Duke Psychology & Neuroscience

Christina L Williams

- Professor and
  Systems and Integrative Neuroscience Program Director
- Psychology and Neuroscience
- 3018 GSRB-II
- Campus Box 90086
- Phone: (919) 660-5638
- Fax: 919-660-5798
- williams@psych.duke.edu

Specialties

- Systems and Integrative Neuroscience
- Cognition and Cognitive Neuroscience
- Developmental Psychology

Research Summary

Perinatal Programming of Hippocampal Plasticity, Mechanism of Hippocampal Memory, Hormones, Brain and Behavior, and Developmental Neuroscience

Research Description

My research uses both mouse and rat models to examine how nutrients and hormones alter the course of brain and behavioral development. For example, we find that supplementing or depleting nutrients like choline or folate from the maternal diet have long-term consequences on rats' memory function during early development, in adulthood, and into old age. Specifically, choline supplementation appears to improve memory while short periods of choline deprivations during prenatal development appears to selectively impair attentional processes. A second line of research examines the effects of estrogen and other steroid hormones on brain and memory function across the lifespan. I am interested in both early developmental effects of estrogens (that is, the development of sex differences in cognition) as well as effects of replacement estrogens after reproductive senescence. Recently our laboratory has begun to use various genetically altered strains of mice (knockouts and transgene) to examine how nutrients and hormones during development may interact with genotype to alter the development of learning and memory processes.

- ## Teaching

  - **PSY 106.01**
    - BIO BASES OF BEHAVIOR
    - LSRC B101
    - TuTh 01:25 PM-02:40 PM
  - **PSY 106.01D**
    - BIO BASES OF BEHAVIOR
    - Social Sciences 124
    - Tu 03:20 PM-04:10 PM
  - **PSY 106.02D**
    - BIO BASES OF BEHAVIOR
    - Old Chem 123
    - Tu 03:20 PM-04:10 PM
  - **PSY 106.03D**
    - BIO BASES OF BEHAVIOR
    - Allen 226
    - Tu 04:55 PM-05:45 PM
  - **PSY 106.04D**
    - BIO BASES OF BEHAVIOR
    - Languages 109
    - W 01:40 PM-02:30 PM
  - **PSY 106.05D**
    - BIO BASES OF BEHAVIOR
    - Allen 226
    - W 01:40 PM-02:30 PM
  - **PSY 106.06D**
    - BIO BASES OF BEHAVIOR
    - Physics 154
    - W 03:20 PM-04:10 PM

- ## Education

  -
    - PhD,
    -
    - Rutgers University,
    - 1980

- ## Awards, Honors and Distinctions

  -

- David and Janet Vaughan Brooks Distinguished Teaching Award,,
- Duke University,
- April, 2011

Selected Publications

- Sandstrom, N.J., Loy, R., & Williams.
- 2002.
- "Prenatal Choline Supplementation Increaes NGF Levels in the Hippocampus and Frontal Cortex of Young and Adult Rats".
- Brain Research
- 947:
- 9-16
- .

- Mohler, E.G., Meck, W.H., & Williams, C.L..
- 2001.
- Sustained Attention in Adult Mice is Modulated by Prenatal Choline Availability.
- International Journal of Comparative Psychology
- 14:
- 136-150
- .

- Sandstrom, N.J. & Williams, C.L..
- 2001.
- Memory Retention is Modulated by Acute Estradiol and Progesterone Replacement.
- Behavioral Neuroscience
- 115:
- 384-393
- .

- Montoya, D.A.C., White, A.M., Williams, C.L., Blusztajn, J.K., Meck, W.H., & Swartzwelder, H.S..
- 2000.
- Prenatal Choline Exposure Alters Hippocampal Responsiveness to Cholinergic Stimulation in Adulthood.
- Developmental Brain Research
- 123:
- 25-32
- .

- Williams, C.L..
- 2002.
- Hormones and Cognition.
- 527-577
- .

- C.L. Williams & Mohler, E.G..
- 2002.

- Prenatal Choline Supplementation Modifies Brain Development: Improved Cognition and Neuroprotection.
- 1-14
- .

- View All Publications
- **Search Publications**

Postdoctoral Students

Melissa Glenn

- 2006 - present