

CURRICULUM VITAE

Samirkumar Pravinbhai Patel, Ph.D.
Research Associate Professor
Department of Physiology,
Spinal Cord & Brain Injury Research Center (SCoBIRC)
University of Kentucky College of Medicine



I. GENERAL INFORMATION

Office Address 741 South Limestone Street
B461 Biomedical & Biological Research Building (BBSRB)
Lexington, KY 40536-0509

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II. EDUCATION

Undergraduate

06/1996-04/1998 **B.Sc. The M. S. University at Baroda**
Vadodara, Gujarat, India
Major: Zoology, Minor: Chemistry & Botany

Post-Graduate

06/1998-04/2000 **M.Sc. The M. S. University at Baroda**
Vadodara, Gujarat, India
Major: Biochemistry

06/2000-06/2006 **Ph.D. Biochemistry, The M. S. University at Baroda**
Vadodara, Gujarat, India
Title "*Effect of alloxan-diabetes on mitochondrial and microsomal function in rat brain, kidney and liver*".

III. PROFESSIONAL EXPERIENCES

07/2006-06/2011 **Post-Doctoral Fellow/Scholar**
SCoBIRC & Department of Physiology, University of Kentucky
Lexington, KY

06/2012-06/2014 **Research Scientist II**
SCoBIRC & Department of Physiology, University of Kentucky
Lexington, KY

IV. ACADEMIC APPOINTMENT

Faculty

	Spinal Cord & Brain Injury Research Center, Department of Physiology, University of Kentucky Lexington, KY
07/2014 – 06/2022	Assistant Professor of Physiology, research series, non-tenure-track, full-time
07/2022-current	Associate Professor of Physiology, research series, non-tenure-track, full-time

VI. CONSULTING ACTIVITIES

National/International

	Mitrix Bio, Inc. San Francisco, CA
01/2021-current	Scientific Advisor/Collaborator

VII. TEACHING ACTIVITIES

University Faculty

University of Kentucky
Lexington, KY 2014:
Volunteer Instructor for undergraduate students in PGY 207 course, U.K.
Note: In coordination with Dr. Dexter Speck, Course Director.

VIII. ADVISING ACTIVITIES

Student Advising/Training*

	The M.S. University of Baroda Vadodara, Gujarat, India
2000-04	Advisor for a series of lab experiments on Biomembranes, DNA, RNA, Lipids, Phospholipids, TLC, as well as spectrophotometric and spectrofluorometric estimations of cytochrome, NADH, flavins etc., for 23 Master's students/year
2002-03	Supervised dissertation of Masters student, Vidya Akhileshwer, M.Sc.

University of Kentucky

Lexington, KY

2010-11:	Oksana Zhurbich, undergraduate research, U.K. BIO395; Fed Work Study
2011:	Jenna VanRooyen; rotating IBS graduate student
2011:	Hyein Jang; rotating IBS graduate student
2012:	Nathalie Astudillo, undergraduate research, U.K. BIO395 Program
2012-13	Taylor Smith, undergraduate research, U.K. CHEM395 Program
2012-13:	Christian Baker, undergraduate research, U.K. BIO395 Program
2013:	Catherine Wang, 2nd Year Med Student, Med Student Research Program
2013-14:	Alicia Kaseta, undergraduate research, U.K. Physiology Scholars Program
2013-14:	Jensen Goh, undergraduate research, U.K. Physiology Scholars Program
2013-14:	Katherine Spezzano, undergraduate research, U.K. BIO395 Program
2013-15:	Ana Bahrami, undergraduate research, U.K. BIO395 Program
2014-15:	Catherine Wang, 3rd Year Med Student, Professional Student Mentored Research Fellowship
2014-16:	Jonathan Gardner, undergraduate research, U.K. CHEM395 Program
2014-16:	Jensen Goh, undergraduate research, U.K. KHP395
2015:	Alex Carter, undergraduate research, U.K. BIO395 Program
2016-17	Meraj Kotwal, undergraduate research, U.K. BIO395 Program
2016-17	Carlee Schreiber, undergraduate research, U.K. BIO395 Program
2018-19	Lydia Boyd, undergraduate research, U.K. PGY 394 Program
2018-19	Bailee Taylor, undergraduate research
2021	Olivia Whitfield, undergraduate research

Mentoring

University of Kentucky

Lexington, KY

2015-16	Tapan Darji, High School research, The Liberal Arts Academy Academic Mentoring Program at Henry Clay High School
2018	Archi Patel, STEAM Academy student
2019-20	Lisa Patel, undergraduate research
2021	Jay Patel, Summer undergraduate research
2021	Blayne Starkey, Summer undergraduate research
2022-23	Arianna Romano, Undergrad Research, PGY394

Co-Mentoring

University of Kentucky

Lexington, KY

2012-17	Jenna VanRooyen, Doctoral Candidate (U.K. Physiology, Rabchevsky lab), Training and Supervising
2014-18	Khalid Eldahan, Doctoral Candidate (U.K. Physiology, Rabchevsky lab), Training and Supervising
2019-2022	Felicia Michael, Post-doctoral scholar (U.K. Physiology & SCoBIRC, Rabchevsky lab) Co-mentor

Dissertation Committee Member

University of Kentucky
Lexington, KY

- 2017-17 Allison Steele, Doctoral Candidate (U.K. Physiology, Saito lab); Thesis Dissertation Committee
- 2021-2023 Meagan Kingren, Doctoral Candidate (U.K. Pharmacology & Nutritional Sciences, Saito lab); Thesis Dissertation Committee
- 2021-Present Olivia Wireman, Doctoral Candidate (U.K. Physiology, Gensel Lab)

*Discloser: *Advising and Training at University of Kentucky- My role was to train undergraduate and rotating IBS students (Mentor-Dr. Rabchevsky) for spinal cord surgeries, biochemical assays, tissue processing and histology, as well as data analysis*

IX. ADMINISTRATIVE ACTIVITIES & UNIVERSITY SERVICE

Department

University of Kentucky/Medical Center
Spinal Cord & Brain Injury Research Center
Lexington, KY

Education & Research

- 2017-present - Member of SCoBIRC DLAR Facility Use committee
- 2020-21 Member of organizing committee for Kentucky Spinal Cord and Head Injury Research Trust meeting 2020-21, annual conference meeting, Lexington, KY

X. HONORS & AWARDS

- 06/2000 – 2003 Graduate Scholarship from Shri Kanam Patidar Seva Samaj charitable trust, Vadodara, India. It paid for PhD tuition and accommodation.
- 07/2007 Anthony Marmarou Award for best poster and oral presentation (out of 300 poster), The 25th Annual Neurotrauma Symposium, Kansas City, MO, “Effects of mitochondrial uncoupling agent, 2,4-dinitrophenol, or nitroxide antioxidant, tempol, on mitochondrial integrity following acute contusion spinal cord injury.”
- 2008 Post-Doctoral Fellowship: The Craig H. Neilsen Foundation “Effects of Acetyl-L-Carnitine Treatment Following Spinal Cord Injury”. Declined based on overlap with grant awarded from KSCHIRT # 8-13 (AGR).
- 2009 Travel award from National Neurotrauma Society to attend the 2nd joint symposium of the International and National Neurotrauma Societies, Santa Barbara, CA.

XI. PROFESSIONAL ACTIVITIES, PUBLIC SERVICE & PROFESSIONAL DEVELOPMENT

Memberships

2006-present	Kentucky Spinal Cord and Head Research Trust, KY USA
2007-present	National Neurotrauma Society
2007-present	Blue Grass Society for Neuroscience, Lexington, KY
2011-present	Society for Neuroscience, USA
2013-present	The American Society for Neural Therapy & Repair

Review Panels

2016	Department of Defense (DOD) - Spinal Cord Injury Research Program (SCIRP) Regeneration and Therapies, Teleconference Reviewer
2017	DOD-SCIRP, Intervention - Secondary Consequences, Scientist Reviewer
2017	DOD- 2019 Combat Casualty Care Research Program, Brain Trauma, Neuroprotection and Neuroregeneration, Online Reviewer
2019	Action Medical Research for Children, United Kingdom, Online Reviewer
2020	Neurological Foundation Project Grant 2020, New Zealand, Scientific Referee
2020	DoD- Peer Reviewed Medical Research Program, Discovery Metabolic Disease peer review panel (pre-DIA 1), Scientific Reviewer
2020	DoD-SCIRP, Preservation and Protection 1, Scientific Reviewer
2021	NIH Review Panel, Scientific Reviewer
2021	DoD-SCIRP Review Panel, Scientific Reviewer

Review Editor

2021	Frontiers in Neuroscience, Frontiers in Neurology and Frontiers in Psychiatry
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Journal Peer-Reviewing

2013-present	BMC Neuroscience
2013-present	International Journal Fertility and Infertility
2013-present	International Journal of Experimental Pathology
2014-present	Experimental Biology and Medicine
2014-present	Neuroscience
2015-present	Future Science Open
2015-present	International Journal of Fertility & Sterility
2015-present	Journal of Applied Physiology
2015-present	Journal of Molecular Imaging & Dynamics
2015-present	Journal of Neuroimmunology
2015-present	Journal of Neuropathology and Experimental Neurology
2015-present	Neuroscience Letter
2015-present	Tissue and Cell
2016-present	Brain Research

2016-present	Experimental Brain Research
2016-present	Mitochondrion
2016-present	Redox Biology
2016-present	Spinal Cord
2016-present	Restorative Neurology and Neuroscience
2018-present	Neurochem International
2018-present	Neuropharmacology
2019-present	FASEB J
2019-present	Neuroimmunology & Neuroinflammation
2019-present	Rejuvenation Research
2020-present	Experimental Neurology
2020-present	Journal of Chemical Neuroanatomy
2021-present	Neurotrauma Reports
2021-present	Neurotherapeutics
2021-present	The Journal of Spinal Cord Medicine
2021-present	PLOS ONE
2021-present	Journal of Neuroinflammation
2021-present	Neurological Research
2021-present	Neurosci Lett

XII. SPEAKING ENGAGEMENTS

Local/State

	University of Kentucky Lexington, KY
04/2011	Department of Physiology Seminar Series: “Therapeutic Interventions for Spinal Cord Injury: Targeting Mitochondrial Dysfunction.”
	Kentucky Spinal Cord & Head Injury Research Trust Louisville, KY
05/2014	Department of Physiology, Faculty (research track) Candidate Seminar Annual Kentucky Spinal Cord & Head Injury Research Trust Symposium “Alternative biofuels as therapeutics for mitochondrial integrity after spinal cord injury:”
	Kentucky Neuroscience Institute Lexington, KY
09/2016	Clinical-Translational Research Symposium: “Pioglitazone Improves Functional Neuroprotection Following Spinal Cord Injury.”
	University of Kentucky Lexington, KY
05/2021	Department of Physiology Promotion seminar: “Mitochondrial Dysfunction: A Pivotal Target for Spinal Cord Injury Therapeutics.”

National/International

- National Neurotrauma Society (NNS)**
Kansas City, MO
07/2007 The 25th Annual Neurotrauma Symposium, Kansas City, MO: “Effects of Mitochondrial Uncoupling Agent, 2,4-Dinitrophenol, or Nitroxide Antioxidant, Tempol, on Mitochondrial Integrity Following Acute Contusion Spinal Cord Injury.”
One of a dozen oral presentations chosen out of 300 totals.
- National Neurotrauma Society (NNS)**
Phoenix, AZ
07/2012 National Neurotrauma Society (NNS) meeting: “N-acetylcysteine amide (NACA) treatment improves mitochondrial bioenergetics and hindlimb functional recovery following contusion spinal cord injury,”
“Open Communication Presentations” chosen out of 370 totals
- National Neurotrauma Society (NNS)**
Nashville, TN
08/2013 National Neurotrauma Society (NNS) meeting: “Effects of continuous subcutaneous delivery of N-acetylcysteine amide (NACA) on acute and chronic pathophysiology after spinal cord injury.”
“Open Communication Presentations” chosen out of 328 totals
- American Society for Neural Therapy & Repair**
Clearwater, FL
04/2019 26th Annual Conference of the American Society for Neural Therapy & Repair: “Effects of mitochondrial transplantation on bioenergetics and neuroprotection following spinal cord injury”
- Glocal University**
Saharanpur, India
11/2020 Virtual presentation, International Conference on Recent Advancements in Science & Technology – (ICRAST-20): “Targeting Mitochondrial Dysfunction to Treat Spinal Cord Injury”

XIII. RESEARCH & INTELLECTUAL CONTRIBUTIONS

A. PUBLICATIONS

Peer-Reviewed Original Research in Professional or Scientific Journals

1. **Patel S.P.**, Katewa S.D. and Katyare S.S. (2005) Effect of antimalarials treatment on rat liver lysosomal function- An in vivo study. *Ind. J. Clin. Biochem.* 20: 1-8. PMID: 23105485.
2. **Patel S.P.** and Katyare S.S. (2005) Differences in kinetic properties of cytochrome oxidase in mitochondria from rat tissues. A comparative study. *Z. Naturforsch.* 60: 785-791. PMID: 16320624.
3. Billimoria F.R., Katyare S.S. and **Patel S.P.** (2006) Insulin status differentially affects energy transduction in cardiac mitochondria from male and female rats. *Dia. Obes. Metab.* 8:67-74. PMID: 16367884.

4. **Patel S.P.** and Katyare S.S. (2006) A comparative study of reactive oxygen species (ROS) related parameters in rat tissues. *Ind. J. Clin. Biochem.* 21:48-53. PMID: 23105569.
5. **Patel S.P.** and Katyare S.S. (2006) Effect of alloxan-diabetes and subsequent treatment with insulin on lipid/phospholipid composition of rat brain microsomes and mitochondria. *Neurosci. Lett.* 399:129-134. PMID: 16483714.
6. Katyare S.S. and **Patel S.P.** (2006) Insulin status differentially affects energy transduction in cerebral mitochondria from male and female rats. *Brain Res. Bull.* 69:458-464. PMID: 16624678.
7. **Patel S.P.** and Katyare S.S. (2006) Insulin-status-dependent modulation of FoF1 ATPase activity in rat liver mitochondria. *Lipids* 41:695-703. PMID: 17069353.
8. **Patel S.P.** and Katyare S.S. (2006) Insulin-status-dependent alterations in lipid/phospholipid composition of rat kidney mitochondria and microsomes. *Lipids.* 41:819-825. PMID: 17152918.
9. **Patel S.P.** and Katyare S.S. (2006) Insulin-status-dependent modulation of FoF1 ATPase activity in rat kidney mitochondria. *Arch. Physiol. Biochem.* 112:150-157. PMID: 17132540.
10. **Patel S.P.** and Katyare S.S. (2006) Effect of alloxan-diabetes and subsequent insulin treatment on kinetic properties of succinate oxidase activity from rat liver mitochondria. *Z. Naturforsch.* 61:756-762. PMID: 17137125.
11. **Patel S.P.** and Katyare S.S. (2006) Effect of alloxan diabetes and subsequent insulin treatment on temperature kinetics properties of succinate oxidase activity in rat kidney mitochondria. *J. Membr. Biol.* 213:31-37. PMID: 17347780.
12. **Patel S.P.** and Katyare S.S. (2007) Differential pH sensitivity of tissue superoxide dismutases. *Ind. J. Clin. Biochem.* 21:129-133. PMID: 23105629.
13. Akhileshwer V., **Patel S.P.** and Katyare S.S. (2007) Diabetic cardiomyopathy and reactive oxygen species (ROS) related parameters in male and female rats. A comparative study. *Ind. J. Clin. Biochem.* 22:84-90. PMID: 23105658.
14. **Patel S.P.**, Patel M.A. Modi H.R. and Katyare S.S. (2007) Improved method for estimation of inorganic phosphate: implications for its application in enzyme assays. *Ind. J. Biochem. Biophys.* 44:88-93. PMID: 17536336.
15. Modi H.R., **Patel S.P.**, Katyare S.S. and Patel M.A. (2007) Thyroid hormone treatments differentially affect kinetic properties of FoF1 ATPase and succinate oxidase and lipid/phospholipid composition of rat kidney mitochondria. a correlative study. *J. Membr. Biol.* 215:135-145. PMID: 17568978.
16. Katyare S.S., Modi H.R., **Patel S.P.** and Patel M.A. (2007) Thyroid hormone-induced alterations in membrane structure-function relationships: studies on kinetic properties of rat kidney microsomal Na(+),K (+)-ATPase and lipid/phospholipid profiles. *J. Membr. Biol.* 219:71-81. PMID: 17721830.
17. Sullivan P.G., Krishnamurthy S., **Patel S.P.**, Pandya J.D. and Rabchevsky A.G. (2007) Temporal characterization of mitochondrial bioenergetics after spinal cord injury. *J. Neurotrauma.* 24:991-999. PMID: 17600515.
18. Katyare S.S., **Patel S.P.** and Modi H. R. (2008) Diabetic modulation of the temperature kinetics properties of cytochrome oxidase activity in rat brain mitochondria. *Neurochem Res.* 33:422-429. PMID: 17721819.
19. Modi H.R., Katyare S.S. and **Patel S.P.** (2008) Thyroidal regulation of substrate kinetics properties of cytochrome oxidase in rat liver mitochondria. *Ind. J. Clin. Biochem.* 23(3):272-278. PMID: 17568978.

20. **Patel S.P.**, Sullivan P.G., Pandya J.D. and Rabchevsky A.G. (2009) Differential effects of the mitochondrial uncoupling agent, 2,4-Dinitrophenol, or the nitroxide antioxidant, Tempol, on synaptic or non-synaptic mitochondria following spinal cord injury. *J. Neurosci. Res.* 87:130-140. PMID: 18709657.
21. **Patel S.P.**, Gamboa J.L., McMullen C.A., Rabchevsky A.G. and Andrade F.H. (2009) Lower respiratory capacity in extraocular muscle mitochondria: evidence for intrinsic differences in mitochondrial composition and function. *Invest. Ophthalmol. Visual Sci.* 50:180-186. PMID: 18791171.
22. **Patel S.P.**, Sullivan P.G., Lyttle T.S. and Rabchevsky A.G. (2010) Acetyl-l-carnitine ameliorates mitochondrial dysfunction following contusion spinal cord injury. *J Neurochem* 114: 291-301. PMID: 20438613.
23. Rabchevsky A.G., **Patel S.P.**, Duale H., Lyttle T.S., O'Dell C.R. and Kitzman P.H. (2011) Gabapentin for spasticity and autonomic dysreflexia after severe spinal cord injury. *Spinal Cord* 49(1):99-105. PMID: 20514053.
24. Zhang X.; **Patel S.P.**, McCarthy J. J., Rabchevsky A. G., Goldhamer D. and Esser K. (2011) A non-canonical e-box within the myod core enhancer is necessary for circadian expression in skeletal muscle. *Nucleic Acids Res.* 40(8):3419-30. PMID: 22210883.
25. **Patel S.P.**, Sullivan P.G., Lyttle T.S., Magnuson D.S.K. and Rabchevsky A.G. (2012) Acetyl-l-carnitine treatment following spinal cord injury improves mitochondrial function correlated with remarkable tissue sparing and functional recovery. *Neuroscience.* 210:296-307. PMID: 22445934.
26. Rabchevsky A.G., **Patel S.P.**, Lyttle T.S., Eldahan K.E., O'Dell C.R., Zhang Y., Popovich P.G., Kitzman P.H. and Donohue K.B. (2012) Effects of gabapentin on muscle spasticity and both induced as well as spontaneous autonomic dysreflexia after complete spinal cord injury. *Front. Physiol.* 3:1-12. PMID: 22934077.
27. ***Patel S.P.**, Sullivan P.G., Pandya J.D., Goldstein G., VanRooyen J. L., Yountas H.M., Eldahan K.C., Morehouse J; Magnuson D.S.K. and Rabchevsky A.G. (2014) N-acetylcysteineamide Promotes Mitochondrial Bioenergetics and Functional Recovery Following Spinal Trauma. *Exp Neurol.* 257:95-105. PMID: 24805071.
28. *Pandya J.D., Readnower R.D., **Patel S.P.**, Yountas H.M., Pauly J.R., Goldstein G., Rabchevsky A.G. and Sullivan P.G. (2014) N-acetylcysteineamide confers neuroprotection, improves bioenergetics and behavioral outcome following TBI. *Exp Neurol.* 257:106-113. PMID: 24792639.
29. **Patel S.P.**, Smith T.D., VanRooyen J.L., Powell D., Cox D.H., Sullivan P.G. and Rabchevsky A.G. (2016) Serial diffusion tensor imaging in vivo predicts long-term functional recovery and histopathology in rats following different severities of spinal cord injury. *Journal of Neurotrauma.* 33(10):917-928. PMID: 26650623.
30. Visavadiya N.P., **Patel S.P.**, VanRooyen J.L., Sullivan P.G. and Rabchevsky A.G. (2016) Cellular and subcellular oxidative stress parameters following severe spinal cord injury. *Redox Biol.* 8:56-67. PMID:26760911.
31. **Patel S.P.**, Cox D.H., VanRooyen J.L., Bailey W.M., Geldenhuys W.J., Gensel J.G., Sullivan P.G. and Rabchevsky A.G. (2017) Pioglitazone Treatment Following Spinal Cord Injury Maintains Acute Mitochondrial Integrity and Increases Chronic Tissue Sparing and Functional Recovery. *Exp Neurol.* 293:74-82. PMID: 28365473.
32. Gollihue J.L., **Patel S.P.**, Mashburn C., Eldahan K.C. and Rabchevsky A.G. (2017) Optimization of mitochondrial isolation techniques for intraspinal transplantation procedures. *J Neurosci Methods* 287:1-12. PMID: 28554833.

33. Eldahan K.C., Cox, D.H., Gollihue J.L., **Patel S.P.** and Rabchevsky A.G. (2018) Rapamycin exacerbates cardiovascular dysfunction after complete high-thoracic spinal cord injury. *J Neurotrauma* 35(6):842-853, PMID: 29205090.
34. Gollihue J.L., **Patel S.P.**, Eldahan K.C., Cox D.H., Donahue R.R., Taylor B.K., Sullivan P.G. and Rabchevsky A.G. (2018) Effects of Mitochondrial Transplantation on Bioenergetics, Cellular Incorporation and Functional Recovery after Spinal Cord Injury. *J Neurotrauma* 35(15):1800-1818. PMID: 29648982.
35. Owen A.M., Starr M.E., **Patel S.P.**, Smith J.D., Kuriyama N., Stromberg A. J., Kaneki M., Esser K.A., Rabchevsky A.G., Peterson C.A. and Saito H. (2019) Mitochondrial Myopathy and Oxidative Damage Accompany Chronic Muscle Weakness in Murine Sepsis Survivors. *eLife* 8:e49920. PMID: 31793435.
36. Eldahan K.C., Williams H.C. Cox, D.H., Gollihue J.L., **Patel S.P.** and Rabchevsky A.G. (2020) Paradoxical effects of continuous high dose gabapentin treatment on autonomic dysreflexia after complete spinal cord injury. *Exp. Neurol.* 323:113083. PMID: 31678138.
37. Stewart A.N., McFarlane K.E., Vekaria H.J., Bailey W.M., Slone S.A., Tranthem L.A., Zhang B., **Patel S.P.**, Sullivan P.G., and Gensel J.C. (2021) Mitochondria exert age-divergent effects on recovery from spinal cord injury. *Exp. Neurol.* 337:113597. PMID: 33422552
38. Stewart A.N., McFarlane K.E., Vekaria H.J., Bailey W.M., Slone S.A., Tranthem L.A., Zhang B., **Patel S.P.**, Sullivan P.G., and Gensel J.C. (2021) Advanced Age and Neurotrauma Diminish Glutathione and Impair Antioxidant Defense after Spinal Cord Injury. *J. Neurotrauma* 39:1075-1089. PMID: 35373589
39. **Patel S. P.**, Michael F. M., Arif Khan M., Duggan B., Wyse S., Darby D. R., Chaudhuri K., Pham J. T., Gollihue J., DeRouchey J. E., Sullivan P. G., Dziubla T. D., Rabchevsky A. G. (2022) Erodible thermogelling hydrogels for localized mitochondrial transplantation to the spinal cord. *Mitochondrion* 64:145-155. PMID: 35398305
40. Hart S. N., **Patel S. P.**, Michael F. M., Stoilov P., Leow C. J., Hernandez A. G., Jolly A., de la Grange P., Rabchevsky A. G. and Stamm S. (2022) Rat Spinal Cord Injury Associated with Spasticity Leads to Widespread Changes in the Regulation of Retained Introns. *Neurotrauma Rep* 3:105-121. PMID: 35403103
41. Velmurugan G.V., Hubbard B.W., Prajapati P., Vekaria H.J., **Patel S.P.**, Rabchevsky A.G. and Sullivan P.G. (2023) LRP1 deficiency promotes mitostasis in response to oxidative stress: Implications for mitochondrial targeting after traumatic brain injury. *Cells* (Accepted for publication).
42. Michael F.M., **Patel S.P.**, Bachstetter A.D. and Rabchevsky A.G. (2023) Proinflammatory and immunomodulatory gene and protein expression patterns in spinal cord and spleen following acute and chronic high thoracic injury. Submitted to *J. Inflammation Res.*

** These articles were featured publications in Experimental Neurology. Results of these sister publications characterizing NACA treatment in both SCI and TBI were "highlighted" in an editorial commentary (Semple BD, 2014, Exp Neurol) on the potential impact of NACA and targeting mitochondrial dysfunction to foster neuroprotection.*

Reviews in Scientific Journals

1. Rabchevsky A.G., **Patel S.P.** and Springer J.E. (2011) Pharmacological interventions for spinal cord injury: Where do we stand? How might we step forward? *Pharmacol Therapeutics* 132(1):15-29. PMID: 21605594.

2. Rabchevsky A.G., **Patel S.P.** and Sullivan P.G. (2017) Targeting mitoNEET with pioglitazone for therapeutic neuroprotection after spinal cord injury. *Neural Regen Res.* 12(11):1807-1808. PMID: 29239323
3. Gollihue J.L., **Patel S.P.** and Rabchevsky A.G. (2018) Mitochondrial transplantation strategies as potential therapeutics for central nervous system trauma. *Neural Regen Res.* 13(2):194-197. PMID: 29557359
4. Michael F.M., **Patel S.P.** and Rabchevsky A.G. (2019) Intraspinal plasticity associated with development of autonomic dysreflexia after complete spinal cord injury. *Frontiers in Cellular Neuroscience, section Cellular Neurophysiology*, 13:505, PMID: 31780900.
5. Rabchevsky A.G., Michael F.M. and **Patel S.P.** (2020) Mitochondria focused neurotherapeutics for spinal cord injury. *Exp. Neurol.* 330:113332. PMID:32353464.
6. **Patel S. P.**, Michael F. M., Gollihue J.L., Hubbard H.W., Sullivan P. G. and Rabchevsky A. G. (2023) Delivery of mitoceuticals or respiratory competent mitochondria to sites of neurotrauma. *Mitochondrion* 68:10-14. PMID: 36371072

Book Chapter(s)

1. **Patel S.P.** and Rabchevsky A.G. *Animal Models of Acute Neurological Injuries*, 2nd edition, Application of the Infinity Horizon spinal cord contusion injury model. Springer Series in Translational Stroke Research, Springer Nature Sitzerland, 2019

Electronic Media

1. Rabchevsky A.G., Sullivan P.G. and **Patel S.P.** “Commonly Used Supplement May Improve Recovery from Spinal Cord Injuries” *UK Now – University of Kentucky News*, <http://uknow.uky.edu/content/commonly-used-supplement-may-improve-recovery-spinal-cord-injuries>
2. Rabchevsky A.G., Sullivan P.G. and **Patel S.P.** “Commonly Used Supplement May Improve Recovery from Spinal Cord Injuries” *Science Daily*, Sept.2011 <http://www.sciencedaily.com/releases/2011/09/110928185025.htm>
3. Rabchevsky A.G., Sullivan P.G. and **Patel S.P.** “Acetyl-L-Carnitine” *PN/Paraplegia News Magazine*, Aug.2013
4. Gollihue J. L. and Rabchevsky A.G. “Mentoring a Key Factor in Spinal Cord Researcher's Success” *UK Now- University of Kentucky News*, Jun.2016 <https://uknow.uky.edu/uk-healthcare/mentoring-key-factor-spinal-cord-researchers-success>

Discloser: Press releases in UK Now (2011), Science Daily and PN/Paraplegia magazine are based on my post-doctoral work in laboratory of Dr. Rabchevsky (see Publications # 23 and #26 in publication list). Press release in UK Now (2016), I trained Dr. Rabchevsky's student Dr. Jenna Gollihue with spinal cord surgery and mitochondrial bioenergetics techniques for successful completion of her PhD thesis.

B. ABSTRACT PRESENTATIONS

Local/State/National/International Meetings

- 03/2003 **Patel S.P.**, Akhileshwer V. and Katyare S.S. “Role of reactive oxygen species (ROS) in diabetic cardiomyopathy” 29th Annual Conference of Association of Clinical Biochemists of India, Jaipur, Rajasthan. Poster Presentation.

- 06/2007 **Patel S.P.**, Pandya J.D., Sullivan P.G. and Rabchevsky A.G. “Effects of mitochondrial uncoupling agent, 2,4-dinitrophenol, or nitroxide antioxidant, tempol, on mitochondrial integrity following acute contusion spinal cord injury.” Selected for oral presentation, *J. Neurotrauma* 24(7): 1231. The 25th Annual National Neurotrauma Society Symposium, Kansas City, MO, Podium Presentation.
- 04/2008 Andrade F.H., **Patel S.P.**, Gamboa J., McMullen C.A., Rabchevsky A.G. “Unexpected constraints of extraocular muscle mitochondrial function: lower respiration rates and enzymatic activity,” Annual meeting of the Association for Research in Vision and Ophthalmology. Fort Lauderdale, FL, Poster Presentation (Gamboa J.).
- 07/2008 **Patel S.P.**, Lyttle T.S., Sullivan P.G. and Rabchevsky A.G. Effects of Acetyl-L-carnitine on mitochondrial dysfunction following acute contusion spinal cord injury. *J. Neurotrauma* 25(7): 893. International and National Neurotrauma Meeting, Orlando, FL, Poster Presentation.
- 09/2009 **Patel S.P.**, Sullivan P.G., Lyttle T.S. and Rabchevsky A.G. Mitochondrial targeted interventions following contusion spinal cord injury. *J. Neurotrauma* 26, p.A123, The 27th Annual National Neurotrauma Society Symposium, Santa Barbara, CA, Poster Presentation.
- 09/2009 Rabchevsky A.G., **Patel S.P.**, Duale H., Lyttle T.S., O’Dell C.R. and Kitzman P.H. Gabapentin for spasticity and autonomic dysreflexia after severe spinal cord injury. *J. Neurotrauma* 26, p.A254. The 27th Annual National Neurotrauma Society Symposium, Santa Barbara, CA, Poster Presentation (Rabchevsky A.G.).
- 06/2010 **Patel S.P.**, Sullivan P.G., Lyttle T.S., O’Dell C.R. and Rabchevsky A.G. Effects of acetyl-l-carnitine on functional recovery and tissue sparing following contusion spinal cord injury. *J. Neurotrauma* 26, p.A-66., The 28th Annual National Neurotrauma Society Symposium, Las Vegas, NV, Poster Presentation.
- 06/2010 Rabchevsky A.G., **Patel S.P.**, Lyttle T.S., O’Dell C.R. and Kitzman P.H. Effects of chronic versus acute gabapentin on spasticity and autonomic dysreflexia after severe spinal cord injury. *J. Neurotrauma* 26, p.A-73. The 28th Annual National Neurotrauma Society Symposium, Las Vegas, NV, Poster Presentation (Rabchevsky, A.G.).
- 11/2010 Rabchevsky A.G., **Patel S.P.**, Lyttle T.S., O’Dell C.R. and Kitzman P.H. Effects of chronic versus acute gabapentin administration on spasticity and autonomic dysreflexia after severe spinal cord injury. Society for Neuroscience Annual meeting, San Diego, CA, Poster Presentation (Rabchevsky, A.G.).
- 10/2010 **Patel S.P.**, Sullivan P.G., Lyttle T.S. and Rabchevsky A.G. Acetyl-l-carnitine is neuroprotective and improves functional recovery following contusion spinal cord injury. The 10th International Conference on Neuroprotective Agents, Pacific Grove, CA. Poster Presentation.
- 07/2011 **Patel S.P.**, Sullivan P.G., Lyttle T.S. and Rabchevsky A.G. Mitochondrial dysfunction: A critical target for treatment of acute spinal cord injury. *J. Neurotrauma* 28, p. A32-33, The 29th Annual National Neurotrauma Society Symposium, Hollywood, FL, Poster Presentation.
- 07/2011 Rabchevsky A.G., **Patel S.P.**, Lyttle T.S., O’Dell C.R., Eldahan K.C., Donohue K.D. and Kitzman P.H. Gabapentin alleviates spasticity and both induced and spontaneous autonomic dysreflexia after severe spinal cord injury. *J. Neurotrauma*

- 28, p. A31-32. The 29th Annual National Neurotrauma Society Symposium, Hollywood, FL, Poster Presentation (Rabchevsky, A.G.).
- 11/2011 Rabchevsky A.G., **Patel S.P.**, Lyttle T.S., O'Dell C.R., Eldahan K.C., Donohue K.D. and Kitzman P.H. Gabapentin mitigates both induced and spontaneous autonomic dysreflexia, as well as reflexive spasticity after severe spinal cord injury. Society for Neuroscience Annual Meeting, Washington, DC, Poster Presentation (Rabchevsky, A.G.).
- 11/2011 **Patel S.P.**, Sullivan P.G., Lyttle T.S. and Rabchevsky A.G. Targeting of mitochondrial dysfunction for treatment of spinal cord injury. Society for Neuroscience Annual Meeting, Washington, DC, Poster Presentation.
- 07/2012 **Patel S.P.**, Pandya J.D., Eldahan K.C., Sullivan P.G. and Rabchevsky A.G. N-acetylcysteine amide (NACA) treatment improved mitochondrial bioenergetics and hindlimb functional recovery following contusion spinal cord injury. J. Neurotrauma 29, p. A-19. The 30th Annual National Neurotrauma Society Symposium, Phoenix, AZ, Podium Presentation.
- 07/2012 Crowdus C., Yu C.G., Singh R., Power R., Pandya J.D., **Patel S.P.**, Sullivan P.G., Rabchevsky A.G. and Geddes J.. Enhancing endogenous protective mechanisms following spinal cord injury. J. Neurotrauma 29, p. A-82-83. The 30th Annual National Neurotrauma Society Symposium, Phoenix, AZ, Poster Presentation (Crowdus C.).
- 10/2012 **Patel S.P.**, Pandya J.D., Visavadiya N.P., Eldahan K.C., Sullivan P.G. and Rabchevsky A.G. Neuroprotective effects of N-acetylcysteine amide (NACA) following contusion spinal cord injury in rats. Society for Neuroscience Annual Meeting, New Orleans, LA. Poster Presentation.
- 10/2012 Rabchevsky A.G., Eldahan K.C., VanRooyen J.L., Kline IV R.H. and **Patel S.P.** Mitigation of autonomic dysreflexia by gabapentin treatment after complete spinal cord injury: effects on perikary expression in spinal cord neurons and neuroglial cells Society for Neuroscience Annual Meeting, New Orleans, LA. Poster Presentation (Rabchevsky A.G.).
- 08/2013 **Patel S.P.**, Sullivan P.G., Yonutas H.M., VanRooyen J.L., Eldahan K.C. and Rabchevsky A.G. Effects of continuous subcutaneous delivery of N-acetylcysteine amide (NACA) on acute and chronic pathophysiology after spinal cord injury. J. Neurotrauma 30, p. A-18. The 31th Annual National Neurotrauma Society Symposium, Nashville, TN, Podium Presentation.
- 11/2013 **Patel S.P.**, Sullivan P.G., Yonutas H.M., VanRooyen J.L., Eldahan K.C. and Rabchevsky A.G. Effects of continuous N-acetylcysteine amide (NACA) treatment on acute and chronic pathophysiology after contusion spinal cord injury. Society for Neuroscience Annual Meeting, San Diego, CA, Poster Presentation.
- 11/2013 Rabchevsky A.G., Eldahan K.C., Nall D.A., VanRooyen J.L., Wang C.Y. and **Patel S.P.** Influences of systemic inflammation and gabapentin on the severity of autonomic dysreflexia in relation to the expression of inflammatory cytokines in both visceral and neural tissues. Society for Neuroscience Annual Meeting, San Diego, CA. poster Presentation (Rabchevsky, A.G.).
- 11/2014 **Patel S.P.**, VanRooyen J.L., Visavadiya N.P., Smith T.L., Sullivan P.G. and Rabchevsky A.G. Treatment with ketone bodies preserves mitochondrial function and reduce oxidative stress following contusion spinal cord injury. Society for Neuroscience Annual Meeting, Washington, DC, Poster Presentation.

- 06/2015 **Patel S.P.**, VanRooyen J.L., Sullivan P.G. and Rabchevsky A.G. Synergistic effects of β -hydroxybutyrate and acetyl-L-carnitine on mitochondrial function after spinal cord injury. *J. Neurotrauma*, 32: p A-118. The 33rd Annual National Neurotrauma Society Symposium, Santa Fe, NM, Poster Presentation.
- 12/2015 Eldahan K.C., VanRooyen J.L., **Patel S.P.**, Smith T.L., Cox D.H. and Rabchevsky A.G. Pharmacological manipulation of maladaptive plasticity to prevent autonomic dysreflexia. International Symposium on Neural Regeneration. Pacific Grove, CA, Poster Presentation (Rabchevsky, A.G.).
- 03/2015 VanRooyen J.L., **Patel S.P.**, Eldahan K.C., Smith T.L., Cox D.H. and Rabchevsky A.G. Mitochondrial supplementation after spinal cord injury maintains cellular bioenergetics. Bluegrass Society for Neuroscience Day, Lexington Convention Center, Lexington, KY, Poster Presentation (VanRooyen, J.L.).
- 05/2015 VanRooyen J.L., **Patel S.P.**, Eldahan K.C., Smith T.L., Cox D.H. and Rabchevsky A.G. Mitochondrial supplementation after spinal cord injury maintains cellular bioenergetics. Kentucky Spinal Cord & Head Injury research Trust Symposium, Louisville, KY, Poster Presentation (VanRooyen, J.L.).
- 05/2015 VanRooyen J.L., **Patel S.P.**, Eldahan K.C., Smith T.L., Cox D.H. and Rabchevsky A.G. Mitochondrial transplantation to restore cellular bioenergetics after spinal cord injury. American Society for Neural Therapy & Repair, Clearwater, FL, Podium Presentation (VanRooyen, J.L.).
- 04/2016 VanRooyen J.L., **Patel S.P.**, Eldahan K.C., Smith T.L., Cox D.H. and Rabchevsky A.G. Mitochondrial transplantation into the injured spinal cord improves bioenergetic integrity. Keystone Symposium on Mitochondrial Dynamics, Steamboat Springs, CO, Poster Presentation (VanRooyen J.L.).
- 06/2016 VanRooyen J.L., **Patel S.P.**, Mashburn C., Eldahan K.C., Cox D.H., Sullivan P. G. and Rabchevsky A.G. Transplanted mitochondria significantly maintain cellular respiration after acute contusion spinal cord injury. *J. Neurotrauma* 33(13): A-8, T01-10, The 34th Annual National Neurotrauma Society Symposium, Lexington, KY, Podium Presentation, Top Presentation Award.
- 06/2016 Eldahan K.C., VanRooyen J.L., **Patel S.P.**, and Rabchevsky A.G. Modulation of the mammalian target of rapamycin to alter maladaptive plasticity associated with autonomic dysreflexia. *J. Neurotrauma* 33(13): A-67, PSA-154, The 34th Annual National Neurotrauma Society Symposium, Lexington, KY, Poster Presentation (Eldahan, K.C.).
- 06/2016 Cox D.H., **Patel S.P.**, VanRooyen J.L., Bailey W., Gensel J.G., Sullivan P. G. and Rabchevsky A.G. Pioglitazone maintains acute mitochondrial integrity and improves long-term functional neuroprotection after spinal cord injury. *J. Neurotrauma* 33(13): A-125, PSB-315, The 34th Annual National Neurotrauma Society Symposium, Lexington, KY, Poster Presentation (Cox, D.H.).
- 07/2017 **Patel S.P.**, VanRooyen J.L., Eldahan K.C., Cox D.H. Sullivan P.G. and Rabchevsky A.G. Mitochondrial transplantation following contusion spinal cord injury. *J. Neurotrauma*, 34: p A-18-11, The 35th Annual National Neurotrauma Society Symposium, Snowbird, UT, Poster Presentation.

- 07/2017 Eldahan K.C., Cox D.H., VanRooyen J.L., **Patel S.P.**, and Rabchevsky A.G. Effect of continuous gabapentin administration on the incidence and severity of autonomic dysreflexia. *J. Neurotrauma*, 34: p A-142, The 35th Annual National Neurotrauma Society Symposium, Snowbird, UT, Poster Presentation (Eldahan K.C.).
- 09/2017 VanRooyen J.L., **Patel S.P.**, Eldahan K.C., Cox D.H. Sullivan P.G. and Rabchevsky A.G. Mitochondrial transplantation following contusion spinal cord injury. The 19th International Spinal Research Trust Network Meeting, London, UK, Poster Presentation (Rabchevsky, A.G.).
- 04/2017 Steele A.M., Starr M.E., **Patel S. P.**, Smith J.D., Kuriyama N., Stromberg A. J., Kaneki M., Esser K.A., Rabchevsky A.G., Peterson C.A. and Saito H. Mitochondrial Damage and Dysfunction in Skeletal Muscle of Middle-Aged Sepsis Survivors. *Shock* 47 Suppl. 1:30, Poster Presentation (Steele, A.M.), This Abstract received Presidential Travel Award.
- 07/2017 Steele A.M, Starr M.E., **Patel S.P.** and Saito H. Impairment of Mitochondrial Function in Murine Sepsis Survivors. *Innovation in Aging* 1 Suppl 1:1 P. 1391, IAGG World Congress of Gerontology and Geriatrics Meeting, Podium Presentation (Steele, A.M.).
- 11/2017 **Patel S.P.**, VanRooyen J.L., Eldahan K.C., Cox D.H. Sullivan P.G. and Rabchevsky A.G. Transplantation of Mitochondria following spinal trauma. Society for Neuroscience Annual Meeting, Washington, D.C., Poster.
- 11/2017 Steele A.M., Starr M.E., **Patel S. P.**, Smith J.D., Kaneki M., Esser K.A., Rabchevsky A.G., Peterson C.A. and Saito H. Mitochondrial Myopathy in Murine Sepsis Survivors with Long-Term Muscle Weakness. 15th Biennial Advances in Skeletal Muscle Health and Disease Conference, Gainesville, FL.
- 08/2018 **Patel S.P.**, Cox D.H., Bailey W.M, Williams H.C., Gensel J.C. Sullivan P.G. and Rabchevsky A.G. Pioglitazone maintains mitochondrial bioenergetics via binding to mitoneet following spinal cord injury. The 3rd Joint Symposium of the International and National Neurotrauma Societies and AANS/CNS Section on Neurotrauma and Critical Care, Toronto, Canada, Poster Presentation.
- 11/2018 **Patel S.P.**, Cox D.H., Bailey W.M, Williams H.C., Gensel J.C. Sullivan P.G. and Rabchevsky A.G. Pioglitazone maintains mitochondrial respiration following spinal cord injury via interaction with mitoNEET. Society for Neuroscience Annual Meeting, San Diego, CA, Poster Presentation.
- 04/2019 **Patel S.P.**, Gollihue, J.L., Williams H.C., Cox D.H., Sullivan P.G. and Rabchevsky A.G. Effects of mitochondrial transplantation on bioenergetics and neuroprotection following spinal cord injury. The American Society for Neural Therapy and Repair, Clearwater, FL, Podium Presentation.
- 06/2019 Stamm S., Danyi S.N., **Patel S.P.** and Rabchevsky A.G. Splice-site changing oligonucleotides targeting the serotonin receptor 2c to reduce spasticity after spinal cord injury. RNA Society Meeting, Krakow, Poland, Poster Presentation (Danyi, S.P.).
- 11/2020 Khan M.A., Marium M.A., Wiegman K., Nuti K., **Patel S.P.**, DeRouchey J.E., Rabchevsky A.G. and Dziubla T.D. Synthesis and Optimization of Hyaluronic Acid-Methyl Cellulose Thermogel for the Controlled Release of Viable Mitochondria. The American Institute of Chemical Engineers (AIChE) 2020 annual meeting, Virtual Poster Presentation (Khan, M.A.).

- 11/2020 Michael F.M., **Patel S.P.** and Rabchevsky A.G. (2020) Temporal characterization of central and peripheral immune responses following complete high thoracic spinal cord injury. The 2020 Neuroscience Clinical- Translational Research Symposium, University of Kentucky, Lexington, USA. Podium presentation (Michael F.M.)
- 04/2021 Michael F.M., **Patel S.P.**, Vaught H.M., Sullivan P.G., DeRouche J., Dziubla T.D., Rabchevsky A. G., (2021) Optimization of mitochondrial transplantation via engineered erodible hydrogels, 12th Annual College of Medicine Trainee Poster Session, University of Kentucky, Lexington, USA. Awarded 3rd place. Poster Presentation (Michael F.M.).
- 05/2021 Michael F.M., **Patel S.P.**, Vaught H.M., Sullivan P.G., DeRouche J., Dziubla T.D., Rabchevsky A. G., (2021) Optimization of mitochondrial transplantation via engineered erodible hydrogels, Dean's Distinguished Lecture Series, University of Kentucky, Lexington, USA. Podium Presentation (Michael F.M.).
- 05/2021 Michael F.M., **Patel S.P.**, Vaught H.M., Sullivan P.G., DeRouche J., Dziubla T.D., Rabchevsky A. G., (2021) Optimization of engineered erodible thermal hydrogels for mitochondrial transplantation, 26th Annual Kentucky Spinal Cord & Head Injury Research Trust Symposium, Virtual Poster Presentation (Michael F.M.).
- 07/2021 **Patel S.P.**, Michael F.M. Vaught H.M., Sullivan P.G., DeRouche J., Dziubla T.D., Rabchevsky A. G., (2021) Development of a thermal-gelling, erodible hydrogel for localized delivery of viable mitochondria, 38th Annual National Neurotrauma Society Symposium, Virtual Poster Presentation.
- 07/2021 Michael F.M., Danyi S., Patel S. P., Grange P.G., Stamm S. and Rabchevsky A. G. (2021) Spasticity after rat spinal cord injury leads to widespread changes in the regulation of retained introns, 38th Annual National Neurotrauma Symposium, Selected as one of the top 20 trainee posters, Virtual Poster and Data Blitz Presentations (Michael F.M.).
- 07/2021 Stewart A., Glaser E., Bosken J., Seward C., Saghaeiannejad-Esfahani H., Bailey W., **Patel S.P.**, Sullivan P.G. and Gensel J. N-acetylcysteine amide does not improve locomotor outcomes despite restoring diminished glutathione after spinal cord injury, 38th Annual National Neurotrauma Society Symposium, Virtual Poster Presentation. (Stewart A.).
- 08/2021 Michael F.M., **Patel S.P.**, Vaught H.M., Sullivan P.G., DeRouche J., Dziubla T.D., Rabchevsky A. G., (2021) Development of thermal erodible hydrogels for subdural delivery of exogenous mitochondria following spinal cord injury, The American Society for Neural Therapy and Repair Annual Conference, Florida, USA.
- 08/2021 Michael F.M., **Patel S.P.**, Vaught H.M., Sullivan P.G., DeRouche J., Dziubla T.D., Rabchevsky A. G., (2021) Mitochondrial transplantation into the spinal cord via engineered erodible hydrogels, Military Health System Research Symposium, Florida, USA. Abstract and Poster Submitted on the website.
- 04/2022 **Patel S.P.**, Michael F.M., Arif Khan M., Tharappel J., Vaught H.M., Sullivan P.G., DeRouche J., Dziubla T.D. and Rabchevsky A. G. (2022) Exogenous mitochondrial supplementation to the injured spinal cord via engineered erodible hydrogels, 39th Annual National Neurotrauma Society Symposium, Atlanta, GA, USA.

- 04/2022 Michael F.M., **Patel S.P.**, Tharappel J., Vaught H.M. and Rabchevsky A. G. (2022) Chemogenetic silencing of ascending propriospinal neurons to modulate autonomic dysreflexia, 39th Annual National Neurotrauma Society Symposium, Atlanta, GA, USA.
- 04/2022 **Patel S.P.**, Michael F.M., Tharappel J., Vaught H.M., Arif Khan M., Sullivan P.G., DeRouchey J., Dziubla T.D. and Rabchevsky A. G. (2022) Delivering mitochondria to the spinal cord via engineered erodible hydrogels, Society for Neuroscience Annual Meeting, Hybrid Conference, San Diego, CA, USA
- 04/2022 Michael F.M., **Patel S.P.**, Vaught H.M., Tharappel J.T., Rabchevsky A.G. (2022) Reversible chemogenetic silencing of ascending propriospinal neurons modulates hemodynamic changes associated with autonomic dysreflexia in response to noxious stimuli following spinal cord injury. Society for Neuroscience Annual Meeting, Hybrid Conference, San Diego, CA, USA.
- 04/2022 Ahmed A.J., Gallegos Z., DeRouchey J.E., **Patel S.P.**, Rabchevsky A.G. and Dziubla T.D. (2023) “Erodible Thermogelling Hydrogels for Localized Mitochondria Delivery to Spinal Cord Injuries”, SFB Biomaterials Day 2022 at Vanderbilt University, Nashville TN, USA.
- 06/2022 **Patel S.P.**, Michael F.M., Khan A.F., Sullivan P.G., DeRouchey J.E., Dziubla T.D. and Rabchevsky A.G. (2022) Exogenous mitochondrial supplementation to the injured spinal cord via engineered erodible hydrogels. The 39th Annual National Neurotrauma Society Symposium, J. Neurotrauma, Hybrid Conference, Atlanta, GA, USA.
- 05/2023 Akin E.V.; Michael F.M., Tharappel J.T., Vaught H.M., Khan A.F., Ahmed J. A., Sullivan P.G., DeRouchey J.E., Dziubla T.D., Rabchevsky A.G. and Patel S.P. (2023) Effects of subdural delivery of mitochondria in combination with neuroprotective agents on cellular bioenergetics in contused spinal cord. 28th Annual Kentucky Spinal Cord & Head Injury Research Trust Symposium, Lexington, KY, USA.
- 05/2023 Jagielo-Miller J.E., Patel S.P., Prajapati P., Baily C.S., Count C.T., Rabchevsky A.G., Sullivan P.G. and Prendergast M.A. (2023) In vitro mechanical distention of culture membranes: modeling distress associated with traumatic brain injury in the Sprague Dawley rat hippocampus. 28th Annual Kentucky Spinal Cord & Head Injury Research Trust Symposium, Lexington, KY, USA.
- 05/2023 Kumari R., Vekaria H.J., DeSana A.J., Wireman O.H., Bailey W.M., Maclean S.M., Stewart A.N., Glaser E.P., Williams H.C., Sullivan P.G., Saatman K.E., Patel S.P. and Gensel J.C. (2023) Metabolic reprogramming of intra-lesion microglia and macrophage after neurotrauma. 28th Annual Kentucky Spinal Cord & Head Injury Research Trust Symposium, Lexington, KY, USA.
- 09/2023 Ahmed A.J., Gallegos Z., DeRouchey J.E., Patel S.P., Rabchevsky A.G. and Dziubla T.D. (2023) “Physiochemical Characterization of Hyaluronic Acid-Methylcellulose Hydrogels for Mitochondria Transplantation”, Annual American Institute of Chemical Engineers (AIChE) 2023 meeting: Materials Engineering and Sciences Division, Orlando, FL, USA (Abstract submitted).

XIV. RESEARCH & INTELLECTUAL CONTRIBUTIONS

SPONSORED RESEARCH PROJECTS, GRANT & CONTRACT ACTIVITIES

Active

Project Title: Mitochondrial transplantation combined with mitochondrial-targeted pharmaceuticals to treat spinal cord injury
Principal Investigator(s): A.G. Rabchevsky Ph.D.
Role in Project: Co-Investigator
Effort: 37.5%
Institution/University: University of Kentucky
Source of Funding: Department of Defense (CDMRP/SCIRP) (Extramural)
Duration of Project: 06/01/20 - 05/31/23
Total Award: \$764,927
Grant Number: SC190110

Project Title: Enhanced mitochondrial viability via engineered hydrogels for intrathecal spinal cord delivery
Principal Investigator(s): S.P. Patel Ph. D. and A.G. Rabchevsky Ph.D.
Role in Project: Multi-PI
Effort: 57.5%
Institution/University: University of Kentucky
Source of Funding: NIH/NINDS (Extramural)
Duration of Project: 10/01/20 - 09/30/25
Total Award: \$2,250,000
Grant Number: 1 R01 NS119337-01

Project Title: Development of a Novel Animal Model for Spinal Cord Injury with Sepsis
Principal Investigator(s): S.P. Patel and H. Saito
Role in Project: Multi-PI
Effort: 18%
Institution/University: University of Kentucky
Source of Funding: NIH/NINDS (Extramural)
Duration of Project: 4/2023 - 3/2025
Total Award: \$419,944
Grant Number: 1R21NS128749-01A1

Scored

Project Title: The role of macrophage metabolism and age in recovery from spinal cord injury (**9th percentile**)
Principal Investigator(s): S.P. Patel and J.C. Gensel
Role in Project: Multi-PI
Effort: 35%
Institution/University: University of Kentucky
Source of Funding: NIH/NINDS (Extramural)

Duration of Project: 04/01/23 - 03/31/27
Total Award: \$3,440,174
Grant Number: N/A

Pending

Project Title: Compounding Effects Of Spinal Cord Injury And Sepsis On Mitochondrial Dysfunction
Principal Investigator(s): S.P. Patel
Role in Project: PI
Effort: 10 %
Institution/University: University of Kentucky
Source of Funding: Morton Cure Paralysis Fund
Duration of Project: 04/2023 - 03/2024
Total Award: \$75,000
Grant Number: N/A

Inactive

Project Title: Ketone body administration to treat spinal cord injury
Project Number/Agency: 260771 The Craig H. Neilsen Foundation – Pilot Research Grant
Principal Investigator(s): S. P. Patel Ph.D.
Role in Project: Principal Investigator
Date Started: 07/01/13
Date Completed: 06/30/16
Total Award: \$298,026
Institution/University: University of Kentucky

Project Title: Autologous mitochondrial replacement strategies to promote recovery after spinal trauma
Project Number/Agency: No ID (Agency- Conquer Paralysis Now)
Principal Investigator(s): A.G. Rabchevsky Ph.D.
Role in Project: Co-Investigator
Date Started: 09/01/15
Date Completed: 08/31/16
Total Award: \$49,981
Institution/University: University of Kentucky

Project Title: Continuous sensor-based home-cage recordings for SCI research
Project Number/Agency: T659612 The Craig H. Neilsen Foundation – Pilot Research Grant
Principal Investigator(s): S. Hochman Ph.D.
Role in Project: Co-Investigator
Date Started: 08/31/16
Date Completed: 08/30/18
Total Award: \$59,874
Institution/University: University of Kentucky and Emory University

Project Title: Mitochondrial transplantation and alternative biofuel administration to treat spinal cord injury
 Project Number/Agency: CCTS-University of Kentucky
 Principal Investigator(s): S.P. Patel Ph.D.
 Role in Project: Principle Investigator
 Date Started: 08/15/17
 Date Completed: 02/14/19
 Total Award: \$50,000
 Institution/University: University of Kentucky

Project Title: Mitochondrial transplantation strategies to promote recovery after spinal cord injury
 Project Number: 1 R21 NS096670-01
 Principal Investigator(s): A.G. Rabchevsky Ph.D.
 Role in Project: Co-Investigator
 Date Started: 04/01/16
 Date Completed: 03/31/19 Extension
 Total Award: \$413,875
 Institution/University: University of Kentucky

Project Title: Changing serotonin receptor 2C splice variants to combat spasticity after spinal cord injury
 Project Number: 1 R21 NS098186-01A1
 Principal Investigator(s): A.G. Rabchevsky Ph.D. and S. Stamm Ph.D.
 Role in Project: Co-Investigator
 Date Started: 04/01/17
 Date Completed: 03/31/19
 Total Award: \$413,875
 Institution/University: University of Kentucky

Project Title: Pioglitazone fosters neuroprotection via specific interaction with mitoNEET
 Principal Investigator(s): A.G. Rabchevsky Ph.D.
 Role in Project: Co-Investigator
 Institution/University: University of Kentucky
 Source of Funding: The Craig H. Nielsen Foundation - Senior Research Grant (Extramural)
 Duration of Project: 07/01/17 – 06/30/21
 Total Award: \$599,781
 Grant Number: 476719

Project Title: Chronic muscle weakness in sepsis survivors.
 Principal Investigator(s): H. Saito Ph.D.
 Role in Project: Co-Investigator
 Institution/University: University of Kentucky
 Source of Funding: NIH-NIGMS (Extramural)
 Duration of Project: 09/01/17 - 08/31/22
 Total Award: \$1,162,800
 Grant Number: R01 GM126181