

Partial Publication List for (FreezeScan) Fear Conditioning System

May 2026
Clever Sys Inc

- Katherine M.J. McMurray, Andrew Winter, Rebecca Ahlbrand, Sachi Shukla, Aravind Kalathill, Andrew Gaulden, Benjamin Packard, Allan-Hermann Pool, Steve Davidson, Jayme R. McReynolds, James P. Herman, Renu Sah. Projections from subfornical organ to infralimbic cortex modulate carbon dioxide associated fear. bioRxiv 2026.05.15.725536; doi: <https://doi.org/10.64898/2026.05.15.725536>
- Salisbury AJ, Figueroa L, Martinowich K, Totty MS. Cortistatin neurons in the prelimbic cortex regulate seizure susceptibility in female mice via BDNF-TrkB signaling. bioRxiv [Preprint]. 2026 Feb 1:2026.01.28.702318. doi: 10.64898/2026.01.28.702318. PMID: 41659551; PMCID: PMC12873827.
- Zoe Anderson, Ryan G. Parsons. The influence of context pre-exposure and shock number on contextual fear conditioning in male and female rats. Behavioural Brain Research, Volume 496, 2026, 115856, ISSN 0166-4328, <https://doi.org/10.1016/j.bbr.2025.115856>.
- Lin, Chen-Cheng and Chen, Chih-Wei and Chen, Yu-Wen and Cheng, Yu-Yen and Liu, Cheng-Che and Cheng, Ming-Te and Liu, Yia-Ping, Acute caffeine selectively rectifies overgeneralization but not extinction deficits of fear in rats following single-prolonged stress exposure. Available at SSRN: <https://ssrn.com/abstract=5869427> or <http://dx.doi.org/10.2139/ssrn.5869427>
- Allgire E, McAlees JW, Ahlbrand RA, Mancz E, Vollmer LL, Winter A, McMurray KMJ, Maile L, Sanders B, Ryan WG, Pool AH, Ifergan I, Wohleb ES, Davidson S, McCullumsmith RE, Lewkowich IP, Sah R. A novel interoceptive subfornical organ to infralimbic cortex circuit relays airway inflammation effects on fear extinction. bioRxiv [Preprint]. 2025 Jul 18:2025.07.16.664367. doi: 10.1101/2025.07.16.664367. Update in: J Neuroinflammation. 2026 May 18. doi: 10.1186/s12974-026-03834-y. PMID: 40791555; PMCID: PMC12338717.
- Kishimoto Y, Kubota T, Nakashima K, Kirino Y. rTg4510 Tauopathy Mice Exhibit Non-Spatial Memory Deficits Prevented by Doxycycline Treatment. Brain Sciences. 2025; 15(11):1183. <https://doi.org/10.3390/brainsci15111183>
- Mukherjee U, Basu B, Beyer SE, Ghodsi S, Robillard N, Vanrobaeys Y, Taylor EB, Abel T, Chatterjee S. Histone Lysine Crotonylation Regulates Long-Term Memory Storage. bioRxiv [Preprint]. 2025 Feb 19:2025.02.19.639114. doi: 10.1101/2025.02.19.639114. PMID: 40027819; PMCID: PMC11870504.
- J. Daniel Obray, Adam R. Denton, Jayda Carroll-Deaton, Kristin Marquardt, L. Judson Chandler, Michael D. Scofield, Enhanced fear extinction through infralimbic perineuronal net digestion:

- The modulatory role of adolescent alcohol exposure, *Alcohol*, Volume 123, 2025, Pages 57-67, ISSN 0741-8329, <https://doi.org/10.1016/j.alcohol.2024.12.006>.
- Araya P, Niemeyer B, Schade K ...Interferon signaling modulates Down syndrome-associated Alzheimer's disease pathology in a mouse model. *iScience*, 2025; 28
- Kraatz G, Xie HTH, Long H, Walker C-D. Neonatal estradiol and early adversity interact to modify basolateral amygdala morphology and adult behavior in female rats. *J Neuroendocrinol.* 2025;37(7):e13483. doi:10.1111/jne.13483
- Featherstone RE, Li H, Sengar AS, Borgmann-Winter KE, Melnychenko O, Crown LM, Gifford RL, Amirfathi F, Banerjee A, Tran A, Parekh K, Heller M, Zhang W, Gallop RJ, Marc AD, Komal P, Salter MW, Siegel SJ, Hahn CG. Protein-protein interaction-interfering peptide rescues dysregulated NMDA receptor signaling. *JCI Insight.* 2025 Dec 4;11(2):e189634. doi: 10.1172/jci.insight.189634. PMID: 41343242; PMCID: PMC12892891.
- Barbour AJ, Hoag K, Cornblath EJ, Chavez A, Lucas A, Li X, Zebrowitz S, Hassman C, Vazquez O, Xie SX, Lee EB, Davis KA, Lee VMY, Talos DM, Jensen FE. Hyperactive neuronal networks enhance tau spread in an Alzheimer's disease mouse model. *bioRxiv [Preprint]*. 2025 Sep 18:2024.12.01.625514. doi: 10.1101/2024.12.01.625514. PMID: 39677701; PMCID: PMC11642807.
- Chien, YC., Lin, SH., Lien, CC. et al. Lacking ASIC1a in ASIC4-positive amygdala/bed nucleus of the stria terminalis (BNST) neurons reduces anxiety and innate fear in mice. *J Biomed Sci* 32, 43 (2025). <https://doi.org/10.1186/s12929-025-01138-6>
- Shih JZ, Kuo CC. Medial orbitofrontal cortex activation reduces discrimination for threat in male rats. *Learn Mem.* 2025 Sep 19;32(9-10):a054107. doi: 10.1101/lm.054107.125. PMID: 40973500; PMCID: PMC12543027.
- nature** Shi, S.M., Suh, R.J., Shon, D.J. et al. Glycocalyx dysregulation impairs blood–brain barrier in ageing and disease. *Nature* 639, 985–994 (2025). <https://doi.org/10.1038/s41586-025-08589-9>
- Zhu, C., Liu, X. Behavioral and pathological characteristics of 5xFAD female mice in the early stage. *Sci Rep* 15, 6924 (2025). <https://doi.org/10.1038/s41598-025-90335-2>
- Chen C, Merrill RA, Jong CJ, Strack S. Driving mitochondrial fission improves cognitive, but not motor deficits in a mouse model of Ataxia of Charlevoix-Saguenay. *Res Sq [Preprint]*. 2024 Apr 10:rs.3.rs-4178088. doi: 10.21203/rs.3.rs-4178088/v1. Update in: *Cerebellum*. 2024 Oct;23(5):2042-2049. doi: 10.1007/s12311-024-01701-1. PMID: 38659734; PMCID: PMC11042405.
- Clarke M, Remesal L, Lentz L ...Prenatal delivery of a therapeutic antisense oligonucleotide achieves broad biodistribution in the brain and ameliorates Angelman syndrome phenotype in mice. *Molecular Therapy*, 2024; 32, 935-951
- Heinemans, M., Moita, M.A. Looming stimuli reliably drive innate defensive responses in male rats, but not learned defensive responses. *Sci Rep* 14, 21578 (2024).

<https://doi.org/10.1038/s41598-024-70256-2>

- Kraatz G, Xie HTH, Long H, Walker CD. Neonatal estradiol and early adversity interact to modify basolateral amygdala morphology and adult behavior in female rats. *J Neuroendocrinol.* 2025 Jul;37(7):e13483. doi: 10.1111/jne.13483. Epub 2024 Dec 18. PMID: 39694537; PMCID: PMC12213032.
- Li, X., Yennawar, M., Wiest, A., O'Brien, W. T., Babrowicz, B., White, R. S., Talos, D. M., & Jensen, F. E. (2024). Cannabidiol attenuates seizure susceptibility and behavioural deficits in adult CDKL5R59X knock-in mice. *European Journal of Neuroscience*, 59(12), 3337–3352. <https://doi.org/10.1111/ejn.16350>
- Ojima D, Tominaga Y, Kubota T, Tada A, Takahashi H, Kishimoto Y, Tominaga T, Yamamoto T. Impaired Hippocampal Long-Term Potentiation and Memory Deficits upon Haploinsufficiency of MDGA1 Can Be Rescued by Acute Administration of D-Cycloserine. *International Journal of Molecular Sciences.* 2024; 25(17):9674. <https://doi.org/10.3390/ijms25179674>
- Peng S, Yang X, Meng S, Liu F, Lv Y, Yang H, Kong Y, Xie W, Li M. Dual circuits originating from the ventral hippocampus independently facilitate affective empathy. *Cell Rep.* 2024 Jun 25;43(6):114277. doi: 10.1016/j.celrep.2024.114277. Epub 2024 May 27. PMID: 38805397.
- Rebecca Ahlbrand, Allison Wilson, Patrick Woller, Yuv Sachdeva, Jayden Lai, Nikki Davis, James Wiggins, Renu Sah, Sex-specific threat responding and neuronal engagement in carbon dioxide associated fear and extinction: Noradrenergic involvement in female mice, *Neurobiology of Stress*, Volume 30, 2024, 100617, ISSN 2352-2895, <https://doi.org/10.1016/j.ynstr.2024.100617>.
- Robert E. Featherstone, Hongbin Li, Ameet Sengar, Karin E. Borgmann-Winter, Olya Melnychenko, Lindsey M. Crown, Ray L. Gifford, Felix Amirfathi, Anamika Banerjee, Krishna Parekh, Margaret Heller, Wenyu Zhang, Adam D. Marc, Michael W. Salter, Steven J. Siegel, Chang-Gyu Hahn. Blocking Src-PSD-95 interaction rescues glutamatergic signaling dysregulation in schizophrenia. *bioRxiv* 2024.03.08.584132; doi: <https://doi.org/10.1101/2024.03.08.584132>
- Vazquez K, Parsons RG. Sex differences in contextual fear expression are associated with altered medial prefrontal cortex activity. *bioRxiv [Preprint]*. 2024 Sep 13:2024.09.07.611834. doi: 10.1101/2024.09.07.611834. PMID: 39314297; PMCID: PMC11419059.
- Minmin Yao, Zhiliang Wei, Jonathan Scharff Nielsen, Yuxiao Ouyang, Aaron Kakazu, Haitong Wang, Lida Du, Ruoxuan Li, Tiffany Chu, Susanna Scafidi, Hanzhang Lu, Manisha Aggarwal, Wenzhen Duan, Senolytic therapy preserves blood-brain barrier integrity and promotes microglia homeostasis in a tauopathy model, *Neurobiology of Disease*, Volume 202, 2024, 106711, ISSN 0969-9961, <https://doi.org/10.1016/j.nbd.2024.106711>.
- Wang X, Lin D, Jiang J, Liu Y, Dong X, Fan J, Gong L, Shen W, Zeng L, Xu T, Jiang K, Connor SA, Xie Y. MDGA2 Constrains Glutamatergic Inputs Selectively onto CA1 Pyramidal Neurons to Optimize Neural Circuits for Plasticity, Memory, and Social Behavior. *Neurosci Bull.* 2024 Jul;40(7):887-904. doi: 10.1007/s12264-023-01171-1. Epub 2024 Feb 6. PMID: 38321347;

PMCID: PMC11250762.

- Xu J, Wen J, Mathena RP, Singh S, Boppana SH, Yoon OI, Choi J, Li Q, Zhang P, Mintz CD. Early Postnatal Exposure to Midazolam Causes Lasting Histological and Neurobehavioral Deficits via Activation of the mTOR Pathway. *International Journal of Molecular Sciences*. 2024; 25(12):6743. <https://doi.org/10.3390/ijms25126743>
- E. Allgire, R.A. Ahlbrand, N. Nawreen, A. Ajmani, C. Hoover, J.W. McAlees, I.P. Lewkowich, R. Sah, Altered Fear Behavior in Aeroallergen House Dust Mite Exposed C57Bl/6 Mice: A Model of Th2-skewed Airway Inflammation, *Neuroscience*, Volume 528, 2023, Pages 75-88, ISSN 0306-4522, <https://doi.org/10.1016/j.neuroscience.2023.07.022>.
- Kehinde E. Cole, Ryan G. Parsons, Sex difference in the facilitation of fear learning by prior fear conditioning, *Neurobiology of Learning and Memory*, Volume 205, 2023, 107835, ISSN 1074-7427, <https://doi.org/10.1016/j.nlm.2023.107835>.
- Lulin Li, Andy Nguyen, Jian Luo, Chapter 10 - Mouse model of repetitive mild traumatic brain injury (investigating cognitive impairment), Editor(s): Colin R. Martin, Vinood B. Patel, Victor R. Preedy, *Handbook of Animal Models in Neurological Disorders*, Academic Press, 2023, Pages 121-132, ISBN 9780323898331, <https://doi.org/10.1016/B978-0-323-89833-1.00007-0>.
- Shao-Han Chang, Huan-Yuan Chen, Fu-Zen Shaw, Bai-Chuang Shyu, Early- and late-phase changes of brain activity and early-phase neuromodulation in the posttraumatic stress disorder rat model, *Neurobiology of Stress*, Volume 26, 2023, 100554, ISSN 2352-2895, <https://doi.org/10.1016/j.ynstr.2023.100554>.
- Shao-Han Chang, Yao-Ming Chang, Huan-Yuan Chen, Fu-Zen Shaw, Bai-Chuang Shyu, Time-course analysis of frontal gene expression profiles in the rat model of posttraumatic stress disorder and a comparison with the conditioned fear model, *Neurobiology of Stress*, Volume 27, 2023, 100569, ISSN 2352-2895, <https://doi.org/10.1016/j.ynstr.2023.100569>.
- Tanita Pairojana, Sarayut Phasuk, Mayuree H. Tantisira, Kai-Chi Liang, Sittiruk Roytrakul, Narawut Pakaprot, Supin Chompoopong, Sutisa Nudmamud-Thanoi, Yang Ming, and Ingrid Y. Liu. Standardized Extract of *Centella asiatica* Prevents Fear Memory Deficit in 3xTg-AD Mice. *The American Journal of Chinese Medicine* Vol. 51, No. 02, pp. 329-353 (2023). <https://doi.org/10.1142/S0192415X23500179>
- Tipton, A.E., Cruz Del Angel, Y., Hixson, K., Carlsen, J., Strode, D., Busquet, N., Mesches, M.H., Gonzalez, M.I., Napoli, E., Russek, S.J. and Brooks-Kayal, A.R. (2023), Selective Neuronal Knockout of STAT3 Function Inhibits Epilepsy Progression, Improves Cognition, and Restores Dysregulated Gene Networks in a Temporal Lobe Epilepsy Model. *Ann Neurol*, 94: 106-122. <https://doi.org/10.1002/ana.26644>
- Tryon SC, Sakamoto IM, Kaigler KF, Gee G, Turner J, Bartley K, Fadel JR, Wilson MA. ChAT::Cre transgenic rats show sex-dependent altered fear behaviors, ultrasonic vocalizations and cholinergic marker expression. *Genes Brain Behav*. 2023 Feb;22(1):e12837. doi: 10.1111/gbb.12837. Epub 2023 Jan 13. PMID: 36636833; PMCID: PMC9994175.

- Wanbing Wang, Yanzhong Li, Fangling Ma, Xuan Sheng, Kai Chen, Rengong Zhuo, Chen Wang, Honghua Zheng, Yun-wu Zhang, Guojun Bu, Xiao-Fen Chen, Li Zhong, Microglial repopulation reverses cognitive and synaptic deficits in an Alzheimer's disease model by restoring BDNF signaling, *Brain, Behavior, and Immunity*, Volume 113, 2023, Pages 275-288, ISSN 0889-1591, <https://doi.org/10.1016/j.bbi.2023.07.011>.
- Waugh, K.A., Minter, R., Baxter, J. et al. Triplication of the interferon receptor locus contributes to hallmarks of Down syndrome in a mouse model. *Nat Genet* 55, 1034–1047 (2023). <https://doi.org/10.1038/s41588-023-01399-7>
- Chandler LJ, Vaughan DT and Gass JT (2022) Adolescent Alcohol Exposure Results in Sex-specific Alterations in Conditioned Fear Learning and Memory in Adulthood. *Front. Pharmacol.* 13:837657. doi: 10.3389/fphar.2022.837657
- Ding H, Zhong Y, Liu N, Wu H, Xu H, Wu Y, Liu G, Yuan S, Zhou Q and Wang C (2022) Panic disorder aging characteristics: The role of telomerase reverse transcriptase gene and brain function. *Front. Aging Neurosci.* 14:835963. doi: 10.3389/fnagi.2022.835963
- Katherine A. Waugh, Ross Minter, Jessica Baxter, Congwu Chi, Kathryn D. Tuttle, Neetha P. Eduthan, Matthew D. Galbraith, Kohl T. Kinning, Zdenek Andrysik, Paula Araya, Hannah Dougherty, Lauren N. Dunn, Michael Ludwig, Kyndal A. Schade, Dayna Tracy, Keith P. Smith, Ross E. Granrath, Nicolas Busquet, Santosh Khanal, Ryan D. Anderson, Liza L. Cox, Belinda Enriquez Estrada, Angela L. Rachubinski, Hannah R. Lyford, Eleanor C. Britton, David J. Orlicky, Jennifer L. Matsuda, Kunhua Song, Timothy C. Cox, Kelly D. Sullivan, Joaquin M. Espinosa. Interferon receptor gene dosage determines diverse hallmarks of Down syndrome. *bioRxiv* 2022.02.03.478982; doi: <https://doi.org/10.1101/2022.02.03.478982>
- Lin C-C, Cheng P-Y, Hsiao M, Liu Y-P. Effects of RU486 in Treatment of Traumatic Stress-Induced Glucocorticoid Dysregulation and Fear-Related Abnormalities: Early versus Late Intervention. *International Journal of Molecular Sciences.* 2022; 23(10):5494. <https://doi.org/10.3390/ijms23105494>
- Reis ALM, Hammond JM, Stevanovski I, Arnold JC, McGregor IS, Deveson IW, Gururajan A. Sex-specific transcriptomic and epitranscriptomic signatures of PTSD-like fear acquisition. *iScience.* 2022 Aug 2;25(9):104861. doi: 10.1016/j.isci.2022.104861. PMID: 36039298; PMCID: PMC9418440.
- Russo, A.S., Parsons, R.G. Neural activity in afferent projections to the infralimbic cortex is associated with individual differences in the recall of fear extinction. *Sci Rep* 12, 13703 (2022). <https://doi.org/10.1038/s41598-022-17895-5>
- Sabban EL, Serova L, Nahvi RJ, Liu X. Potential benefits of intranasal neuropeptide Y include sustained extinction of fear memory. *J Neuroendocrinol.* 2023;35(11):e13279. doi:10.1111/jne.13279
- Sydney Trask, Fred J Helmstetter, Unique roles for the anterior and posterior retrosplenial cortices in encoding and retrieval of memory for context, *Cerebral Cortex*, Volume 32, Issue 17, 1 September 2022, Pages 3602–3610, <https://doi.org/10.1093/cercor/bhab436>

- Tiantian Guo, Xinjia Pan, Guangtong Jiang, Denghong Zhang, Jinghui Qi, Lin Shao, Zhanxiang Wang, Huaxi Xu, Yingjun Zhao. Downregulating PTBP1 Fails to Convert Astrocytes into Hippocampal Neurons and to Alleviate Symptoms in Alzheimer's Mouse Models. *Journal of Neuroscience* 21 September 2022, 42 (38) 7309-7317; DOI: 10.1523/JNEUROSCI.1060-22.2022
- Zhou C, Assareh N, Arnold JC. The Cannabis Constituent Cannabigerol Does Not Disrupt Fear Memory Processes or Stress-Induced Anxiety in Mice. *Cannabis Cannabinoid Res.* 2022 Jun;7(3):294-303. doi: 10.1089/can.2021.0027. Epub 2021 Jun 28. PMID: 34182770; PMCID: PMC9225414.
- Lu WH, Chao HW, Lin PY, Lin SH, Liu TH, Chen HW, Huang YS. CPEB3-dowregulated Nr3c1 mRNA translation confers resilience to developing posttraumatic stress disorder-like behavior in fear-conditioned mice. *Neuropsychopharmacology.* 2021 Aug;46(9):1669-1679. doi: 10.1038/s41386-021-01017-2. Epub 2021 May 3. PMID: 33941859; PMCID: PMC8280193.
- Smith LK, Verovskaya E, Bieri G, et al. The aged hematopoietic system promotes hippocampal-dependent cognitive decline. *Aging Cell.* 2020;19:e13192. <https://doi.org/10.1111/accel.13192>
- Yu-Tzu Shih, Tzyy-Nan Huang, Hsiao-Tang Hu, Tzu-Li Yen, Yi-Ping Hsueh, (2020) Vcp Overexpression and Leucine Supplementation Increase Protein Synthesis and Improve Fear Memory and Social Interaction of Nf1 Mutant Mice, *Cell Reports*, Volume 31, Issue 13, 2020, 107835, ISSN 22111247, <https://doi.org/10.1016/j.celrep.2020.107835>
- I. Lewkowich, R. Ahlbrand, E. Johnson, J. McAlees, N. Nawreen, R. Raman, I. Lingel, J. Hargis, C. Hoover, R. Sah, Modulation of fear behavior and neuroimmune alterations in house dust mite exposed A/J mice, a model of severe asthma, *Brain, Behavior, and Immunity*, Volume 88, 2020, Pages 688-698, ISSN 0889-1591, <https://doi.org/10.1016/j.bbi.2020.04.084>
- Morgan Bridi, Hannah Schoch, Cédric Florian, Shane G. Poplawski, Anamika Banerjee, Joshua D. Hawk, Giulia S. Porcari, Camille Lejards, Chang-Gyu Hahn, Karl-Peter Giese, Robbert Havekes, Nelson Spruston, and Ted Abel (2020) Transcriptional corepressor SIN3A regulates hippocampal synaptic plasticity via Homer1/mGluR5 signaling, *JCI Insight*, 2020;5(5):e92385.<https://doi.org/10.1172/jci.insight.92385>
- Eagle, A.L., Manning, C.E., Williams, E.S. et al. (2020) Circuit-specific hippocampal Δ FosB underlies resilience to stress-induced social avoidance. *Nat Commun* 11, 4484 (2020).<https://doi.org/10.1038/s41467-020-17825-x>
- Charles W. White IIIa, Xuelai Fana, Jason C. Maynard, Elizabeth G. Wheatleya, Gregor Bieria, Julien Couthouisd, Alma L. Burlingamec, and Saul A. Villedaa, (2020) Age-related loss of neural stem cell OGlcnAc promotes a glial fate switch through STAT3 activation, *PNAS Latest Articles*
- Jeffrey Parrilla Carrero, Kris F. Kaigler, George H. Hartshorn, Jim R. Fadel, Marlene A. Wilson, Mu opioid receptor regulation of glutamate efflux in the central amygdala in response to predator odor, *Neurobiology of Stress*, Volume 11, 2019, 100197, ISSN 2352-2895, <https://doi.org/10.1016/j.ynstr.2019.100197>

- Elizabeth G. Wheatley, Eddy Albarran, Charles W. White, Gregor Bieri, Cesar Sanchez-Diaz, Karishma Pratt, Cedric E. Snelhage, Jun B. Ding, Saul A. Villeda, (2019) Neuronal O-GlcNAcylation Improves Cognitive Function in the Aged Mouse Brain, *Current Biology*, Volume 29, Issue 20, 2019, Pages 3359-3369.e4, ISSN 0960-9822, <https://doi.org/10.1016/j.cub.2019.08.003>
- Tzyy-Nan Huang, Tsan-Ting Hsu, Ming-Hui Lin, Hsiu-Chun Chuang, Hsiao-Tang Hu, Cheng-Pu Sun, MiHua Tao, John Y. Lin, Yi-Ping Hsueh, (2019) Interhemispheric Connectivity Potentiates the Basolateral Amygdalae and Regulates Social Interaction and Memory, *Cell Reports*, Volume 29, Issue 1, 2019, Pages 34-48.e4, ISSN 2211-1247, <https://doi.org/10.1016/j.celrep.2019.08.082>
- Yun-Fen Hung, Chiung-Ya Chen, Wan-Chen Li, Ting-Fang Wang, Yi-Ping Hsueh, (2019) Tlr7 deletion alters expression profiles of genes related to neural function and regulates mouse behaviors and contextual memory, *Brain, Behavior, and Immunity*, Volume 72, 2018, Pages 101-113, ISSN 0889-1591, <https://doi.org/10.1016/j.bbi.2018.06.006>
- Jessie R Scheimann, Rachel D Moloney, Parinaz Mahbod , Rachel L Morano , Maureen Fitzgerald , Olivia Hoskins , Benjamin A Packard , Evelin M Cotella , Yueh-Chiang Hu, James P Herman (2019) Conditional deletion of glucocorticoid receptors in rat brain results in sexspecific deficits in fear and coping behaviors, *eLife*, 2019
- V.A. Macht, J.L. Woodruff, E.S. Maissy, C.A. Grillo, M.A. Wilson, J.R. Fadel, L.P. Reagan, (2019) Pyridostigmine bromide and stress interact to impact immune function, cholinergic neurochemistry and behavior in a rat model of Gulf War Illness, *Brain, Behavior, and Immunity*, 2019, ISSN 0889-1591, <https://doi.org/10.1016/j.bbi.2019.04.015>.
- nature** John V. Pluvinage, Michael S. Haney, Benjamin A. H. Smith, Jerry Sun, Tal Iram, Liana Bonanno, Lulin Li, Davis P. Lee, David W. Morgens, Andrew C. Yang, Steven R. Shuken, David Gate, Madeleine Scott, Purvesh Khatri, Jian Luo, Carolyn R. Bertozzi, Michael C. Bassik & Tony Wyss-Coray (2019) CD22 blockade restores homeostatic microglial phagocytosis in ageing brains, *Nature* volume 568, pages187–192 (2019)
- Junhua Yang, Maria del Carmen Vitery, Jianan Chen, James Osei-Owusu, Jiachen Chu, Zhaozhu Qiu, Glutamate-Releasing SWELL1 Channel in Astrocytes Modulates Synaptic Transmission and Promotes Brain Damage in Stroke, *Neuron*, 2019, ISSN 0896-6273, <https://doi.org/10.1016/j.neuron.2019.03.029>.
- Bing-Lin Zhu, Yan Long, Wei Luo, Zhen Yan, Yu-Jie Lai, Li-Ge Zhao, Wei-Hui Zhou, Yan-Jiang Wang, Lin-Lin Shen, Lu Liu, Xiao-Juan Deng, Xue-Feng Wang, Fei Sun, Guo-Jun Chen, (2019) MMP13 inhibition rescues cognitive decline in Alzheimer transgenic mice via BACE1 regulation, *Brain*, Volume 142, Issue 1, January 2019, Pages 176–192, <https://doi.org/10.1093/brain/awy305>
- Inga Schubert, Rebecca Ahlbrand, Andrew Winter, Lauren Vollmer, Ian Lewkowich, Renu Sah, (2018) Enhanced fear and altered neuronal activation in forebrain limbic regions of CX3CR1-deficient mice, *Brain, Behavior, and Immunity*, Volume 68, 2018, Pages 34-43, ISSN 0889-

1591, <https://doi.org/10.1016/j.bbi.2017.09.013>

Lu WH, Yeh NH, Huang YS. CPEB2 Activates GRASP1 mRNA Translation and Promotes AMPA Receptor Surface Expression, Long-Term Potentiation, and Memory. *Cell Rep.* 2017 Nov 14;21(7):1783-1794. doi: 10.1016/j.celrep.2017.10.073. PMID: 29141213.

nature Joseph M. Castellano, Kira I. Mosher, Rachele J. Abbey, Alisha A. McBride, Michelle L. James, Daniela Berdnik, Jadon C. Shen, Bende Zou, Xinmin S. Xie, Martha Tingle, Izumi V. Hinkson, Martin S. Angst & Tony Wyss-Coray (2017) Human umbilical cord plasma proteins revitalize hippocampal function in aged mice, *Nature* (2017), doi:10.1038/nature22067

Elizabeth Rickenbacher, Rosemarie E Perry, Regina M Sullivan, Marta A Moita (2017) Freezing suppression by oxytocin in central amygdala allows alternate defensive behaviours and motherpup interactions *eLife* 2017;6:e24080. DOI: 10.7554/eLife.24080

Janine L Kwapis, Timothy J Jarome, Nicole C Ferrara, Fred J Helmstetter (2017), Updating Procedures can Reorganize the Neural Circuit Supporting a Fear Memory, *Neuropsychopharmacology* accepted article preview 31 January, 2017; doi: 10.1038/npp.2017.23.

Natalia I. Brzozowska, Kristie L. Smith, Cilla Zhou, Peter M. Waters, Ligia Menezes Cavalcante, Sarah V. Abelev, Michael Kuligowski, David J. Clarke, Stephanie M. Todd, Jonathon C. Arnold, (2017) Genetic deletion of P-glycoprotein alters stress responsivity and increases depression-like behavior, social withdrawal and microglial activation in the hippocampus of female mice, *Brain, Behavior, and Immunity*, Volume 65, 2017, Pages 251-261, ISSN 0889-1591, <http://dx.doi.org/10.1016/j.bbi.2017.05.008>.

Tsai K-J, Sze C-I, Lin Y-C, Lin Y-J, Hsieh T-H, Lin C-H (2016) A Single Postnatal Dose of Dexamethasone Enhances Memory of Rat Pups Later in Life. *PLoS ONE* 11(10): e0165752. doi:10.1371/journal.pone.0165752

Middeldorp J, Lehallier B, Villeda SA, Miedema SSM, Evans E, Czirr E, Zhang H, Luo J, Stan T, Mosher KI, Masliah E, Wyss-Coray T. (2016) Preclinical Assessment of Young Blood Plasma for Alzheimer Disease. *JAMA Neurol.* 2016;73(11):1325-1333. doi:10.1001/jamaneurol.2016.3185

Lauren Larke Vollmer, Sriparna Ghosal, Jennifer L. McGuire, Rebecca L. Ahlbrand, Ke-Yong Li, Joseph M. Santin, Christine A. Ratliff-Rang, Luis G.A. Patrone, Jennifer Rush, Ian P. Lewkowich, James P. Herman, Robert W. Putnam, Renu Sah (2016) Microglial Acid Sensing Regulates Carbon Dioxide Evoked Fear, *Biological Psychiatry* Available online 12 May 2016

Jose Rodriguez-Romaguera, , Francisco Sotres-Bayon,, , Devin Muellera, Gregory J. Quirk (2015) Systemic Propranolol Acts Centrally to Reduce Conditioned Fear in Rats Without Impairing Extinction, *Biological Psychiatry*, Volume 65, Issue 10, 887 – 892

Yingbo He, Hui Zhang, Andrea Yung, Saul A Villeda, Philipp A Jaeger, Oluwatobi Olayiwola, Nina Fainberg & Tony Wyss-Coray (2014) ALK5-dependent TGF- β signaling is a major determinant of late-stage adult neurogenesis, *Nature Neuroscience*, (2014)

doi:10.1038/nn.3732, Received, 30 December 2013

- Tzzy-Nan Huang, Hsiu-Chun Chuang, Wen-Hsi Chou, Chiung-Ya Chen, Hsiao-Fang Wang, Shen-Ju Chou & Yi-Ping Hsueh, (2014) Tbr1 haploinsufficiency impairs amygdalar axonal projections and results in cognitive abnormality, *Nature Neuroscience* 17, 240–247, (2014)
- Luis E Rosas-Vidal, Fabricio H Do-Monte, Francisco Sotres-Bayon and Gregory J Quirk (2014) Hippocampal–Prefrontal BDNF and Memory for Fear Extinction, *Neuropsychopharmacology* (14 March 2014) | doi:10.1038/npp.2014.64
- Tzzy-Nan Huang, Hsiu-Chun Chuang, Wen-Hsi Chou, Chiung-Ya Chen, Hsiao-Fang Wang, Shen-Ju Chou & Yi-Ping Hsueh (2014) Tbr1 haploinsufficiency impairs amygdalar axonal projections and results in cognitive abnormality, *Nature Neuroscience* doi:10.1038/nn.3626 Published online 19 January 2014
- Chao-Chuan Wang, Hui-Ching Lin, Yun-Han Chan, Po-Wu Gean, Yen Kung Yang, Po See Chen (2013) 5-HT1A-receptor agonist modified amygdala activity and amygdala-associated social behavior in a valproate-induced rat autism model, *International Journal of Neuropsychopharmacology*, Volume 16, Issue 9, Pp. 2027 - 2039
- Lin H-C, Gean P-W, Wang C-C, Chan Y-H, Chen PS (2013) The Amygdala Excitatory/Inhibitory Balance in a Valproate-Induced Rat Autism Model. *PLoS ONE* 8(1): e55248. doi:10.1371/journal.pone.0055248.
- Ting Judy Wang, Megan Allen, Darren Goffin, Xinjian Zhu, Andrew H. Fairless, Edward S. Brodtkin, Steve J. Siegel, Eric D. Marsh, Julie A. (2012) Blendy, and Zhaolan Zhou ,(2012) Loss of CDKL5 disrupts kinome profile and event-related potentials leading to autistic-like phenotypes in mice, *PNAS*, Dec 2012; 109: 21516 – 21521
- Sotres-Bayon, Francisco; Sierra-Mercado, Demetrio; Pareda-Delgado, Enmanuelle; Quirk, Gregory. (2012) Gating of Fear in Prelimbic Cortex by Hippocampal and Amygdala Inputs, *Neuron* doi:10.1016/j.neuron.2012.09.028 (volume 76 issue 4 pp.804 - 812).
- Kristen A. Rahn, Crystal C. Watkins, Jesse Alt, Rana Rais, Marigo Stathis, Inna Grishkan, Ciprian M. Crainiceanu, Martin G. Pomper, Camilo Rojas, Mikhail V. Pletnikov, Peter A. Calabresi, Jason Brandt, Peter B. Barker, Barbara S. Slusher, and Adam I. Kaplin, (2012) Inhibition of Glutamate Carboxypeptidase II (GCP II) activity as a treatment for cognitive impairment in multiple sclerosis, *PNAS* 2012; doi:10.1073/pnas.1209934109
- Edwin Santini, Marian Sepulveda-Orengo and James T Porter (2012) Muscarinic Receptors Modulate the Intrinsic Excitability of Infralimbic Neurons and Consolidation of Fear Extinction, *Neuropsychopharmacology* , (18 April 2012) | doi:10.1038/npp.2012.52.
- Pushpinder K. Multani, Rachel Hodge, Marcel A. Estévez, Ted Abel, Hank Kung, Mark Alter, Bethany Brookshire, Irwin Lucki, Aleksandra H. Nall, Konrad Talbot, Glenn A. Doyle, Falk W. Lohoff, (2012) VMAT1 Deletion Causes Neuronal Loss in the Hippocampus and Neurocognitive Deficits in Spatial Discrimination, *Neuroscience* Available online 28 November 2012.

- Corniola R, Zou Y, Leu D, Fike JR, Huang T-T (2012) Paradoxical Relationship between Mn Superoxide Dismutase Deficiency and Radiation-Induced Cognitive Defects. *PLoS ONE* 7(11): e49367. doi:10.1371/journal.pone.0049367.
- R. Hazra , J.D. Guo, J. Dabrowska, D.G. Rainnie, Differential distribution of serotonin receptor subtypes in BNSTALG neurons: Modulation by unpredictable shock stress, *Neuroscience*, Available online 22 August 2012.
- Janine L. Kwapis, Timothy J. Jarome, Marieke R. Gilmartin, Fred J. Helmstetter, (2012) Intra-amygdala infusion of the protein kinase Mzeta inhibitor ZIP disrupts foreground context fear memory *Neurobiology of Learning and Memory* Available online 31 May 2012.
- Edwin Santini, Marian Sepulveda-Orengo and James T Porter (2012) Muscarinic Receptors Modulate the Intrinsic Excitability of Infralimbic Neurons and Consolidation of Fear Extinction, *Neuropsychopharmacology* , (18 April 2012) | doi:10.1038/npp.2012.52.
- Chen C-C, Shen J-W, Chung N-C, Min M-Y, Cheng S-J, et al. (2012) Retrieval of Context-Associated Memory is Dependent on the Cav3.2 T-Type Calcium Channel. *PLoS ONE* 7(1): e29384. doi:10.1371/journal.pone.0029384 .
- Marieke R. Gilmartin, Janine L. Kwapis, Fred J. Helmstetter, (2012) Trace and contextual fear conditioning are impaired following unilateral microinjection of muscimol in the ventral hippocampus or amygdala, but not the medial prefrontal cortex, *Neurobiology of Learning and Memory* Available online 26 March 2012.
- Elaine Waldron-Roby, Tamara Ratovitski, XiaoFang Wang, Mali Jiang, Erin Watkin, Nikolas Arbez, Rona K. Graham, Michael R. Hayden, Zhipeng Hou, Susumu Mori, Deborah Swing, Mikhail Pletnikov, Wenzhen Duan, Lino Tessarollo, and Christopher A. Ross (2012) Transgenic Mouse Model Expressing the Caspase 6 Fragment of Mutant Huntingtin, *J. Neurosci.*, Jan 2012; 32: 183 - 193.
- Jennifer Briellaier, Craig G. McDonald and Robert F. Smith, (2012) Effects of acute stress on acquisition of nicotine conditioned place preference in adolescent rats: a role for corticotropin-releasing factor 1 receptors, *Psychopharmacology* , June 2011.
- Janine L. Kwapis, Timothy J. Jarome, Janet C. Schiff, and Fred J. Helmstetter, Memory consolidation in both trace and delay fear conditioning is disrupted by intra-amygdala infusion of the protein synthesis inhibitor anisomycin, *Learn. Mem.*, Oct 2011; 18: 728 - 732.
- Catherine C. Kaczorowska, Scott J. Davisa, James R. Moyer Jr; (2011) Aging redistributes medial prefrontal neuronal excitability and impedes extinction of trace fear conditioning, *Neurobiology of Aging*, 22 March 2011.
- Darah E. Fontanez-Nuin, Edwin Santini, Gregory J. Quirk, and James T. Porter (2011), Memory for Fear Extinction Requires mGluR5-Mediated Activation of Infralimbic Neurons, *Cereb Cortex*, Mar 2011; 21: 727 - 735.
- Saul A. Villeda, Jian Luo, Kira I. Mosher, Bende Zou, Markus Britschgi, Gregor Bieri, Trisha M. Stan, Nina Fainberg, Zhaoqing Ding, Alexander Eggel, Kurt M. Lucin, Eva Czirr, Jeong-Soo

- Park, Sebastien Couillard-Després, Ludwig Aigner, Ge Li, Elaine R. Peskind, Jeffrey A. Kaye, Joseph F. Quinn, Douglas R. Galasko, Xinmin S. Xie, Thomas A. Rando & Tony Wyss-Coray, (2011) The ageing systemic milieu negatively regulates neurogenesis and cognitive function' *Nature* Volume: 477, Pages: 90–94 Date published: (01 September 2011).
- Hsiao, Ya-Hsin, Chen, Po See, Chen, Shun-Hua, Gean, Po-Wu, The Involvement of Cdk5 Activator p35 in Social Isolation-Triggered Onset of Early Alzheimer's Disease-Related Cognitive Deficit in the Transgenic Mice, *Neuropsychopharmacology* (2011) 36, 1848–1858; doi:10.1038/npp.2011.69; published online 4 May 2011
- Sierra-Mercado D, Padilla-Coreano N, Quirk GJ. Dissociable roles of prelimbic and infralimbic cortices, ventral hippocampus, and basolateral amygdala in the expression and extinction of conditioned fear. *Neuropsychopharmacology*. 2011 Jan;36(2):529-38. doi: 10.1038/npp.2010.184. Epub 2010 Oct 20. PMID: 20962768; PMCID: PMC3005957.
- Demetrio Sierra-Mercado, Nancy Padilla-Coreano, Gregory J Quirk, (2010) Dissociable Roles of Prelimbic and Infralimbic Cortices, Ventral Hippocampus, and Basolateral Amygdala in the Expression and Extinction of Conditioned Fear , *Neuropsychopharmacology* (20 October 2010) doi:10.1038/npp.2010.184.
- Derick H. Lindquist, Luke P. Mahoney, Joseph E. Steinmetz, (2010) Conditioned fear in adult rats is facilitated by the prior acquisition of a classically conditioned motor response, *Neurobiology of Learning and Memory*, Volume 94, Issue 2, September 2010, Pages 167-175.
- Marieke R. Gilmartin and Fred J. Helmstetter (2010), Trace and contextual fear conditioning require neural activity and NMDA receptor-dependent transmission in the medial prefrontal cortex, *Learn. Mem.*, Jun 2010; 17: 289 - 296.
- Railey AM, Micheli TL, Wanschura PB, Flinn JM. (2010) Alterations in fear response and spatial memory in pre-and post-natal zinc supplemented rats: remediation by copper, *Physiol Behav*. 2010 May 11;100(2):95-100. Epub 2010 Feb 14.
- Timothy J. Jarome, Janine L. Kwapis, Steven H. Nye and Fred J. Helmstetter (2010) Introgression of Brown Norway Chromosome 1 onto the Fawn Hooded Hypertensive Background Rescues Long-Term Fear Memory Deficits *Behavior Genetics*, Volume 40, Number 1, 85-92.
- M. R. MILAD, S. A. IGOE, K. LEBRON-MILAD AND J. E. NOVALES, (2009) ESTROUS CYCLE PHASE AND GONADAL HORMONES INFLUENCE CONDITIONED FEAR EXTINCTION, *Neuroscience* 164 (2009) 887–895.
- Peter Curzon, Nathan R. Rustay, and Kaitlin E. Browman (2009) Chapter 2 Cued and Contextual Fear Conditioning for Rodents, *Methods of Behavior Analysis in Neuroscience*. 2nd edition. Buccafusco JJ, editor. Boca Raton (FL): CRC Press; 2009.
- Helmstetter, F. J., Parsons, R.G., Gafford, G.M. (2008). Macromolecular synthesis, distributed synaptic plasticity, and fear conditioning. *Neurobiology of Learning and Memory*, 89(3), 324-337.
- Mueller, D., Porter, J.T., Quirk, G.J. (2008). Noradrenergic Signaling in Infralimbic Cortex Increases

Cell Excitability and Strengthens Memory for Fear Extinction. *Journal of Neuroscience*, 28(2), 369-375, 2008.

Burgos-Robles, A., Vidal-Gonzalez I., Santini, E., Quirk, G.J. (2007), Consolidation of Fear Extinction Requires NMDA Receptor-Dependent Bursting in the Ventromedial Prefrontal Cortex. *Neuron*, 53(6), 871-880.

Corcoran, K. A., Quirk, G.J. (2007). Recalling safety: cooperative functions of the ventromedial prefrontal cortex and the hippocampus in extinction. *CNS Spectrums*, 12(3), 200-206.

Corcoran, K. A., Quirk, G.J. (2007). Activity in prelimbic cortex is necessary for the expression of learned, but not innate, fears. *Journal of Neuroscience*, 27(4), 840-844.

Sierra-Mercado, D., Corcoran, K.A., Lebron-Milad, K., Quirk, G.J. (2006), Inactivation of the ventromedial prefrontal cortex reduces expression of conditioned fear and impairs subsequent recall of extinction. *European J of Neuroscience*, 24(6), 1751-1758.