. J. (2022). Kynurenine metabolism is altered in mdx mice: A potential muscle to brain connection [Journal Article]. *Exp Physiol*, *107*(9), 1029–1036. https://doi.org/10.1113/ep090381
4. Dekker, J., Nelson, K., Kurgan, N., Falk, B., Josse, A., & Klentrou, P. (2017). Wnt signaling-related osteokines and transforming growth factors before and after a single bout of plyometric exercise in child and adolescent females [Journal Article]. *Pediatr Exerc Sci*, *29*(4), 504–512. https://doi.org/10.1123/pes.2017-0042
5. Guzman, A., Kurgan, N., Moniz, S. C., McCarthy, S. F., Sale, C., Logan-Sprenger, H., Elliott-Sale, K. J., Hazell, T. J., & Klentrou, P. (2022). Menstrual cycle related fluctuations in circulating markers of bone metabolism at rest and in response to running in eumenorrheic females [Journal Article]. *Calcif Tissue Int*, *111*(2), 124–136. https://doi.org/10.1007/s00223-022-00970-4
6. Hamstra, S. I., Kurgan, N., Baranowski, R. W., Qiu, L., Watson, C. J. F., Messner, H. N., MacPherson, R. E. K., MacNeil, A. J., Roy, B. D., & Fajardo, V. A. (2020). Low-dose lithium feeding increases the SERCA2a-to-phospholamban ratio, improving SERCA function in murine left ventricles [Journal Article]. *Exp Physiol*, *105*(4), 666–675. https://doi.org/10.1113/ep088061

7. Hamstra, S. I., Whitley, K. C., Baranowski, R. W., Kurgan, N., Braun, J. L., Messner, H. N., & Fajardo, V. A. (2020). The role of phospholamban and GSK3 in regulating rodent cardiac SERCA function [Journal Article]. *Am J Physiol Cell Physiol*, *319*(4), C694–c699. https://doi.org/10.1152/ajpcell.00318.2020

8. Klentrou, P., Angrish, K., Awadia, N., Kurgan, N., Kouvelioti, R., & Falk, B. (2018). Wnt signaling-related osteokines at rest and following plyometric exercise in prepubertal and early pubertal boys and girls [Journal Article]. *Pediatr Exerc Sci*, *30*(4), 457–465. https://doi.org/10.1123/pes.2017-0259

9. Klentrou, P., McKee, K., McKinlay, B. J., Kurgan, N., Roy, B. D., & Falk, B. (2021). Circulating levels of bone markers after short-term intense training with increased dairy consumption in adolescent female athletes [Journal Article]. *Children (Basel)*, *8*(11). https://doi.org/10.3390/children8110961

10. Kouvelioti, R., Kurgan, N., Falk, B., Ward, W. E., Josse, A. R., & Klentrou, P. (2018). Response of sclerostin and bone turnover markers to high intensity interval exercise in young women: Does impact matter? [Journal Article]. *Biomed Res Int*, *2018*, 4864952. https://doi.org/10.1155/2018/4864952

11. Kouvelioti, R., Kurgan, N., Falk, B., Ward, W. E., Josse, A. R., & Klentrou, P. (2019). Cytokine and sclerostin response to high-intensity interval running versus cycling [Journal Article]. *Med Sci Sports Exerc*, *51*(12), 2458–2464. https://doi.org/10.1249/mss.0000000000002076

12. McKinlay, B. J., Theocharidis, A., Adebero, T., Kurgan, N., Fajardo, V. A., Roy, B. D., Josse, A. R., H, M. L.-S., Falk, B., & Klentrou, P. (2020). Effects of post-exercise whey protein consumption on recovery indices in adolescent swimmers [Journal Article]. *Int J Environ Res Public Health*, *17*(21). https://doi.org/10.3390/ijerph17217761

13. McKinlay, B. J., Wallace, P. J., Olansky, S., Woods, S., Kurgan, N., Roy, B. D., Josse, A. R., Falk, B., & Klentrou, P. (2022). Intensified training in adolescent female athletes: A crossover study of greek yogurt effects on indices of recovery [Journal Article]. *J Int Soc Sports Nutr*, *19*(1), 17–33. https://doi.org/10.1080/15502783.2022.2044732

14. Papadopoulos, E., Gillen, J., Moore, D., Au, D., Kurgan, N., Klentrou, P., Finelli, A., Alibhai, S. M. H., & Santa Mina, D. (2021). High-intensity interval training or resistance training versus usual care in men with prostate cancer on active surveillance: A 3-arm feasibility randomized controlled trial [Journal Article]. *Appl Physiol Nutr Metab*, *46*(12), 1535–1544. https://doi.org/10.1139/apnm-2021-0365

15. Skelly, L. E., Barbour-Tuck, E. N., Kurgan, N., Calleja, M., Klentrou, P., Falk, B., & Josse, A. R. (2021). Neutral effect of increased dairy product intake, as part of a lifestyle modification program, on cardiometabolic health in adolescent girls with overweight/obesity: A secondary analysis from a randomized controlled trial [Journal Article]. *Front Nutr*, *8*, 673589. https://doi.org/10.3389/fnut.2021.673589

Conference Presentations and Published Abstracts

2022

Kurgan N, Deshmukh AS. Proposal: Dissecting the role of exercise-induced extracellular vesicles on tissue metabolism. DDA Postdoc Summit, Rønne, Denmark (2022). Poster Presentation.

2022

Kurgan N, Skelly LE, Ludwa LA, Klentrou P, and Josse AR. Do exercise training and dairy consumption influence the acute bone response in adolescent females with overweight/obesity? Proceedings of 18th IBEC – Hosted by York University, Toronto Canada (2022). Poster Presentation.

2022

Fraschetti EC, Prowting JL, Skelly LE, **Kurgan N**, Klentrou P, and Josse AR. The Relationship between Inflammatory and Bone Biomarker Responses following Acute High-impact Exercise. Proceedings of 18th IBEC – Hosted by York University, Toronto Canada (2022). Poster Presentation.

2021

Kurgan N, Stoikos J, Baranowski BJ, Dhaliwal R, Sweezey-Munroe JB, Fajardo VA, MacPherson REK, Klentrou P. Sclerostin regulates exercise-induced adaptations in energy expenditure and body composition in C57BL/6J mice. CSEP, Virtual. Proceedings in APNM, 46 (2021). Graduate Student Oral Presentation Award Finalist.

2021

Prowting JL, Skelly LE, **Kurgan N**, Klentrou P, and Josse AR. Acute Effects of Milk vs Carbohydrate on Bone Turnover Biomarkers following Exercise in Young Adult Females. CSEP, Virtual. Proceedings in APNM, 46 (2021). Poster Presentation.

2020

Klentrou P, Theocharidis A, McKinlay B, Vlachopoulos D, Kouvelioti R, **Kurgan N**, Falk B. Effects of Post-Exercise Protein Supplementation on Bone Turnover in Adolescent Swimmers. ECSS (2020). Oral Presentation.

2020

Barbour-Tuck EN, Skelly LE, **Kurgan N**, Klentrou P, Josse AR. A lifestyle modification program including higher dairy product intake and exercise is associated with improvements in global cardiometabolic risk in adolescent girls with overweight/obesity. CNS (2020). Poster Presentation.

Hamstra SI, **Kurgan N**, Baranowski R, Qiu L, Watson CJF, Messner H, MacNeil AJ, Roy BD, Fajardo VA. Low dose lithium feeding improves murine left ventricular SERCA function by regulating SERCA2a and phospholamban expression. CSEP, Kelowna, Canada, Proceedings in APNM, 44 (2019). Oral Presentation. *2019*

Kurgan N, N Noaman, M Pergande, SM Cologna, JR Coorssen, P Klentrou. An anti-inflammatory phenotype following high intensity interval exercise: a sequential top-down proteomic analysis of human serum. Proceedings of 'Cell' - Exercise Metabolism Conference, Sitges, Spain (2019). Poster Presentation. *2019*

Kurgan N, Maddalena LA, Roy BD, Stuart JA, Fajardo VA. Low therapeutic and sub-therapeutic doses of lithium enhance calcineurin signalling and myoblast fusion in C2C12 cells. CSEP, Niagara Falls, ON. Proceedings in APNM, 43 (2018). Poster Presentation. *2018*

Kurgan N, Noaman N, Coorssen JR, Klentrou P. Sequential top-down analysis of the human serum proteome in response to high intensity exercise and recovery. CSEP, Niagara Falls, ON. Published in APNM, 43 (2018). Oral Presentation. *2018*

Kurgan N, B Falk, P Klentrou. Effect of plyometric exercise on Wnt related osteokines in boys and girls. CSEP, Winnipeg, MB. Published in APNM, 42 (2017). Oral Presentation. *2018*

Kurgan N, Pepper C. Logan-Sprenger H, Falk B, Klentrou P. Overtraining in elite female endurance sport and bone metabolism. Proceedings of the 2016 Exercise is Medicine Conference. Western University ON, Canada (2016). Oral Presentation. *2016*

Kurgan N, Logan-Sprenger H, Falk B, Klentrou P. The effect of training for a year on cytokine response and bone health in the Canadian Olympic rowing team. Proceedings of Ontario Exercise Physiology. Barrie ON, Canada (2016). Oral Presentation. *2016*

Guest Lectures

Basic Metabolic Research and Critical Thinking Ph.D. Seminar, University of Copenhagen, Center for Protein Research: Lead seminars on the application of mass-spectrometry-based proteomics and metabolomics *2023*

HLSC 4P98 – Leveraging proteomics to understand the molecular response to exercise, Brock University, Faculty of Biological Sciences: Lectured on top-down vs. bottom-up proteomics and presented my work using top-down proteomics *2018-21*

GERO 5P88 – Molecular mechanisms of age-related bone loss, Annually, Brock University, Faculty of Applied Health Sciences: Lectured on the importance of bone mass across the lifespan and the temporal mechanisms regulating bone mass *2019-20*

KINE 1P90 – Gas Exchange and Transport, Annually, Brock University, Faculty of Applied Health Sciences: Gave annual lectures for my supervisors course *2017-20*

KINE 1P90 – The Blood and its Constituents, Annually, Brock University, Faculty of Applied Health Sciences: Gave annual lectures for my supervisors course *2017-20*

HSLC 2P09 – Ion Channels and Action Potentials, Annually, Brock University, Faculty of Applied Health Sciences: Gave annual lectures for my supervisors course *2017-18*