NC STATE UNIVERSITY

Comparative Medicine Institute

Elizabeth Lucas

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B.S. in Psychology, University of Alabama at Birmingham

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Title:

Research emphasis:

The Lucas Lab seeks to understand the mechanisms underlying susceptibility to psychiatric illness, with an emphasis on sex as a biological factor. Women are twice as likely as men to be diagnosed with fear-, anxiety-, and mood-based psychiatric disorders, but the exclusion of female subjects in preclinical research has hindered our progress in elucidating the sex-specific neurobiological bases of such illnesses. We utilize a multifaceted approach that combines *in vivo* behavioral manipulations with *ex vivo* electrophysiological, transcriptional, anatomical, and endocrinological analyses in mouse models to dissect the neurobiological mechanisms underlying sex differences in behavioral states relevant to mental health.

Application:

- Mouse models
- Behavioral neuroscience
- Whole cell slice electrophysiology
- Regulation of transcription

Collaboration potential:

- Activity-dependent cellular tagging and manipulation
- Nuclear receptor signaling
- Excitable membrane dynamics
- Cellular plasticity

Selected publications:

Lucas, E.K., Jegarl, A.M., Morishita, H., & Clem, R.L. (2016). Multimodal and site-specific plasticity of amygdala parvalbumin interneurons after fear learning. ***Neuron***, *91*, 3: 629-643.

Lucas, E.K., Jegarl, A., & Clem, R.L. (2014). Mice lacking TrkB in parvalbumin-positive cells exhibit sexually dimorphic behavioral phenotypes. ***Behavioural Brain Research***, *274*: 219-225.

Lucas, E.K., Dougherty, S.E., McMeekin, L.J., Reid, C.S., West, A.B., Dobrunz, L.E., Hablitz, J.J., & Cowell, R.M. (2014). PGC-1α provides a transcriptional framework for synchronous neurotransmitter release from parvalbumin-positive interneurons. ***Journal of Neuroscience***, *34*, 43: 14375-14387.

Lucas, E.K., Markwardt, S.J., Gupta, S., Meador-Woodruff, J.H., Lin, J.D., Overstreet-Wadiche, L., & Cowell, R.M. (2010). Parvalbumin deficiency and GABAergic dysfunction in mice lacking PGC-1α. ***Journal of Neuroscience***, *30,* 21: 7227-7235.