Joshua Crapser
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EDUCATION:

Doctor of Philosophy, **Biological Sciences** (Neurobiology and Behavior; June 2021)
University of California, Irvine
GPA 4.0/4.0

Bachelor of Science, **Biological Sciences** (May 2013)
University of Connecticut
GPA: 4.0/4.0

RESEARCH EXPERIENCE:

Postdoctoral Scholar (October 2021 –):
Department of Neurology and Neurological Sciences, Stanford University
Mentorship: Dr. Katrin Andreasson

- Research focus: Studying myeloid metabolism in the context of aging and neurodegenerative disease, and how modulation of central nervous system and/or peripheral myeloid cell energy dynamics alter disease pathogenesis.

Graduate Student (September 2015 – June 2021); Postdoctoral Scholar (June 2021 – September 2021):
Department of Neurobiology and Behavior, University of California, Irvine
Mentorship: Dr. Kim Green

- Research focus: Investigation of the role of microglia in Huntington's and Alzheimer's disease pathology and symptom development via CSF1R inhibition, with particular focus on the involvement of the extracellular matrix. Characterizing dynamics of microglial repopulation following elimination induced by CSF1R inhibition.

Research Assistant (January 2012 – August 2015):
Neuroscience Department, University of Connecticut Health Center
Mentorship: Dr. Louise McCullough

- Research focus: Investigation of the role of aging and inflammation in stroke outcome, particularly pertaining to gut permeability and bacterial translocation from the gut as a source of post-stroke infection.

PUBLISHED WORK:

Peer-Reviewed Articles: *(Asterisk denotes co-first authorship)*

1) **Crapser, J.D.***, Arreola, M.A.*, Tsourmas, K.I., Green, K.N. (2021). Microglia as hackers of the matrix: sculpting synapses and the extracellular space. *Cellular & Molecular Immunology* 18, 2472-2488.
2) Arreola, M.A., Soni, N., **Crapser, J.D.**, Hohsfield, L.A., Elmore, M.R.P., Matheos, D.P., Wood, M.A., Swarup, V., Mortazavi, A., Green, K.N. (2021). Microglial dyshomeostasis drives perineuronal net and synaptic loss in a CSF1R+/− mouse model of ALSP, which can be rescued via CSF1R inhibitors. *Science Advances* 7, eabg1601
3) Hohsfield, L.A., Najafi, A.R., Ghorbanian, Y., Soni, N., **Crapser, J.**, Figueroa Velez, D.X., Jiang, S., Royer, S.E., Kim, S.J., Henningfield, C.M., Anderson, A., Gandhi, S.P., Mortazavi, A., Inlay, M.A., Green, K.N. (2021). Subventricular zone/white matter microglia reconstitute the empty adult microglial niche in a dynamic wave. *eLife* 10, e66738.
4) Green, K.N., **Crapser, J.D.**, Hohsfield, L.A. (2020). To Kill a Microglia: A Case for CSF1R Inhibitors. *Trends in Immunology* 41, 771-784.
5) **Crapser, J.D.**, Spangenberg, E.E., Barahona, R.A., Hohsfield, L.A., Green, K.N. (2020). Microglia facilitate loss of perineuronal nets in the Alzheimer's disease brain. *EBioMedicine* 58, 102919.
    - Commentary: Reichelt, A.C. (2020). Is loss of perineuronal nets a critical pathological event in Alzheimer's disease? *EBioMedicine* 59, 102946.
6) **Crapser, J.D.**, Ochaba, J., Soni, N., Reidling, J.C., Thompson, L.M., Green, K.N. (2019). Microglial depletion prevents extracellular matrix changes and striatal volume reduction in a model of Huntington's disease. *Brain* 143, 266-288.
7) Spangenberg, E., Severson, P.L., Hohsfield, L.A., **Crapser, J.**, Zhang, J., Burton, E.A., Zhang, Y., Spevak, W., Lin, J., Phan, N.Y., Habets, G., Rymar, A., Tsang, G., Walters, J., Nespi, M., Singh, M., Broome, S., Ibrahim, P., Zhang, C., Bollag, G., West, B.L., Green, K.N. (2019). Sustained microglial depletion with CSF1R inhibitor impairs parenchymal plaque development in an Alzheimer's disease model. *Nature Communications* 10, 3758.
8) Ritzel, R.M., Al Mamun, A., **Crapser, J.**, Verma, R., Patel, A.R., Knight, B.E., Harris, N., Mancini, N., Roy-O'Reilly, M., Ganesh, B.P., Liu, F., McCullough, L.D. (2019). CD200-CD200R1 inhibitory signaling prevents spontaneous bacterial infection and promotes resolution of neuroinflammation and recovery after stroke. *J. Neuroinflammation* 16, 40.
9) Morozko, E.L., Ochaba, J., Hernandez, S.J., Lau, A., Sanchez, I., Orellana, I., Kopan, L., **Crapser, J.**, Duong, J.H., Overman, J., Yeung, S., Steffan, J.S., Reidling, J., Thompson, L.M. (2018). Longitudinal Biochemical Assay Analysis of Mutant Huntingtin Exon 1 Protein in R6/2 Mice. *J. Huntingtons Dis.* 7, 321-335.
10) Najafi, A.R., **Crapser, J.**, Jiang, S., Ng, W., Mortazavi, A., West, B.L., Green, K.N. (2018). A limited capacity for microglial repopulation in the adult brain. *Glia* 66, 2385-2396.
11) Ritzel, R.M., Lai, Y.J., **Crapser, J.D.**, Patel, A.R., Schrecengost, A., Grenier, J.M., Mancini, N.S., Patrizz, A., Jellison, E.R., Morales-Scheihing, D., Venna, V.R., Kofler, J.K., Liu, F., Verma, R., McCullough, L.D. (2018). Aging alters the immunological response to ischemic stroke. *Acta Neuropathol.* 136, 89-110.
12) Verma, R., Ritzel, R.M., **Crapser, J.**, Friedler, B.D., McCullough, L.D. (2018). Evaluation of the Neuroprotective Effect of Sirt3 in Experimental Stroke. *Transl. Stroke Res.* 10, 57-66.

13) Ritzel, R.M., Patel, A.R., Spychala, M., Verma, R., **Crapser, J.**, Koellhoffer, E.C., Schrecengost, A., Jellison, E.R., Zhu, L., Venna, V.R., McCullough, L.D. (2017). Multiparity improves outcomes after cerebral ischemia in female mice despite features of increased metabovascular risk. *PNAS*. 114, 5673-5682.
14) **Crapser, J.***, Ritzel, R.*, Verma, R., Venna, V.R., Liu, F., Chauhan, A., Koellhoffer, E., Patel, A., Ricker, A., Maas, K., Graf, J., and McCullough, L.D. (2016). Ischemic stroke induces gut permeability and enhances bacterial translocation leading to sepsis in aged mice. *Aging* 8, 1049-1063.
15) Ritzel, R.M., **Crapser, J.**, Patel, A.R., Verma, R., Grenier, J.M., Chauhan, A., Jellison, E.R., and McCullough, L.D. (2016). Age-Associated Resident Memory CD8 T Cells in the Central Nervous System Are Primed To Potentiate Inflammation after Ischemic Brain Injury. *J. Immunol*. 196, 3318-3330.
16) Ritzel, R.M., Pan, S.J., Verma, R., Wizeman, J., **Crapser, J.**, Patel, A.R., Lieberman, R., Mohan, R., and McCullough, L.D. (2016). Early retinal inflammatory biomarkers in the middle cerebral artery occlusion model of ischemic stroke. *Mol. Vis.* 22, 575-588.
17) Verma, R., Harris, N.M., Friedler, B.D., **Crapser, J.**, Patel, A.R., Venna, V., and McCullough, L.D. (2016). Reversal of the Detrimental Effects of Post-Stroke Social Isolation by Pair-Housing is Mediated by Activation of BDNF-MAPK/ERK in Aged Mice. *Sci. Rep.* 6, 25176.
18) Friedler, B.*, **Crapser, J.***, and McCullough, L. (2015). One is the deadliest number: the detrimental effects of social isolation on cerebrovascular diseases and cognition. *Acta Neuropathol*. 129, 493-509.
19) Ritzel, R.M., Patel, A.R., Grenier, J.M., **Crapser, J.**, Verma, R., Jellison, E.R., and McCullough, L.D. (2015). Functional differences between microglia and monocytes after ischemic stroke. *J. Neuroinflammation* 12, 106-015-0329-1.
20) Ritzel, R.M., Patel, A.R., Pan, S., **Crapser, J.**, Hammond, M., Jellison, E., and McCullough, L.D. (2015). Age- and location-related changes in microglial function. *Neurobiol. Aging* 36, 2153-2163.
21) Venna, V.R., Verma, R., O'Keefe, L.M., Xu, Y., **Crapser, J.**, Friedler, B., and McCullough, L.D. (2014). Inhibition of mitochondrial p53 abolishes the detrimental effects of social isolation on ischemic brain injury. *Stroke* 45, 3101-3104.

RESEARCH ABSTRACTS:

1) **Crapser, J.,** Ochaba, J., West, B., Reidling, J., Thompson, L., Green, K. (2017). Microglial elimination reduces pathology and delays motor symptoms in a mouse model of HD. Research and Education in Memory Impairments and Neurological Disorders (ReMIND) 8th Annual Emerging Scientists Symposium at the University of California, Irvine. Irvine, California, USA.
2) **Crapser, J.**, Ritzel, R., Doran, S., Koellhoffer, E., Patel, A., Friedler, B., Verma, R., McCullough, L. (2015). Worsening of stroke outcome with age is associated with increased intestinal permeability and peripheral inflammation. International Stroke Conference. Nashville, TN.
3) Verma, R., Harris, N., Friedler, B., **Crapser, J.**, Patel, A., Venna, V., McCullough, L. (2015). Pair housing reverses the detrimental effect of social isolation and restores BDNF and MBP in aged mice after stroke. International Stroke Conference. Nashville, TN.
4) **Crapser, J.**, Ritzel, R., Doran, S., Koellhoffer, E., Patel, A., Friedler, B., McCullough, L. (2014). Age-related changes in intestinal permeability and gut microbiota after ischemic stroke. XII International Congress of Neuroimmunology (ISNI). Mainz, Germany.
5) Ritzel, R., Patel, A., **Crapser, J**., McCullough, L. (2014). CD8 T cell recruitment in the normal aging CNS.

XII International Congress of Neuroimmunology (ISNI). Mainz, Germany.

6) **Crapser, J.**, Verma, R., McCullough, L. (2014). SIRT3 is upregulated during stroke and contributes to ischemic damage by depressing the transcription of nuclear genes. International Stroke Conference. San Diego, CA.

ACADEMIC AWARDS:

- Allergan Foundation Graduate Awards (2020, 2021)
- Ruth L. Kirschstein F31 National Research Service Award (2019)
- William D. Redfield Graduate Fellowship Award (2019)
- UCI BioSci Graduate Fellowship (2015)
- UCI Graduate Dean's Recruitment Fellowship (2015)
- Babbidge Scholar Award (2010-2013)
- MassMutual Scholars Scholarship (2009-2012)
- American Heart Association Student Summer Fellowship (2013)

TEACHING EXPERIENCE:

- Teaching Assistant, Neurobiology Lab (undergraduate senior course) (2017-2018), University of California, Irvine. Prepared and presented lecture and course material. Prepared and graded assignments and exams. Conducted laboratory sections.
- Teaching Assistant, Neurobiology and Behavior (undergraduate senior course) (2017-2018), University of California, Irvine. Prepared and graded test material. Met with students to discuss course material.
- Teaching Assistant, DNA to Organisms (undergraduate freshman course) (2016), University of California, Irvine. Prepared and presented lecture and course material. Prepared and graded assignments and exams.

PROFESSIONAL REFERENCES:

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