

Stanford



Dan Christoffel

Postdoctoral Research Fellow, Neurosciences

 Curriculum Vitae available Online

Bio

HONORS AND AWARDS

- K99/R00 ROLE OF NUCLEUS ACCUMBENS AND ITS GLUTAMATERGIC INPUTS IN HIGH-FAT INTAKE, NIDDK (07/2018-062023)
- F32 FUNCTION OF THALAMIC EXCITATORY SYNAPSES IN SOCIAL REWARD PROCESSING, NIMH (2015-2017)

PROFESSIONAL EDUCATION

- Doctor of Philosophy, Icahn School of Medicine at Mount Sinai , Neuroscience (2014)
- Bachelor of Arts, New York University (2004)

STANFORD ADVISORS

- Robert Malenka, Postdoctoral Faculty Sponsor

Research & Scholarship

CURRENT RESEARCH AND SCHOLARLY INTERESTS

Our experiences come to shape our future behaviors and can have lasting effects on our quality of life. My research aims to understand how chronic exposure to particular stimuli (i.e. stress, food, drugs) alters the functioning of specific neural circuits. Following identification of the relevant circuits, I investigate the mechanisms that regulate these experience-dependent changes. This ultimately aids in our understanding of how maladaptive changes in brain function occur and how these changes result in psychiatric disorders.

My current focus is on specific neural circuits involved in reward processing and feeding behavior. I am discovering how various excitatory inputs to the nucleus accumbens, a critical brain node involved in processing the salience of events, modulate reward-related behaviors utilizing converging lines of inquiry. Specifically, I observe neuronal activity in awake behaving mice, and assess the mechanisms underlying changes in activity with electrophysiology. Finally, I then modulate specific circuits using optogenetics, a technique that provides spatio-temporal control over genetically identified cells, to determine the causal role of these circuits in the approach and consumption of palatable foods.

Publications

PUBLICATIONS

- **5-HT release in nucleus accumbens rescues social deficits in mouse autism model.** *Nature*
Walsh, J. J., Christoffel, D. J., Heifets, B. D., Ben-Dor, G. A., Selimbeyoglu, A., Hung, L. W., Deisseroth, K., Malenka, R. C.
2018
- **Parallel circuits from the bed nuclei of stria terminalis to the lateral hypothalamus drive opposing emotional states.** *Nature neuroscience*

Giardino, W. J., Eban-Rothschild, A., Christoffel, D. J., Li, S., Malenka, R. C., de Lecea, L.
2018

- **Closing the loop on impulsivity via nucleus accumbens delta-band activity in mice and man.** *Proceedings of the National Academy of Sciences of the United States of America*
Wu, H., Miller, K. J., Blumenfeld, Z., Williams, N. R., Ravikumar, V. K., Lee, K. E., Kakusa, B., Sacchet, M. D., Wintermark, M., Christoffel, D. J., Rutt, B. K., Bronte-Stewart, H., Knutson, et al
2018; 115 (1): 192–97
- **Basal forebrain projections to the lateral habenula modulate aggression reward** *NATURE*
Golden, S. A., Heshmati, M., Flanigan, M., Christoffel, D. J., Guise, K., Pfau, M. L., Aleyasin, H., Menard, C., Zhang, H., Hodes, G. E., Bregman, D., Khibnik, L., Tai, et al
2016; 534 (7609): 688-?
- **Excitatory transmission at thalamo-striatal synapses mediates susceptibility to social stress.** *Nature neuroscience*
Christoffel, D. J., Golden, S. A., Walsh, J. J., Guise, K. G., Heshmati, M., Friedman, A. K., Dey, A., Smith, M., Rebusi, N., Pfau, M., Ables, J. L., Aleyasin, H., Khibnik, et al
2015; 18 (7): 962-964
- **Illuminating circuitry relevant to psychiatric disorders with optogenetics** *CURRENT OPINION IN NEUROBIOLOGY*
Steinberg, E. E., Christoffel, D. J., Deisseroth, K., Malenka, R. C.
2015; 30: 9-16
- **IkappaB kinase regulates social defeat stress induced synaptic and behavioral plasticity** *Neuropsychopharmacology*
Christoffel, D. J., et al
2012; 37 (12): 2615-23
- **IkappaB kinase regulates social defeat stress induced synaptic and behavioral plasticity** *Journal of Neuroscience*
Christoffel, D. J., et al
2011; 32 (1): 314-21
- **Cell-type-specific role for nucleus accumbens neuroligin-2 in depression and stress susceptibility.** *Proceedings of the National Academy of Sciences of the United States of America*
Heshmati, M., Aleyasin, H., Menard, C., Christoffel, D. J., Flanigan, M. E., Pfau, M. L., Hodes, G. E., Lepack, A. E., Bicks, L. K., Takahashi, A., Chandra, R., Turecki, G., Lobo, et al
2018; 115 (5): 1111–16
- **Susceptibility to chronic social stress increases plaque progression, vulnerability and platelet activation** *THROMBOSIS AND HAEMOSTASIS*
Giannarelli, C., Rodriguez, D. T., Zafar, M. U., Christoffel, D., Vialou, V., Pena, C., Badimon, A., Hodes, G. F., Mury, P., Rabkin, J., Alique, M., Villa, G., Argmann, et al
2017; 117 (4): 816-818
- **Antipsychotic-induced Hdac2 transcription via NF-#B leads to synaptic and cognitive side effects.** *Nature neuroscience*
Ibi, D., de la Fuente Revenga, M., Kezunovic, N., Muguruza, C., Saunders, J. M., Gaitonde, S. A., Moreno, J. L., Ijaz, M. K., Santosh, V., Kozlenkov, A., Holloway, T., Seto, J., García-Bea, et al
2017; 20 (9): 1247–59
- **Stress and CRF gate neural activation of BDNF in the mesolimbic reward pathway** *NATURE NEUROSCIENCE*
Walsh, J. J., Friedman, A. K., Sun, H., Heller, E. A., Ku, S. M., Juarez, B., Burnham, V. L., Mazei-Robison, M. S., Ferguson, D., Golden, S. A., Koo, J. W., Chaudhury, D., Christoffel, et al
2014; 17 (1): 27-29
- **Individual differences in the peripheral immune system promote resilience versus susceptibility to social stress.** *Proceedings of the National Academy of Sciences of the United States of America*
Hodes, G. E., Pfau, M. L., Leboeuf, M., Golden, S. A., Christoffel, D. J., Bregman, D., Rebusi, N., Heshmati, M., Aleyasin, H., Warren, B. L., Lebonoté, B., Horn, S., Lapidus, et al
2014; 111 (45): 16136–41
- **Kalirin-7 Mediates Cocaine-Induced AMPA Receptor and Spine Plasticity, Enabling Incentive Sensitization** *JOURNAL OF NEUROSCIENCE*
Wang, X., Cahill, M. E., Werner, C. T., Christoffel, D. J., Golden, S. A., Xie, Z., Loweth, J. A., Marinelli, M., Russo, S. J., Penzes, P., Wolf, M. E.
2013; 33 (27): 11012-U410

- **Epigenetic regulation of RAC1 induces synaptic remodeling in stress disorders and depression** *NATURE MEDICINE*
Golden, S. A., Christoffel, D. J., Heshmati, M., Hodes, G. E., Magida, J., Davis, K., Cahill, M. E., Dias, C., Ribeiro, E., Ables, J. L., Kennedy, P. J., Robison, A. J., Gonzalez-Maeso, et al
2013; 19 (3): 337-344
- **Rapid regulation of depression-related behaviours by control of midbrain dopamine neurons** *NATURE*
Chaudhury, D., Walsh, J. J., Friedman, A. K., Juarez, B., Ku, S. M., Koo, J. W., Ferguson, D., Tsai, H., Pomeranz, L., Christoffel, D. J., Nectow, A. R., Ekstrand, M., Domingos, et al
2013; 493 (7433): 532-?