

# Jared M Cregg, PhD

Blegdamsvej 3B - MT 7.4  
2200 Copenhagen N  
Denmark

jared.cregg@sund.ku.dk  
<https://jmcregg.github.io>  
+45 2267 3118

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## Education

- 2018      **PhD, Neuroscience**  
Case Western Reserve University  
Cleveland, OH
- 2010      **BSE, Biomedical Engineering**  
Michigan Technological University  
Houghton, MI

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## Research Positions

- 2017 -      **Postdoctoral Scholar**  
Laboratory of Prof. Ole Kiehn  
Department of Neuroscience, University of Copenhagen  
Copenhagen, Denmark
- 2010 - 2017      **Graduate Student**  
Laboratories of Drs. Jerry Silver & Lynn T Landmesser  
Department of Neuroscience, Case Western Reserve University  
Cleveland, OH
- 2009 - 2010      **Research Assistant**  
Laboratory of Dr. John W McDonald, III  
Department of Neurology, Johns Hopkins University  
Baltimore, MD
- 2007 - 2009      **Research Assistant**  
Laboratory of Asst. Prof. Ryan J Gilbert  
Department of Biomedical Engineering, Michigan Technological University  
Houghton, MI

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## Publications

### Postdoc

1. **Cregg JM**<sup>†</sup>, Mirdamadi JL, Fortunato C, Okorokova EV, Kuper C, Nayeem R, Byun AJ, Avraham C, Buonocore A, Winner TS, Mildren RL. (2023) Highlights from the 31<sup>st</sup> Annual Meeting of the Society for the Neural Control of Movement. *Journal of Neurophysiology* 129:220-234. <sup>†</sup>Corresponding author. ([pdf](#))
2. Leiras R\*, **Cregg JM**\*, Kiehn O. (2022) Brainstem circuits for locomotion. *Annual Review of Neuroscience* 45:63-85. \*Co-first authors. ([pdf](#))
3. **Cregg JM**, Leiras R, Montalant A, Wanken P, Wickersham IR, Kiehn O. (2020) Brainstem neurons that command mammalian locomotor asymmetries. *Nature Neuroscience* 23:730-740. ([pdf](#))

### Graduate

4. Vagnozzi AN, Garg K, Dewitz C, Moore MT, **Cregg JM**, Jeannotte L, Zampieri N, Landmesser LT, Philippidou P. (2020) Phrenic-specific transcriptional programs shape respiratory motor output. *eLife* 9:e52859. ([pdf](#))

5. Lager AM, Corradin O, **Cregg JM**, Elitt MS, Shick E, Clayton BL, Allan KC, Olsen HE, Madhavan M, Tesar PJ. (2018) Rapid functional genetics of the oligodendrocyte lineage using pluripotent stem cells. *Nature Communications* 9:3708. ([pdf](#))
6. **Cregg JM**, Chu KA, Dick TE, Landmesser LT<sup>†</sup>, Silver J<sup>†</sup>. (2017) Phasic inhibition as a mechanism for generation of rapid respiratory rhythms. *Proceedings of the National Academy of Sciences USA* 114:12815-12820. <sup>†</sup>Co-corresponding authors. ([pdf](#))
7. **Cregg JM**, Chu KA, Hager LE, Maggard RS, Stoltz DR, Edmond M, Alilain WJ, Philippidou P, Landmesser LT, Silver J. (2017) A latent propriospinal network can restore diaphragm function after high cervical spinal cord injury. *Cell Reports* 21:654-665. ([pdf](#))
8. Niemi JP, DeFrancesco-Lisowitz A, **Cregg JM**, Howarth M, Zigmond RE. (2015) Overexpression of the monocyte chemokine CCL2 in dorsal root ganglion neurons causes a conditioning-like increase in neurite outgrowth and does so via a STAT3 dependent mechanism. *Experimental Neurology* 275:25-37. ([pdf](#))
9. Gardner RT, Wang L, Lang BT, **Cregg JM**, Dunbar CL, Woodward WR, Silver J, Ripplinger CM, Habecker BA. (2015) Targeting protein tyrosine phosphatase sigma after myocardial infarction restores cardiac sympathetic innervation and prevents arrhythmias. *Nature Communications* 6:6235. ([pdf](#))
10. Lang BT, **Cregg JM**, DePaul MA, Tran AP, Xu K, Dyck SM, Madalena KM, Brown BP, Weng YL, Li S, Karimi-Abdolrezaee S, Busch SA, Shen Y, Silver J. (2015) Modulation of the proteoglycan receptor PTP $\sigma$  promotes recovery after spinal cord injury. *Nature* 518:404-408. ([pdf](#))
11. **Cregg JM**, DePaul MA, Filous AR, Lang BT, Tran A, Silver J. (2014) Functional regeneration beyond the glial scar. *Experimental Neurology* 253:197-207. ([pdf](#))
12. Hilton BJ, Lang BT, **Cregg JM**. (2012) Keratan sulfate proteoglycans in plasticity and recovery after spinal cord injury. *Journal of Neuroscience* 32:4331-4333. ([pdf](#))

#### Undergraduate

13. Hurtado A\*, **Cregg JM\***, Wang HB, Wendell DF, Oudega M, Gilbert RJ, McDonald JW. (2011) Robust CNS regeneration after complete spinal cord transection using aligned poly-L-lactic acid microfibers. *Biomaterials* 32:6068-6079. \*Co-first authors. ([pdf](#))
14. Wang HB, Mullins ME, **Cregg JM**, McCarthy CM, Gilbert RJ. (2010) Varying the diameter of aligned electrospun fibers alters neurite outgrowth and Schwann cell migration. *Acta Biomaterialia* 6:2970-2978. ([pdf](#))
15. **Cregg JM**, Wiseman SL, Pietrzak-Goetze NM, Smith MR, Jaroch DB, Clupper DL, Gilbert RJ. (2010) A rapid, quantitative method for assessing axonal extension on biomaterial platforms. *Tissue Engineering Part C: Methods* 16:167-172. ([pdf](#))
16. Wang HB, Mullins ME, **Cregg JM**, Hurtado A, Oudega M, Trombley MT, Gilbert RJ. (2009) Creation of highly aligned electrospun poly-L-lactic acid fiber for nerve regeneration applications. *Journal of Neural Engineering* 6:016001. ([pdf](#))

#### Bibliometric Summary

Web of Science: >1700 citations, h-index 12 ([link](#))

Google Scholar: >2500 citations, h-index 15 ([link](#))

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#### Funding

2021 - 2024	Postdoctoral Fellowship Lundbeck Foundation \$380,000 USD
2018 - 2020	EMBO Long-Term Fellowship European Molecular Biology Organization (EMBO) \$120,000 USD

2016 - 2017	Core Pilot Grant CTSC Case Western Reserve University \$7,100
2010 - 2013	Graduate Research Fellowship National Science Foundation (NSF) \$123,500 USD

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### Invited/Conference Talks

2023*	Benzon Symposium: Bringing Circuit for Movement Together ( <i>*planned</i> ) <i>Copenhagen, Denmark</i>
2023*	Motor Control: Spinal Circuits and Beyond ( <i>*planned</i> ) <i>St Andrews, Scotland</i>
2023	Annual Meeting of the International Basal Ganglia Society <i>Stockholm, Sweden</i>
2023	Department of Neuroscience, Karolinska Institutet <i>Stockholm, Sweden</i>
2023	School of Psychology and Neuroscience, University of St Andrews <i>St Andrews, Scotland</i>
2023	Department of Neurobiology and Behavior, Stony Brook University <i>Stony Brook, NY</i>
2023	Department of Neuroscience, Yale University <i>New Haven, CT</i>
2022	Department of Neuroscience, Case Western Reserve University <i>Cleveland, OH</i>
2022	Annual Meeting of the Society for the Neural Control of Movement <i>Dublin, Ireland</i>
2022	Basal Ganglia Gordon Research Seminar <i>Ventura, CA</i>
2021	Brain States Meeting, Danish Society for Neuroscience <i>Copenhagen, Denmark</i>
2020	Emerging Neuroscientists Seminar Series, Sainsbury Wellcome Center <i>Virtual seminar</i>
2020	International Online Spinal Cord Injury Research Seminars <i>Virtual seminar</i>
2019	Workshop on Neuronal Circuits in Motor Behavior, Okinawa Institute of Science & Technology <i>Okinawa, Japan</i>
2016	National Neurotrauma Society Annual Meeting <i>Lexington, KY</i>
2015	Department of Pulmonary, Critical Care, and Sleep Medicine, Case Western Reserve University <i>Cleveland, OH</i>
2010	Society for Biomaterials Annual Meeting <i>Seattle, WA</i>
2008	Biomedical Engineering Society Annual Meeting <i>St. Louis, MO</i>

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## Awards

- 2022    Scholarship Award, Society for the Neural Control of Movement
- 2021    Trainee Professional Development Award, Society for Neuroscience
- 2018    Best Poster Award, The Brain Prize Meeting, Middlefart, Denmark
- 2018    Doctoral Excellence Award in Neurosciences, Case Western Reserve University
- 2015    Travel Award, International Symposium on Neural Regeneration
- 2008    Summer Undergraduate Research Fellowship, NASA / Michigan Space Grant Consortium
- 2008    Summer Undergraduate Research Fellowship, Michigan Technological University
- 2008    Barry M. Goldwater Scholarship
- 2008    Grand Prize Winner, Graduate Research Forum Poster Competition, Michigan Technological University

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## Mentoring

- 2020 - 2022    Simrandeep K Sidhu  
MS Thesis in Neuroscience, University of Copenhagen  
*Current PhD student in Neuroscience Academy Denmark*
- 2018 - 2020    Paulina Wanken  
MS Thesis in Human Biology, University of Copenhagen  
*Current PhD student at Max Planck Institute*
- 2015 - 2017    Kevin A Chu  
BS Thesis in Biology, Case Western Reserve University  
*Medical Graduate of NYIT College of Osteopathic Medicine*

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## Teaching

### *University of Copenhagen*

- 2023            PhD Course: Open Neurophysiology – Analysis Tools & Datasets  
Lecture: 'Tracking Locomotor Asymmetries using DeepLabCut' ([link](#))  
Department of Neuroscience
- 2022            PhD Course: Animal Models of Disease and Behavior  
Lecture: 'In Vivo Calcium Recording' ([slides](#))  
Department of Neuroscience
- 2021            Workshop on Animal Models  
Lecture: 'Measuring Mouse Behavior: Dissection of Circuits for Motor Control'  
Graduate Program in In Vivo Pharmacology
- 2018 - 2022    MS Course: Neuronal Signaling/Neuroscience  
Lecture: 'In Vivo Optogenetics & Chemogenetics' ([slides](#))  
Department of Neuroscience

### *Case Western Reserve University*

- 2017            PHOL519: Cardiorespiratory Physiology  
Cardiovascular Control in Disease: Cardiac Arrhythmia ([syllabus](#)) ([slides](#))  
Department of Physiology & Biophysics
- 2017            PHOL466: Cell Signaling  
Neurotransmitter-Gated Ion Channels ([syllabus](#))  
Department of Physiology & Biophysics

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## Patents

1. Hurtado A, Gilbert RJ, Wang HB, **Cregg JM**, Mullins ME, Oudega M. Three-dimensional scaffolds, methods for fabricating the same, and methods of treating a peripheral nerve or spinal cord injury. US Patent 10,413,391.
2. Silver J, Lang BT, **Cregg JM**, Weng YL, Li H, Wu W. Compositions and methods of treating root avulsion injury. US Patent 10,258,672.
3. Lang BT, **Cregg JM**, Weng YL, Silver J. Compositions and methods for inhibiting the activity of lar family phosphatases. US Patent 9,937,242.

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## Conference Abstracts

- 2022 Cregg JM, Sidhu SK, Leiras R, Kiehn O. Basal ganglia-spinal cord pathway that commands locomotor gait asymmetries. Society for Neuroscience Annual Meeting  
*San Diego, CA*
- 2022 Cregg JM, Sidhu SK, Leiras R, Kiehn O. Basal ganglia-spinal cord pathway that commands locomotor asymmetries. Federation of European Neuroscience Societies Forum  
*Paris, France*
- 2022 Cregg JM, Leiras R, Kiehn O. Basal ganglia-spinal cord pathway that commands locomotor asymmetries. Basal Ganglia Gordon Research Conference  
*Ventura, CA*
- 2021 Cregg JM, Leiras R, Kiehn O. Basal ganglia-spinal cord pathway that mediates locomotor asymmetries. Society for Neuroscience Annual Meeting  
*Virtual meeting*
- 2019 Cregg JM, Leiras R, Kiehn O. Brainstem command neurons that specify locomotor direction. Society for Neuroscience Annual Meeting  
*Chicago, IL*
- 2018 Cregg JM, Leiras R, Kiehn O. Spinal projection neurons that control direction orientation during mammalian locomotion. The Brain Prize Meeting  
*Middelfart, Denmark*
- 2016 Cregg JM, Chu K, Dick T, Landmesser LT, Silver J. Optogenetic dissection reveals principles underlying respiratory frequency control. Society for Neuroscience Annual Meeting  
*San Diego, CA*
- 2016 Cregg JM, Chu K, Dick T, Landmesser LT, Silver J. Optogenetic dissection reveals principles underlying respiratory frequency control. Cell Symposium: Big Questions in Neuroscience  
*San Diego, CA*
- 2015 Cregg JM, Landmesser LT, Silver J. Control of diaphragm activity in the absence of supraspinal input: the contribution of interneurons. International Symposium on Neural Regeneration  
*Pacific Grove, CA*
- 2015 Cregg JM, Landmesser LT, Silver J. Control of diaphragm activity in the absence of supraspinal input: the contribution of interneurons. Society for Neuroscience Annual Meeting  
*Chicago, IL*
- 2009 Cregg JM, Wang HB, Gilbert RJ. The role of fiber density in axon motility on aligned topography. Biomedical Engineering Society Annual Meeting  
*Pittsburgh, PA*
- 2009 Cregg JM, Wang HB, Gilbert RJ. Midwest Biomedical Engineering Conference. The role of aligned fiber density in axon motility  
*Ann Arbor, MI*

- 2008 Cregg JM, Wang HB, Mullins ME, Gilbert RJ. Development of polymeric nerve guidance conduits that contain anisotropic cues including aligned microfibers and gradients of adsorbed laminin-1. Design of Medical Devices Conference  
*Minneapolis, MN*
- 2007 Cregg JM, Wang HB, Trombley MT, Gilbert RJ. Anisotropic micro-fibrous scaffolds for nerve regeneration applications. Biomedical Engineering Society Annual Meeting  
*Los Angeles, CA*

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### Short Courses/Workshops (Attendee)

- 2022 EMBO Course on Laboratory Leadership  
*Virtual course*
- 2020 EMBO Course on Negotiation for Scientists  
*Heidelberg, Germany*
- 2016 Brain Function: Development, Aging and Disease  
*Lexington, KY*
- 2010 Practical Training Course in Confocal Microscopy and Stereology  
*Chicago, IL*
- 2009 Tissue Engineering of the Nervous System  
*Pittsburgh, PA*
- 2008 Peripheral Nerve Regeneration, Georgia Institute of Technology  
*Atlanta, GA*

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### Service

#### Committees

Nominations Committee - Student Invited Speaker, Department of Neuroscience, Case Western Reserve University (2015).

#### Peer Review

Ad hoc reviewer for *Scientific Reports*, *Experimental Neurology*  
Co-reviewer with Prof. Ole Kiehn for *Cell*, *Neuron*, *Nature Communications*, *Frontiers in Neuroscience*  
Co-reviewer with Dr. Jerry Silver for *Nature Neuroscience*

#### Society Membership

Society for Neuroscience (2015 - present)  
American Association for the Advancement of Science (2010 - present)

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