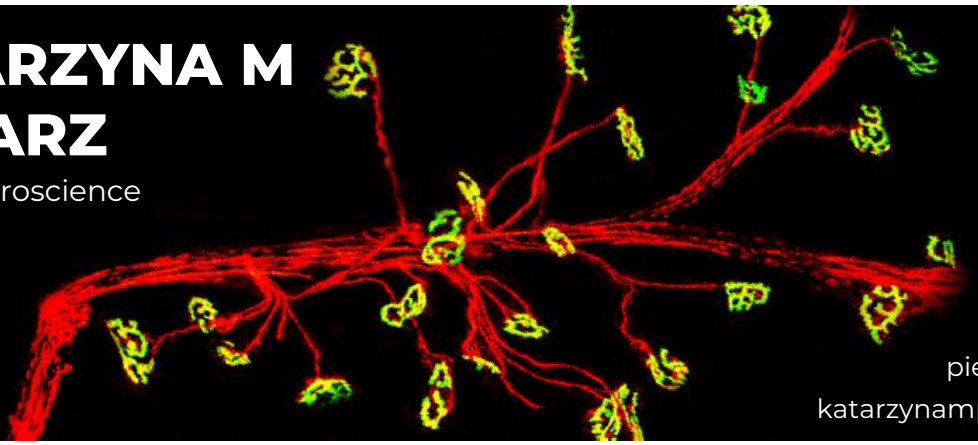
KATARZYNA M PIEKARZ

PhD in Neuroscience



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EXPERIENCE

- POSTDOCTORAL FELLOW at WASHINGTON UNIVERSITY IN ST. LOUIS
  August 2024-
  Zebrafish spinal cord circuit simulations
- POSTDOCTORAL FELLOW at GEORGIA TECH
  November 2021 –August 2024
  Ciona Motor Ganglion development
- PhD CANDIDATE/GRADUATE RESEARCH ASSISTANT at OU Neuroscience
  University of Oklahoma Health Sciences Center, Oklahoma, USA
  July 2016–August 2021
  Spinal cord aging
- WOC RESEARCH ASSISTANT at Veterans Affairs; Oklahoma City
  May 2017–August 2021
- RESEARCH TRAINEE at OKLAHOMA MEDICAL RESEARCH FOUNDATION (Fulbright Visiting Graduate Research Traineeship Program; currently bioLAB)
  June 2015–June 2016
  Cell cycle in S. cerevisiae

EDUCATION

- PhD in NEUROSCIENCE
  July 2016 – August 2021

  OU Neuroscience, University of Oklahoma Health Sciences Center
- MSc in BIOTECHNOLOGY
  October 2013 - July 2016

  Jagiellonian University, Faculty of Biochemistry, Biophysics and Biotechnology, Cracow, Poland
  Thesis: The role of Eco1 during meiosis in Saccharomyces cerevisiae
- MA in LATIN AMERICAN STUDIES
  October 2009 - July 2011

  Jagiellonian University, Faculty of International and Political Studies, Cracow, Poland
- BA and MA in ITALIAN STUDIES
  October 2004 - July 2009

  Jagiellonian University, Faculty of Philology, Cracow, Poland

LABORATORY SKILLS

MOLECULAR TECHNIQUES,
CELL CULTURE, YEAST CULTURE,
IMMUNOSTAINING,
CRISPR, VIRAL VECTORS,
ANIMAL MODELS (MOUSE, C. ELEGANS, D. MELANOGASTER, CIONA)
CONFOCAL AND FLUORESCENCE MICROSCOPY

COMPUTER SKILLS

PYTHON, R, MATLAB
DATA ANALYSIS
BIOINFORMATICS (RNA-seq, scRNA-seq, Seurat, scanpy, hdWGCNA, etc.)
MACHINE LEARNING,
NEURAL NETWORKS, spiking NN
SIMULATIONS (NEURON, NetPyNE, Brian),
WEB DEVELOPMENT, DOCKER,
BAYESIAN STATISTICS WITH JASP

COURSES and WORKSHOPS

NASA STAR-5 Program: Spaceflight Technology, Applications, and Research 2024-2025

OIST Computational Neuroscience Course, Japan, June 17-July 4 2024

gtec BCI and Neurotechnology Spring School, online, April 22-May 1 2024

SimNeuroX: Simulation Neuroscience (EPFL, edX), August 2023

Allen Institute Modeling Software Workshop, Seattle, July 2023

The Computational Neuroscience, Neurotechnology and Neuro-inspired AI (CN3) Autumn School by Ulster University, October 2022

McMedHacks 2022 Summer School – Deep Learning and Medical Image Analysis

Neuromatch Academy – Computational Neuroscience, summer school, July 2022

Build Basic Generative Adversarial Networks; by DeepLearning.AI (Coursera), May 2021

Dimensionality Reduction using an Autoencoder in Python (Coursera), February 2021

Professional Certificate in TinyML (by HarvardX and Google on edX), March 2021

Deep Learning Specialization (by Andrew Ng, Coursera), December 2020)

Computational Neuroscience course (by University of Washington on Coursera), May 2020

Neuromatch 2.0 - the community driven online computational neuroscience conference (IEEE Brain, UPenn, PennState, Georgia Tech, NBDT, eLife, Imperial College London), May 25-27, 2020, online

29th Annual Computational Neuroscience Meeting CNS*2020, July 18-22, online

Allen Institute Modeling Workshop. Towards multipurpose models of cortical circuits; August 12-14, 2020, online

Numbers-Computers-Life, Student Conference and Workshops, Faculty of Mathematics and Informatics, Jagiellonian University, Poland 2015; R in Neuroinformatics, Computer-Aided Drug Design

NGS in Gene Regulation, Ideas4biology, Poznań, Poland 2014
Linux environment, R, data analysis and visualization

Bioinformatics for Biologists, VitaInSilica, Poznań, Poland 2013
Statistics, Databases

10th Poznan Summer School of Bioinformatics, Adam Mickiewicz University, Poznań, Poland 2013
Molecular evolution, Phylogenetics, Metagenomics

MEMBERSHIPS

2024- NASA Analysis Working Group
2021-2023 Society for Developmental Biology
2018- American Aging Association
2018- IEEE, IEEE Computer Society, IEEE Brain
2018- Society for Neuroscience
2018- Organization for Computational Neuroscience, Software Working Group
2018-2019 Microscopy Society of America
2016- American Association for the Advancement of Science
2016- Planetary Society

AWARDS AND SCHOLARSHIPS

Poster Award at OCNS Research Retreat, Feb 7th, 2020

Diana Jacobs Kalman/AFAR Scholarship for Research in the Biology of Aging 2019

2019 Oklahoma Center for Neuroscience Seed Grant

OUHSC Graduate College Award for Scientific Achievement at GREAT Symposium 2019

OUHSC sponsored AGE 2019 meeting Travel Award

OMRF Pre-doctoral Scholarship; Drs. Patricia H. and J. Donald Capra Scholarship Fund 2018-2019

OCNS Image Competition 2018 winner

OK Catalyst Researchers Program; May-July 2018

Bertelsmann Data Science Challenge Scholarship through Udacity; May-August 2018

Superior Poster Presentation by a Pre-doctoral Student at AGE 2018, meeting of the American Aging Association

Best Student Poster Award at 2018 Oklahoma Geroscience Symposium

Fulbright Visiting Graduate Research Traineeship Program (currently BioLAB) at Oklahoma Medical Research Foundation 2015-2016

Merit-based Jagiellonian University Scholarship for academic years 2011-2012, 2010-2011, 2009-2010

6-month visiting scholarship at Pontificia Universidad Católica del Peru 2010-2011

6-month Erasmus Program at Universita degli Studi di Siena 2007-2008

ADDITIONAL LABORATORY PRACTICE

SUMMER INTERN at KAROLINSKA INSTITUTET, SWEDEN, 2014
Department of Neuroscience, Experimental Neurogerontology Group, Brun Ulfhake's laboratory

10th Stem Cells Summer School at JAGIELLONIAN UNIVERSITY MEDICAL COLLEGE, 2014
Stem cells isolation, mouse handling

Student Laboratory Practice, JAGIELLONIAN UNIVERSITY, 2014-2015
Faculty of Biochemistry, Biophysics and Biotechnology, Department of Physical Biochemistry
Cell culture (MBE, HEK293), cell toxicity tests

Student Laboratory Practice, JAGIELLONIAN UNIVERSITY, 2013-2014
Faculty of Biology and Earth Sciences, Department of Genetics and Evolutionism, Institute of Zoology
SNPs analysis

SOCIAL

/katarzyna-piekarz

researchgate.net/profile/Katarzyna_Piekarz

orcid.org/0000-0003-4710-9970

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PUBLICATIONS

First author and co-first author papers:

Xu, H*; **Piekarz, KM***; Brown, J; Bhaskaran, S; Van Remmen, H; Neuroprotective treatment with the nitrone compound OKN-007 mitigates age-related muscle weakness in aging mice. GeroScience 2024

Piekarz, KM, Stolfi, A; Development and circuitry of the tunicate larval Motor Ganglion, a putative hindbrain/spinal cord homolog. Journal of Experimental Zoology Part B: Molecular and Developmental Evolution 2023 Wiley Online Library

Piekarz, KM; Georgescu, Constantin; Wren, Jonathan D; Towner, Rheal A; Van Remmen, Holly. Pharmacologic treatment with OKN-007 reduces alpha-motor neuron loss in spinal cord of aging mice. GeroScience 44 1 67-81 2022

Piekarz, KM; Bhaskaran, Shylesh; Sataranatarajan, Kavithalakshmi; Street, Kaitlyn; Premkumar, Pavithra; Saunders, Debra; Zalles, Michelle; Gulej, Rafal; Khademi, Shadi; Laurin, Jaime; Peelor 3rd, Fredrick F; Miller, Benjamin F; Towner, Rheal; Van Remmen, Holly. Molecular changes associated with spinal cord aging. Geroscience 42 2 765-784 2020

* Equal contributions

Other papers:

Kim, K; **Piekarz, KM**.; Stolfi, A. A gene regulatory network for specification and morphogenesis of a Mauthner Cell homolog in non-vertebrate chordates. bioRxiv https://doi.org/10.1101/2024.01.15.57561 2024; under review in Nature Communications

Borowik, AK; Lawrence, MM; Peelor III, FF; **Piekarz, KM**; Crosswhite, A; Richardson, A; Miller, BF; Van Remmen, H; Brown, JL. Senolytic treatment does not mitigate oxidative stress-induced muscle atrophy but improves muscle force generation in CuZn superoxide dismutase knockout mice. GeroScience 2024

Bhaskaran, S; Kumar, G; Thadathil, N; **Piekarz, KM**; Mohammed, S; Dominguez Lopez, S; Qaisar, R; Walton, D; Brown, JL; Murphy, A; Smith, N; Saunders, D; Beckstead, MJ; Plafker, S; Lewis Jr., TL; Rheal Towner, R; Deepa, SS; Richardson, A; Axtell, RC; Van Remmen, H. Neuronal deletion of MnSOD in mice leads to demyelination, inflammation and progressive paralysis that mimics phenotypes associated with progressive multiple sclerosis. Redox Biology 2023 Elsevier

Johnson, CJ; Razy-Krajka, F; Zeng, F; **Piekarz, KM**; Biliya, S; Rothbacher, U; Stolfi, A. Specification of distinct cell types in a sensory-adhesive organ for metamorphosis in the Ciona larva. bioRxiv 2023; accepted in PLoS Biology 2024

Gigante, ED; **Piekarz, KM**; Gurgis, A; Cohen, L; Razy-Krajka, F; Popsuj, S; Ali, Hussan S; Sundaram, S; Stolfi, A. Specification and survival of post-metamorphic branchiomeric neurons in the hindbrain of a non-vertebrate chordate. bioRxiv 2023; under review in Development

Ahn, B; Ranjit, R; Kneis, P; Xu, H; **Piekarz, KM**; Freeman, WM; Kinter, M; Richardson, A; Ran, Q; Brooks, SV; Van Remmen, H. Scavenging mitochondrial hydrogen peroxide by peroxiredoxin 3 overexpression attenuates contractile dysfunction and muscle atrophy in a murine model of accelerated sarcopenia. Aging Cell 21.0 3 e13569 2022

Xu, H; Bhaskaran, S; **Piekarz, KM**; Ranjit, R; Bian, J; Kneis, P; Ellis, A; Bhandari, S; Rice, Heather C; Van Remmen, H. Age Related Changes in Muscle Mass and Force Generation in the Triple Transgenic (3xTgAD) Mouse Model of Alzheimer's Disease. Frontiers in Aging Neuroscience 350 2022

Brown, JL; Lawrence, MM; Ahn, B; Kneis, P; **Piekarz, KM**; Qaisar, R; Ranjit, R; Bian, J; Pharaoh, G; Brown, C; Peelor, FF; Kinter, MT; Miller, BF; Richardson, A; Van Remmen, H. Cancer cachexia in a mouse model of oxidative stress Journal of cachexia, sarcopenia and muscle 11 6 1688-1704 2020

Sataranatarajan, K; Pharaoh, G; Brown, JL; Ranjit, R; **Piekarz, KM**; Street, K; Wren, JD; Georgescu, C; Kinter, C; Kinter, M; Freeman, WM; Richardson, A; Van Remmen, H. Molecular changes in transcription and metabolic pathways underlying muscle atrophy in the CuZnSOD null mouse model of sarcopenia. GeroScience 42 1101-1118 2020

Bhaskaran, S; Pollock, N; Macpherson, P; Ahn, B; **Piekarz, KM**; Staunton, CA; Brown, JL; Qaisar, R; Vasilaki, A; Richardson, A; McArdle, A; Jackson, MJ; Brooks, SV; Van Remmen, H. Neuron-specific deletion of CuZnSOD leads to an advanced sarcopenic phenotype in older mice. Aging Cell 19 10 e13225 2020

Ahn, B; Ranjit, R; Premkumar, P; Pharaoh, G; **Piekarz, KM**; Matsuzaki, S; Claflin, DR; Riddle, K; Judge, J; Bhaskaran, S; Sataranatarajan, K; Barboza, E; Wronowski, B; Kinter, M; Humphries, KM; Griffin, TM; Freeman, WM; Richardson, A; Brooks, SV; Van Remmen, H. Mitochondrial oxidative stress impairs contractile function but paradoxically increases muscle mass via fibre branching. Journal of Cachexia, Sarcopenia and Muscle 10 2 411-428 2019

Ahn, B; Ranjit, R; **Piekarz, K**; Poopal, A; Bian, J; Sataranatarajan, K; Ran, Q; Van Remmen, H. Skeletal muscle specific overexpression of the mitochondrial H2O2 scavenger, peroxiredoxin 3, rescues mitochondrial dysfunction and sarcopenia phenotypes elicited by redox imbalance. Free Radical Biology and Medicine 128 S123 2018

Alomer, RM; da Silva, Eulália ML; Chen, J; **Piekarz, KM**; McDonald, K; Sansam, CG; Sansam, CL; Rankin, S. Esco1 and Esco2 regulate distinct cohesin functions during cell cycle progression. Proceedings of the National Academy of Sciences 114 37 9906-9911 2017

POSTER PRESENTATIONS

OKN-007 slows down disease progression in the G93A ALS mutant mouse model. Katarzyna M Piekarz, Debra Saunders, David Stefanoff, Rafal Gulej, Rheal Towner, and Holly Van Remmen. Retreat of Oklahoma Center for Neuroscience; University of Oklahoma Health Sciences Center, February 7, 2020; Oklahoma City, USA

Troponins are expressed in α-motor neurons and can act as potential transcription factors relevant to the age-related neuronal loss. Katarzyna M Piekarz, Kavithalakshmi Sataranatarajan, and Holly Van Remmen. Neuroscience 2019, annual meeting of Society for Neuroscience, October 19-23 2019; Chicago, USA

How can we prevent age-related alpha motor neuron loss? Katarzyna M Piekarz, Shylesh Bhaskaran, Kavithalakshmi Sataranatarajan, Kaitlyn Riddle, Debra Saunders, Michelle Zalles, Rheal Towner, and Holly Van Remmen. 2019 Oklahoma Geroscience Symposium April 24, 2019; Oklahoma City, USA

Spinal cord aging is associated with loss of α-motor neurons, upregulation of ECM components and MMPs, and blood-spinal cord barrier dysfunction Katarzyna M Piekarz, Shylesh Bhaskaran, Kavithalakshmi Sataranatarajan, Kaitlyn Riddle, Debra Saunders, Michelle Zalles, Rheal Towner, and Holly Van Remmen. Retreat of Oklahoma Center for Neuroscience; University of Oklahoma Health Sciences Center, February 1, 2019; Oklahoma City, USA

Troponins as potential transcription factors relevant to the age-related alpha-motor neuron loss. Katarzyna M Piekarz, Kavithalakshmi Sataranatarajan, and Holly Van Remmen. AGE meeting - 48th annual conference of American Aging Association; May 29 – June 2, 2019; San Francisco, USA

Strategies to prevent age-related alpha motor neuron loss. Katarzyna M Piekarz, Shylesh Bhaskaran, Kavithalakshmi Sataranatarajan, Kaitlyn Riddle, Debra Saunders, Michelle Zalles, Rheal Towner, and Holly Van Remmen. The annual Graduate Research Education and Technology (GREAT) Symposium, April 1-4 2019; University of Oklahoma Health Sciences Center, Oklahoma City, USA

Molecular changes in aging spinal cord. Katarzyna M Piekarz, Shylesh Bhaskaran, Kavithalakshmi Sataranatarajan, Kaitlyn Riddle, Debra Saunders, Michelle Zalles, Rheal Towner, and Holly Van Remmen. Retreat of Oklahoma Medical Research Foundation, March 7-8, 2019; Oklahoma City, USA

Aging is associated with loss of motor neurons and disruption of extracellular matrix homeostasis. Katarzyna M Piekarz, Shylesh Bhaskaran, Kavithalakshmi Sataranatarajan, Kaitlyn Riddle, and Holly Van Remmen. AGE meeting - 47th annual conference of American Aging Association; June 27 – July 1, 2018; Philadelphia, USA

Aging is associated with alpha-motor neuron loss. Katarzyna M Piekarz, Shylesh Bhaskaran, Kavithalakshmi Sataranatarajan, Kaitlyn Riddle, and Holly Van Remmen. The annual Graduate Research Education and Technology (GREAT) Symposium, April 9-12 2018, University of Oklahoma Health Sciences Center, Oklahoma City, USA

Spinal cord aging is associated with loss of motor neurons and disruption of extracellular matrix homeostasis. Katarzyna M Piekarz, Shylesh Bhaskaran, Kavithalakshmi Sataranatarajan, Kaitlyn Riddle, and Holly Van Remmen. 2018 Oklahoma Geroscience Symposium April 6, 2018; Oklahoma City, USA

Age-related alpha motor neuron loss and disruption of extracellular matrix homeostasis. Katarzyna M Piekarz, Shylesh Bhaskaran, Kavithalakshmi Sataranatarajan, Kaitlyn Riddle, and Holly Van Remmen. Retreat of Oklahoma Medical Research Foundation, March 1-2, 2018; Oklahoma City, USA