2014 Report and 2015 Budget Request
Center for Development and Behavioral Neuroscience

Norman E. Spear, Director

Board of Directors
Norman Spear
Ray Romanczyk (Associate Director)
Linda Spear (Associate Director)
Terry Deak (Associate Director)

The Center for Development and Behavioral Neuroscience (CDBN; formerly Center for Developmental Psychobiology, CDP) was founded by N. Spear in 1986. The purpose of the Center is to promote both basic and applied research examining ontogenetic development throughout the lifespan, with focus on the investigation of normal and abnormal behavior and their biological bases. Many of society's most serious problems with developing humans, such as consequences of birth complications or prenatal exposure to toxic agents and drugs of abuse, cannot be understood solely through experimental research with humans. In recognition of this limitation, CDBN provides a vehicle to promote basic and clinical research examining the ontogeny of behavior throughout the lifespan, and an opportunity for cross-fertilization between these approaches.

I. Center Accomplishments during 2014

a. Accomplishments. In ongoing basic research, Center members investigate topics such as these: developmental consequences of prenatal and postnatal encounters with drugs of abuse; circumstances of brain development and environment that place adolescents at risk for initiation and continuation of drug use and abuse; factors of neuroimmunology and genetics that promote or limit abuse of alcohol; neurochemical control of movement disorders associated with Parkinson's disease; consequences of stress during development for immune function; molecular basis of opioid activity; CNS control of circadian rhythms during development; genetic and environmental control over ethanol intake during development; parental and environmental determinants of anxiety and depression; cognitive, behavioral and neural basis of autism and its treatment; and perceptual determinants of memory in human infants. Our intention is that this information be considered in the context of that from the Center's more clinically oriented laboratories and treatment facilities (Coles, Donovick, Gibb, Lisman, Mattson, Romanczyk) that encounter, investigate and treat products of perturbed human development arising from many of the same sources studied in our tests with animals. For instance, severe learning disabilities, special challenges or behavioral abnormalities create difficulties for children not only in formal classroom settings but also in their social adjustments within and outside their homes, and a long-range goal is alleviation or cure of such afflictions.

Most Center functions (e.g., symposia and colloquia, visiting fellows, support for new collaborative research ventures, etc.) are specifically designed to encourage cross-disciplinary research and cooperative consideration of basic and applied knowledge about ontogeny, with a diversity of specific issues under investigation. In the Psychology Department alone, significant differences exist in the issues studied and methods applied for persons conducting developmental research in the behavioral neuroscience, cognitive and clinical areas. All three areas of Psychology (which are often located in separate departments at other
Universities) are represented in the Board of Directors of CDBN, as well as by other members of the Center. The CDBN comprises faculty not only from these three areas but also the Departments of Biology and Anthropology at Binghamton. Consistent with our past collaborations with Cornell’s Departments of Psychology, Nutrition, and Human Development and Family Studies, and College of Veterinary Medicine, and with the Department of Psychology at Albany (SUNY), we currently have a variety of research collaborations with scientists in the Department of Neuroscience at Upstate Medical University in Syracuse. Considerable evidence for research collaboration between laboratories within the CDBN can be seen in the publications list (see Appendix I).

b. Collaborations. The CDBN enables and facilitates collaborative research ventures among Center faculty and between these faculty and a variety of U.S. and international scientists studying development and behavioral neuroscience. Without the attraction and prestige of the Center, such collaborations would be less extensive or nonexistent. Nationally and internationally, many scientists studying developmental issues associated with behavioral neuroscience are well acquainted with not only individual faculty working in the Center, but also with the CDBN itself as an entity.

The CDBN has become internationally known for its research productivity, successful Ph.D.s and postdoctoral research associates. Within the last 5 years, for example, 10-12 postdocs and research associates from Argentina and Spain have conducted collaborative research in our laboratories.

Internationally, CDBN seems to be viewed highly by behavioral neuroscientists with a developmental orientation. It is unlikely that we would have such a strong reputation without the organization, support and status as an Organized Research Center provided by Binghamton University.

c. CDBN funds support research at BU. The most immediate benefit of the Center is in terms of federal research grant funds to the University, consequential acquisition of new information and concomitant training of students in our laboratories. The hope is for more long-term benefits for society generally, for issues such as: mechanisms by which children develop severe learning disabilities and behavioral disorders, and therapeutic interventions for these abnormalities; predictors of depression and anxiety symptoms in children and adults, including genetic predictors and alleviation of these symptoms; factors contributing to drug and alcohol abuse and other risk-taking behaviors during adolescence; neurochemical determinants of movement disorders associated with Parkinson’s disease; and circumstances of prenatal gestation and infancy that contribute to subsequent abuse of drugs.

The CDBN regularly provides travel support for graduate students and postdocs to present the results of their research at national and international conferences. This contributes significantly to the visibility of the Center, the Department of Psychology and Binghamton University in the international research community, and to professional growth of associated students and postdocs. Toward this end CDBN provided $25,000 toward the start-up funds of a promising new professor who otherwise could not have been hired. National and international visibility for the Center and University are further promoted by the active publication records of CDBN faculty and their current and former students. CDBN regularly provides funds to support the research of productive members toward their development of grant proposals, which in turn helps support graduate student research. As a recent example, one form of CDBN support was the purchase of major equipment to enhance the capability for neurochemical assays for all members of CDBN (Experion Bio-Rad System with associated computer). A final example of CDBN support of multi-user equipment is our purchase and maintenance of a large-format printer suitable for producing posters -- invaluable when preparing for meetings.

CDBN also provides funds to support the recruitment and travel of graduate-student candidates intending to study in the laboratories of CDBN members. The limited University budget often precludes...
funding for visits by graduate student candidates or for our students to travel to meetings of professional research societies. Because of the importance of having papers presented at these meetings by Center faculty and students, CDBN recently expanded its support for this function, increasing the maximum amount awarded for each meeting (now $350 per student) and expanded coverage to graduate students, postdoctoral research associates and faculty members without grants. In terms of Center support for salaries of graduate students, two graduate research assistantships have been awarded to CDBN by the University in recent years and one is assigned on to a different member of CDBN each year. These assistantships are valuable for the laboratory, mentor and student. This year assistantships were awarded to Jessica Santerre (academic year) and Anny Okrainets (academic year).

II. Future Directions

a. Long-range plans. CDBN faculty generally have been successful in obtaining external funding for their research, and it is envisioned that with CDBN’s support they will continue to be at least as successful in the future. It is difficult, however, to use conventional research grant funds to support many of the kinds of activities now supported by CDBN, and hence it would seem that some sort of internal support will be necessary to move CDBN forward. It is worth noting that despite our increasing need for administrative support in terms of secretarial and accounting assistance, we have not requested it from the University. We have managed instead by, essentially, pirating the part-time help of an unusually capable administrative assistant and office equipment purchased primarily with federal (largely NIH) funds.

We recognize that a potential source of support we have not yet pursued is the training grant mechanism. Given material support from the University and released time from teaching for the author and organizer of the application, we are nevertheless determined to move toward development of such a proposal in the near future. With the current NIH funding of the NIAAA Center Grant with UMU (DEARC), and the collaboration of a few of their scientists, we would be well-positioned for a Training Grant associated with CDBN.

b. Non-budgetary resource needs. Our meeting room (room 216, Science IV) will need to be replaced during the pending renovation of Science IV. The exact schedule is still uncertain.

c. External review. Our next external review will be in 2018.
Attachment 1:  
Center for Development and Behavioral Neuroscience

1. Center Personnel

a. Binghamton faculty associated with Center:

Carlos Arias, Behavioral Neuroscience*
Christopher Bishop, Behavioral Neuroscience
Nicole Cameron, Behavioral Neuroscience
Yulong Chen, Biological Sciences
Anne Clark, Biological Sciences
Meredith Coles, Clinical
Terrence Deak, Behavioral Neuroscience
Marvin Diaz, Behavioral Neuroscience
Patricia Di Lorenzo, Behavioral Neuroscience
Peter Donovick, Clinical
Peter Gerhardstein, Cognitive
Brandon Gibb, Clinical
Stephen Lisman, Clinical
Michael Little, Anthropology
Richard Mattson, Clinical
Juan Carlos Molina, Behavioral Neuroscience*
Michael Nizhnikov, Behavioral Neuroscience
Ricardo Pautassi, Behavioral Neuroscience*
Maria-Teresa Romero, Behavioral Neuroscience
Eric Truxell, Behavioral Neuroscience
Lisa Savage, Behavioral Neuroscience
Elena Varlinskaya, Behavioral Neuroscience
David Werner, Behavioral Neuroscience

b. Postdoctoral students/associates associated with the Center

Tamara Doremus-Fitzwater, Behavioral Neuroscience
Sebastian Miranda Morales, Behavioral Neuroscience*
Gina Fernandez, Behavioral Neuroscience
Max Owens, Behavioral Neuroscience
Amy Perkins, Behavioral Neuroscience
Lindsey Vedder, Behavioral Neuroscience

* collaborators from Argentina; frequent visitors to Binghamton University
b. Graduate students associated with the Center

M. Belen Acevedo
Amanda Borrow
Summer Bottini
Katie Burkhouse
Jenna Carter
Joe Catanzaro
Rachel Cavallero
Nicole Chambers
Melissa Conti
Donna Crossman
Marcela Cullerre
Carol Dannenhoffer
Amanda Deming
Alex Denman
Olga Escañilla
M. Carolina Fabio
Justin Gill
Joseph Hall
Dominika Hosova
Esther Kim
Anastacia Kudinova
Justine Landin
Marissa Langett

David Lindenbach
Dennis Lovelock
Alex McClory
Lindsey Morra
Alecia Moser
Jacob Nota
Anny Okrainetz
Sarah Olsen
Corinne Ostock Kiessling
Edwin Ortiz
Courtney Pooler
Daniel Popoola
Ariel Ravid
Damian Revillo
Jessica Saalfield
Jessica Santerre
Jessica Schubert
Nadia Schuman
Elizabeth Soehngen
Aliona Tsypes

Laura Turner
Julia Usula
Andrew Vore
c. Other personnel associated with the Center

Teri Tanenhaus, Administrator
  25% effort paid by Center
Attachment 2:
Center for Development and Behavioral Neuroscience

2. Center Productivity

a. Publications 2014

Carlos Arias:


Christopher Bishop:


Nicole Cameron:
* = student co-author


Meredith Coles:
* = student co-author


**Terrence Deak:**


Hennessy, M.B., Deak, T. & Schiml, P.A. (2014). Sociality and sickness: have cytokines evolved to serve social functions beyond times of pathogen exposure? Brain, Behavior & Immunity, 37, 15-20. [schematic illustration selected for use as Cover Art for this issue of BBI].


Patricia DiLorenzo:


Escanilla; O.D., Victor, J.D. and Di Lorenzo, P.M. Odor-taste convergence in the nucleus of the solitary tract of the wake freely licking rat. Under revision.
**Tamara I. Fitzwater:**


**Peter Gerhardstein:**


**Brandon Gibb:**


Stephen Lisman:


Richard Mattson:


Sebastian Miranda Morales:


Juan Carlos Molina


Michael Nizhnikov:


**Ricardo Pautassi:**


Michael Nizhnikov, Ricardo Pautassi, Jenna Carter, Justine Landin, Elena Varlinskaya, Kelly Bordner, David Werner, and Norman E. Spear (2014). Brief prenatal ethanol exposure alters behavioral sensitivity to the kappa opioid receptor agonist (u62,066c) and antagonist (nor-bni) and reduces kappa opioid receptor expression. Alcoholism, clinical and experimental research 38(6), 1630-38. DOI: 10.1111/acer.12416


Raymond Romanczyk:


Lisa Savage:
* = student co-author


Linda Spear:
* = student co-author


Norman Spear:


Miranda-Morales RS, Nizhnikov ME, and **Spear NE**. (2014) Prenatal exposure to ethanol during late gestation facilitates operant self-administration of the drug in 5-day-old rats. Alcohol 48: 19-23. PMID: 24355072

Nizhnikov ME, Pautassi RM, Carter JM, Landin JD. Varlinskaya EI, Borchner KA, Werner, DF, **Spear NE** (2014). Brief prenatal ethanol exposure alters behavioral sensitivity to the kappa opioid receptor agonist (U62,066E) and antagonist (Nor-BNI) and reduces kappa opioid receptor expression. Alcohol Clin Exp Res. 2014 Jun;38(6):1630-8. PMID: 24796820


**Eric Truxell:**


**Elena Varlinskaya:**


David Werner:


b.-c. Presentations, Meetings, Lectures, Symposia 2014

Christopher Bishop:


Nicole Cameron:
* = student co-author

*Borrow, A.P. and Cameron, N.M. (2014) A natural model of gonadal steroid effects on emotional lability and risky behavior in females. 8th International Conference on Hormones, Brain and Behavior (ICHBB) Liège, Belgium


*Popoola, D., Nizhnikov, M., Spear, N. and Cameron N.M. (2014) Possible contributions of GABAA and kappa opioid receptor in transgenerational effects of prenatal exposure. Society for Neuroscience (SFN) Washington, DC, USA

*Popoola, D., Nizhnikov, M., Spear, N. and Cameron N.M. (2014) Possible contributions of GABAA and kappa opioid receptor in transgenerational effects of prenatal exposure. 2nd Workshop on France-USA Collaborative Initiatives in Addiction. Washington, DC, USA

Meredith Coles:
* = student co-author


Coles, M.E. & *Schubert, J.R. (2014, April). Making Exposure and ritual prevention for pediatric OCD work for you and your patients. Workshop accepted for presentation at the annual meeting of the Anxiety Disorders Association of America, Chicago, IL

Terrence Deak:


Presented at the annual meeting of the Society for Neuroscience, Washington, DC.


Kudinova, A.Y., Hueston, C., Deak, T., McGearry, J., Knopik, V., & Gibb, B.E. (2014, March). *Early life stress, cytokines, and depression*. In B.E. Gibb (Chair) Using multiple levels of analysis to develop a more fine-grained understanding of depression risk: Animal models, genetic influences, physiology, and environmental context. Symposium presented at the annual meeting of the Anxiety and Depression Association of America, Chicago, IL.

*Invited lecture:*


**Tamara Fitzwater:**


**Peter Gerhardstein:**


**Brandon Gibb:**

Woody, M. & Gibb, B.E. (2014, March). Do cognitive vulnerabilities mediate versus moderate the link between mother and child depression? In J. Hamilton (Chair) The role of cognitive vulnerabilities in adolescent depression. Symposium to be conducted at the annual meeting of the Society for Research on Adolescence, Austin, TX.


Burkhouse, K.L., Owens, M., & Gibb, B.E. (2014, March). Neural markers of emotional reactivity in children of depressed mothers. In B.E. Gibb (Chair) Using multiple levels of analysis to develop a more fine-grained understanding of depression risk: Animal models, genetic influences, physiology, and environmental context. Symposium conducted at the annual meeting of the Anxiety and Depression Association of America, Chicago, IL.

Gibb, B.E. (2014, March). Discussant. In J.A. Micco (Chair) Family risk factors of cognitive vulnerability to child anxiety and depression. Symposium conducted at the annual meeting of the Anxiety and Depression Association of America, Chicago, IL.

Gibb, B.E. (2014, March). Using multiple levels of analysis to develop a more fine-grained understanding of depression risk: Animal models, genetic influences, physiology, and
environmental context. Chair of symposium conducted at the annual meeting of the Anxiety and Depression Association of America, Chicago, IL.


Kudinova, A.Y., Ilueston, C., Deak, T., McGeary, J., Knopik, V., & Gibb, B.E. (2014, March). Early life stress, cytokines, and depression. In B.E. Gibb (Chair) Using multiple levels of analysis to develop a more fine-grained understanding of depression risk: Animal models, genetic influences, physiology, and environmental context. Symposium conducted at the annual meeting of the Anxiety and Depression Association of America, Chicago, IL.

Owens, M., Johnson, A.L., McGeary, J.E., Knopik, V.S., & Gibb, B.E. (2014, March). Eye tracking indices of attentional bias in children of depressed mothers: Polygenic influences help to clarify previous mixed findings. In B.E. Gibb (Chair) Using multiple levels of analysis to develop a more fine-grained understanding of depression risk: Animal models, genetic influences, physiology, and environmental context. Symposium conducted at the annual meeting of the Anxiety and Depression Association of America, Chicago, IL.

Woody, M.L., Gibb, B.E., & McGeary, J.E. (2014, March). Physiological and genetic mechanisms underlying brooding rumination in women at risk for depression. In B.E. Gibb (Chair) Using multiple levels of analysis to develop a more fine-grained understanding of depression risk: Animal models, genetic influences, physiology, and environmental context. Symposium conducted at the annual meeting of the Anxiety and Depression Association of America, Chicago, IL.


Gibb, B.E. (2014, September). Biomarkers of risk in children of depressed mothers. Chair of symposium conducted at the annual meeting of the Society for Psychophysiological Research, Atlanta, GA.


Symposium conducted at the annual meeting of the Society for Psychophysiological Research, Atlanta, GA.


Stephen Lisman:

Lisman, S. A. What I Have Learned about Alcohol and Alcohol Abuse: My 12 Steps. Case Conference presentation, Binghamton University Psychology Department, October 23, 2014.

Richard Mattson


Invited lectures, symposia and meetings:


Sebastian Miranda Morales:


Juan Carlos Molina

Macchione AF, Haymal BO, Molina JC. Conditioned breathing depression during perinatal life as a function of associating ethanol odor and the drug’s intoxicating effects. 1st Panamerican Congress Of Physiological Sciences (Panam), Foz De Iguazú. August 2-6, 2014.

Invited lectures, symposia and meetings:


Michael Nizhnikov:


*Popoola, D., Nizhnikov, M., Spear, N. and Cameron N.M. (2014) Possible contributions of GABAA and kappa opioid receptor in transgenerational effects of prenatal exposure. Society for Neuroscience (SFN) Washington, DC, USA

*Ricardo Pautassi:


Tuzinkevich, Francisco; Roque, Denise; Pautassi, Ricardo (2014). Alcohol Consumption and driving: a revisión on studies using driving simulators. VI International Congress on Research and Practice in Psychology. Facultad de Psicología de la Universidad Nacional de Buenos Aires, 26 al 29 de Noviembre de 2014.

Vera, Belén Del Valle; Pautassi, Ricardo; Roque, Denise; Lagoria, Oscar; Pilatti, Angelina (2014). Alcohol consumption and alcohol-related problems in freshmen. VI International Congress on Research and Practice in Psychology. Facultad de Psicología de la Universidad Nacional de Buenos Aires, 26 al 29 de Noviembre de 2014.

Berardo, LR; Fabio, MC; Pautassi, RM. A revisión on the effects of maternal separation on alcohol consumption in rats. 1st Latinamerican Congress for the Advancement of Psychological Science. Universidad Abierta Interamericana, October 15-18, 2014, Buenos Aires.


Raymond Romanczyk:


Lisa Savage:


Linda Spear:


Norman Spear:


*Popoola, D., Nizhnikov, M., Spear, N. and Cameron N.M. (2014) Possible contributions of GABAA and kappa opioid receptor in transgenerational effects of prenatal exposure. Society for Neuroscience (SFN) Washington, DC, USA

*Popoola, D., Nizhnikov, M., Spear, N. and Cameron N.M. (2014) Possible contributions of GABAA and kappa opioid receptor in transgenerational effects of prenatal exposure. 2nd Workshop on France-USA Collaborative Initiatives in Addiction. Washington, DC, USA

Eric Truxell:

presented at the 36th Annual Research Society on Alcoholism Meeting, Orlando, FL.


_Elena Varlinskaya:_


David Werner


Attachment 3:
Center for Development and Behavioral Neuroscience

3. Current Sources of Support/Space

a. Grants awarded to participating faculty, 2014
   b. Critical role of the CDBN in development of proposals:

Christopher Bishop:

PI: Bishop, C. National Institute of Neurological Disease and Stroke. “Regulation of L-DOPA-induced dyskinesia by 5-HT1A receptor mechanisms”. The aim of the proposed set of experiments will be to test the hypothesis that striatal 5-HT1A receptors represent a viable mechanistic target for the reduction of L-DOPA-induced dyskinesia using a validated in vivo rodent model of PD. 1R01NS059600-01 (5/01/08-4/30/14). Direct Costs: $875,000

PI: Bishop, C. Micheal J. Fox Foundation. “Co-targeting of 5-HT1A receptors and serotonin transporters for the treatment of L-DOPA-induced dyskinesia”. The aim of this work is to determine whether coincident blockade of the serotonin targets reduces the development and long-term expression of dyskinesia in a rat model of Parkinson’s disease. MJFF Dyskinesia Challenge Program (1/01/14-12/30/14). Direct Costs: $100,000

PI: Bishop, C. Michael J. Fox Foundation. “D-512, a novel multifunctional D2/D3 receptor agonist for the treatment of PD”. The aim of this work is to determine whether the dopamine agonist D-512 is a useful monotherapy in a preclinical rat model of Parkinson’s disease. MJFF Rapid Response Innovation Award Program (9/15/14-9/14/15). Total Costs: $75,000

Co-PI: Bishop, C. Howard Hughes Medical Institute. “Jumpstarting collaboration, fueling undergraduate research”. The grant will fund a program that teams undergraduate majors in the life sciences with students in the physical sciences, mathematics, computer science and engineering to work on collaborative, interdisciplinary research projects in the life sciences. (1/01/10-12/31/14). Total Costs: $1,400,000

Co-PI: Bishop, C. Howard Hughes Medical Institute. “Authentic research in STEM undergraduate education”. The grant will fund a program that provides authentic STEM research experiences to freshmen undergraduate in the physical sciences, mathematics, computer science and engineering. (8/01/14-7/31/19). Total Costs: $1,200,000

Pending Grants:

PI: Bishop, C. Micheal J. Fox Foundation. “Targeting muscarinic receptors for the treatment of L-DOPA-induced dyskinesia”. The goal of this research is to determine whether coincident stimulation of muscarinic m1 and m4 receptors reduces the long-term expression of dyskinesia in a rat model of Parkinson’s disease. MJFF Dyskinesia Challenge Program (1/01/15-12/30/15). Direct Costs: $100,000
Co-investigator: **Bishop, C.** National Science Foundation. “Freshman Research Immersion Program for Engagement and Retention”. The grant will fund equipment for a program to provide authentic STEM research experiences to freshmen in the physical sciences, mathematics, computer science and engineering to increase engagement and retention of students in these fields (8/1/15-7/31/2018). Direct Costs: $1,516,515.

**Nicole Cameron:**

National Institutes of Alcohol Abuse and Alcoholism (NIAAA), PI: **Nicole M. Cameron.** *Maternal care influence in offspring ethanol sensitivity and consumption.* Pilot grant part of a P50 (PI: Linda P. Spear.): Cost: $60,000 (8/1/2014-7/30/16)

SUNY/RF Research Collaboration Pilot Grant, PI: Richard E. Mattson; Co-PIs: **Nicole M. Cameron,** Matthew D. Johnson, Frank Middleton, Joanne Davila *The Interplay of genetic, neurobiological, and developmental factors in the association between social support in marriage and physical and mental health: toward an integrated model.* Cost: $100,000 (1/1/2014-12/30/15)

Developmental exposure Alcohol Research Center (DEARC) PI: **Nicole M. Cameron.** Pilot Project Grant. *Effects of early environment and adolescent ethanol exposure on negative mental health outcomes.* Cost: $15,000/year for 2 years (9/1/2012-8/30/2014)

Binghamton University/ Upstate Medical University Collaborative Neuroscience Pilot Project. Co-PIs: **Nicole M. Cameron** and Frank Middleton. *Epigenetic effects of maternal care on puberty onset in female rats.* Cost: $18,500 (9/1/2012-8/30/2014)

**Terry Deak:**

Spear, L., **Deak, T.** Youngentob, S.L. (co-Investigator). “Developmental Exposure Alcohol Research Center (DEARC)” NIAAA. Sept 1, 2014- Aug 31, 2019. Total Costs: $9,000,000. This is a renewal application for our multi-investigator Center grant for which I serve in multiple roles: PI of Main Research Component 3; PI of the Pilot Project Core; and co-I of the Administrative core.

Hennessy, M.B., **Deak, T.** & SchmI-Webb, P. (Co-Investigator). “Stress-induced sickness during social separation: implications for depression”; NIMH Grant: R15 (AREA grant); Funding period: July 1st, 2013 – June 30th, 2016; Direct Costs: $300,000. This is our 3rd renewal (4th funded proposal) in series on this collaboration.

**Deak, T.** (Principal Investigator). “Stress, Neuroinflammation and Social Behavior.” Janssen Pharmaceuticals; Funding Period: October 1, 2013-October 1, 2015; Total Costs: $101,289

**Deak, T.** (Principal Investigator). “Neuroinflammation and social behavior across the lifespan”; NIA: 1R01AG043467-01; Funding period: May 15, 2014 – May 14, 2019; Total Costs: $2,308,112.
Pending support:


Patricia Di Lorenzo:

NIH Grant, “Temporal coding in the gustatory system of the brain”, December 1, 2010 to November 30, 2015, $1,250,000 (direct costs), PI.

NIH Bridges to the Baccalaureate Grant, “SUNY Upstate Bridges to Baccalaureate Program, October 1, 1998 to September 30, 2019, $1,720,000 (total direct) co-PI.

Peter Gerhardstein:

NSF “Transfer of learning from touch screens and television during early childhood”. CO-I with Rachel Barr, PhD, Georgetown University. 2010-2014. Total cost $500,000.

An eye-tracker for this project was purchased in part with funding from the CDBN; a conference presentation pertinent to the continuation of this work can be seen below. Support from the CDBN allowed students to travel to conferences to present this work in 2014.

Brandon Gibb:

Brandon Gibb Principal Investigator: “Pathways to Depression in Children of Depressed Mothers” (2009-2014)
National Institute of Child Health and Human Development, R01 HD057066
Total costs: $2,061,875

Brandon Gibb Principal Investigator: “Children’s Attentional Biases: A Key Component of Negative Valence Systems” (2012-2016)
National Institute of Mental Health, R01 MH098060-01
Total costs: $2,945,834

Brandon Gibb Co-Sponsor: “DPADY: Developmental Pathways from Anxiety to Depression in Youth” (PI: Cohen [Rutgers University]) (2012-2014) National Institute of Mental Health, F31 MH096430

Brandon Gibb Consultant: “Biased Attention to Emotional Faces as an Endophenotype for Depression in Youth” (PI: Jenness [University of Denver]) (2012-2014)
National Institute of Mental Health, F31 MH097367

Brandon Gibb Principal Investigator: Administrative supplement to R01 MH098060-01 (banking of data from parent project in RDoC-db)
Binghamton University Interdisciplinary Collaborative Grant
Total costs: $20,000

Steve Lisman:

RF/SUNY Collaborative Fund. “College Student's Perceptions of the Positive and Negative Consequences of Non-Medical Prescription Drug (NMPD) Use"
Project Period: 09/01/12-08/31/14 (2Years)
PI: Kathleen Parks Marsh, RIA at University at Buffalo
Co-Is: Sherri Darrow, Ph.D., Amy Hequembourg, Ph.D. (Buffalo), Stephen Lisman, Ph.D. (Binghamton)
[10% effort in both years In Kind ], Mark Muraven, Ph.D. (Albany) Awarded 11/28/2012 for two years. Direct Costs: $99,627 (Institutional Matching Funds, $120,405).

Richard Mattson

SUNY Research Foundation Collaborative Fund.
The interplay of genetic, neurobiological, and developmental factors in the association between social support in marriage and physical and mental health.
Date Submitted: 2013
Role: Principal Investigator
Total Costs: $100,000.00

The CDBN has supported this grant by way of its purchasing of dry ice necessary for the transport and storage of biological samples from the beginning of the project through the end of 1/14.

Juan C. Molina:


Molina, J.C. (PI) Exposición ética durante la gestación tardía y la lactancia: efectos a nivel materno y su influencia sobre la respuesta infantil hacia la droga (Ethanol exposure during late gestation and nursing: Maternal effects and influences upon infantile responsiveness to the the

Molina, J.C. (PI) Exposición etílica en fetos e infantes altriciales: efectos sobre la reactividad al alcohol (continuación) (Ethanol exposure in altricial fetuses and infants: Effects upon alcohol reactivity (Continuation)). Secretaría de Ciencia y Técnica, Universidad Nacional de Córdoba, Code: PP01. June2012-June 2014. Annual funding: $ 90,000 ($ 8.50 = U$$ 1.00). Also includes a postdoctoral fellowship with an annual funding approximately equivalent to $72,000.


Subcontract between THE RESEARCH FOUNDATION OF STATE UNIVERSITY FOR NEW YORK (PI: Dr. Norman E. Spear) and Institute Ferreyra in Cordoba, Argentina (PI, Dr. Juan Carlos Molina). Research topics: Early Sensitivity to Acetaldehyde’s Motivational Properties and Early EtOH Exposure: Impact upon Respiration Patern. April 2014 - April 2015. Annual funding: U$$ 10,000.

Note: The above described subcontract was absolutely critical to allow the development of our research projects and the training of the corresponding human resources. As can be observed, despite the number of grants obtained in Argentina, the funding is minimal due to the exchange ratio existing between our peso ($) and the American dollar (U$$. Without the cooperation with the CDBN, particularly via the scientific interaction with Dr. Norman E. Spear, it was simply impossible to sustain the necessary scientific and academic activity. Furthermore, the fact of cooperating with the CDBN has had a major impact in the scoring of the different grants obtained in our country.
Ricardo Pautassi:


Raymond Romanczyk:

Romanczyk, R.G. Evaluating the Impact of EI Services on Children with ASD and Their Families. In partnership with New York State Department of Health via a grant from Department of Health and Human Services' Health Resources and Services Administration. September 2010 – August 2014.


Lisa Savage:

R01AA021775 (Savage-PI) 05/05/14 - 02/28/19 1 mo summer

NIAAA
Cortical Biobehavioral Disruption after Thiamine Deficiency and Chronic Alcohol
In this proposal, we use our recently developed translational animal model of chronic ethanol treatment (CET) combined with thiamine deficiency (TD) to determine both the independent actions of CET and TD as well as how these factors synergistically interact to affect neurotrophin adaptation, cognitive functioning and activation of the fronto-cortico-limbic network (AIM 1). We will determine whether basal forebrain cholinergic cell loss, altered cortical cellular structure and dysfunctional acetylcholine (ACh) release are critical mediators of alcohol-related cognitive impairment. Furthermore, we will determine whether exercise can restore behavior, cholinergic innervation, and behaviorally stimulated ACh efflux across the hippocampus and frontal cortex (AIM 2). The final AIM (3) will determine whether a moderate
TD episode during CET leads to greater disruption of cytogenesis (neurogenesis in the hippocampus and gliogenesis in the frontal cortex).
$254,343.00 (yearly - direct)
$373,442.00 (yearly - total)

R21 NS085502-01 (Savage, PI) 06/30/14 - 06/29/16 I mo summer
NINDS
Exercise recovers cholinergic dysfunction through neurotrophin modulation. The project will test the hypothesis that voluntary exercise improves learning and memory via acute and prolonged increases in levels of neurotrophins BDNF and NGF, with NGF recovering a quiescent population of cholinergic neurons that co-label with nestin. This in turn enhances cholinergic transmission throughout the septohippocampal circuit, which leads to improvements in learning and memory.
$150,000.00 (yr 1-direct)
$222,900.00 (yr 1-total)

5R25GM056637-15 (Savage, DiLorenzo, MPIs) 08/01/10 - 07/31/19 I mo summer
NIH-NIGM
SUNY Upstate Bridges to the Baccalaureate Program
This program aims to identify the appropriate URM students in their first year at the community college; support the students in their science courses at the community college and provide a hands-on research experience in the university setting for these students.
$198,000.00 (yr-direct costs)
$215,000.00 (yr-total)

P50AA017823 (renewal): Developmental Exposure Alcohol Research Center (DEARC)
NIH-NIAAA: Head Center PI: Spear, L.P.
09/01/14 - 08/31/19 2 mo academic
1. Animal/Behavioral Core (ABC);
(Savage, PI)
The DEARC represents a comprehensive approach towards understanding functional and neural effects of developmental alcohol exposure at multiple neural levels and across the protracted span of brain development – including the important developmental transitions of adolescence. The “alcoholism generator” theme of our Center emphasizes the importance of developmental programming in the emergence of alcohol problems and alcoholism. The ABC is designed to: (a) to support production of animals needed for the DEARC; (b) provide oversight, standardization, and training for alcohol administration and measurement procedures; and (c) to function as a collaborative partnership with all DEARC PIs to develop and characterize the functional phenotypes that emerge as a result of ethanol exposure at various developmental stages.
$48,000.0 (yr-direct costs)
$60,000.00 (yr-total)

2. NeuroCore
(Savage, Co-PI)
The NeuroCore is designed to support mechanistic approaches to assess consequences of developmental ethanol exposure, and how this exposure changes brain function. The NeuroCore consists
of three subcomponents: The molecular subcomponent will provide nucleic acid purification, quantification and quality assessment, mRNA and microRNA expression profiling by sequencing as well as microarray, DNA profiling of transcription factor binding, modified histone binding, or CpG methylation by sequencing, multiplex validation of RNA or DNA-based data and real-time quantitative RT-PCR. Techniques available in the neuroanatomy subcomponent include immunofluorescence techniques to map regional alterations in neuronal and glial phenotypes, immunohistochemistry to determine functional anatomical circuit adaptations using expression of immediate early genes, neuropeptides, or signal transduction pathways, and other metrics of neuropathological consequences of alcohol exposure. The cellular subcomponent includes the necessary equipment, space and expertise to conduct in vitro experiments in primary neuronal, glial, and cell line specific cultures as well as embryonic and oocyte preparations to create genetically modified rodent models.

$78,000.00 (yr-direct costs)
$115,000.00 (yr-total)

Linda Spear:

R01 AA08026  Spear, LP (PI)  09/30/08-08/31/2015
NIAAA  Acute and Chronic Tolerance to Ethanol in Adolescence: Impact on Consumption

The goals of this project are to determine the relationship between ethanol consumption and the development of acute and chronic tolerance to various aversive effects of ethanol during adolescence and in adulthood, explore neural substrates underlying these ethanol adaptations, and assess whether tolerance development is causal for inducing the high levels of ethanol consumption characteristic of adolescence.

5P50AA017823-07  Spear, LP (Center Director, PI of Main 4)  09/01/09-08/31/2019
NIAAA  Developmental Exposure Alcohol Research Center

The Developmental Exposure Alcohol Research Center (DEARC) is an interdisciplinary center uniting Behavioral and biomedical researchers at Binghamton University of the State University of New York (SUNY), SUNY Upstate Medical Center, and other institutions in upstate New York for the conduct and promotion of research involving fetal and adolescent alcohol exposures.

U01 AA19972-01  Spear, LP (PI)  09/01/10-08/31/2015
NIAAA  Impact of adolescent intermittent ethanol on adult social reward and anxiety

This U01 is part of the “Neurobiology of Adolescent Drinking in Adulthood” (NADIA) consortium. The goals of this project are to determine the lasting effects of self-administered and experimenter-administered alcohol during adolescence on social anxiety, alcohol’s anxiolytic properties, and underlying neural/genetic adaptations.
**Norman E. Spear:**

Ethanol intake and reinforcement in infant rats

PI: N. Spear

NIAAA: RO1AA13098, 2002-2007, $1,128,750 (total costs)

No-Cost Extension 2013-2014

Developmental Exposure Alcohol Research Center, NIAAA: 1P50AA017823, 2009-2014

N. Spear: Main Project III

Ontogeny of response to ethanol after prenatal ethanol,

2009-2014

2009-2010, $264,887 (total costs, Year 1)

2010-2011, $290,490 (total costs, Year 2)

2011-2012, $281,242 (total costs, Year 3)

2012-2013, $281,242 (total costs, Year 4)

2013-2014, $281,242 (total costs, Year 5)

**Elena Varlinskaya:**

The Developmental Exposure Research Center (DEARC) is an interdisciplinary center uniting behavioral and biomedical researchers at Binghamton University, SUNY-Upstate Medical Center, and other institutions in upstate New York for the conduct and promotion of research involving fetal/adolescent alcohol exposures.

Role: PI Project 5

R01 AG043467 Deak, T. (PI) 05/15/2014-05/14/20:9

NIH/NIA

Neuroinflammation and social behavior across the lifespan.

This proposal will examine the role of aging-related increases in brain inflammation, accompanied by a decline in gonadal steroids and their impact on social behavior in aged rats.

Role: Co-investigator

**David Werner:**

P50AA017823-06 (PI: Spear): Alcohol Center 09/2014 – 08/2019

Source: NIH/NIAAA

Title: Developmental Exposure Alcohol Research Center

Role/Effort: co-Investigator, Main4 and NeuroCore, 2 months effort

Total $: 8,999,961 / 21,159

Role of CDBN: The Center and all of its members have played a critical role in getting helping this renewal obtain a top priority score. Such a mechanism is critical to all members of the CDBN.
Health Sciences Transdisciplinary Area of Excellence 01/2014 – 12/2014
Source: State University of New York
Title: A New Strategy to Prevent Neuronal Glutamate Excitotoxicity
Role/Effort: Co-PI (with Christof Grewer)
Total $: 12,000

Role of the CDBN: The Center and its members have been instrumental in providing both fiscal support and scientific feedback on this successfully funded SUNY internal joint project between Dr. Christof Grewer and myself.

Submitted Applications:
R21AA024189-01 (PI: Werner): 07/2015 – 06/2017
Source: NIH/NIAAA
Title: Investigation of norepinephrine modulation of age-dependent ethanol responses
Role/Effort: PI, 2.5 months effort
Total $: 429,095

c. Annual Operating Budget. The annual income for CDBN consists of three components: (1) the CDBN Infrastructure funds, which are based on the total grant funds awarded to participating faculty and credited to the Center (and may be carried over to the next academic year; (2) an amount designated by the Advisory Committee for Scholarship and Research and funded through Sponsored Funds for ORC Research Activities; and (3) award of graduate student assistantships for the academic year. The stipend for each GA line is $18, 500 and includes a tuition scholarship.

In 2014-15, the CDBN infrastructure project award was $43,047; the ORC award was $2000; and two GA lines were awarded.

The expenses for CDBN in 2014 are listed below.

Student Travel Expenses:

<table>
<thead>
<tr>
<th>Name</th>
<th>Date</th>
<th>Organization</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Amanda Borrow</td>
<td>4/14</td>
<td>Organization for Study of Sex Differences</td>
<td>$350</td>
</tr>
<tr>
<td>Jenna Carter</td>
<td>6/14</td>
<td>Research Society on Alcoholism</td>
<td>$350</td>
</tr>
<tr>
<td>Carol Dannenhoffer</td>
<td>6/14</td>
<td>Research Society on Alcoholism</td>
<td>$350</td>
</tr>
<tr>
<td>Anny Okrainets Gano</td>
<td>6/14</td>
<td>Research Society on Alcoholism</td>
<td>$350</td>
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<tr>
<td>Tamara Fitwater</td>
<td>6/14</td>
<td>Research Society on Alcoholism</td>
<td>$350</td>
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<tr>
<td>Esther Kim</td>
<td>6/14</td>
<td>Research Society on Alcoholism</td>
<td>$350</td>
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<tr>
<td>Justine Landin</td>
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<td>Jessica Saalfield</td>
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<tr>
<td>Alecia Moser</td>
<td>11/14</td>
<td>Intl.Society for Developmental Psychobiology</td>
<td>$350</td>
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<tr>
<td>Melissa Conti</td>
<td>11/14</td>
<td>Society for Neuroscience</td>
<td>$350</td>
</tr>
<tr>
<td>Carol Dannenhoffer</td>
<td>11/14</td>
<td>Society for Neuroscience</td>
<td>$350</td>
</tr>
<tr>
<td>Tamara Fitzwater</td>
<td>11/14</td>
<td>Society for Neuroscience</td>
<td>$350</td>
</tr>
<tr>
<td>Jessica George</td>
<td>11/14</td>
<td>Society for Neuroscience</td>
<td>$350</td>
</tr>
</tbody>
</table>
David Lindenbach 11/14 Society for Neuroscience $350
Dennis Lovelock 11/14 Society for Neuroscience $350
Michael Weiss 11/14 Society for Neuroscience $350

Total = $ 5,600.00

Faculty Research Support

Dr. Lisa Savage/ Dr. Molly Deak 4/14 VWR Flammable Materials Refrigerator 50% contribution $1,302.54
Dr. Meredith Coles 5/14 Emotiv Education Edition, EEG headset, and EPOG hydrator pack $3,349.90
Dr. David Werner 2014 various equipment/supplies: lab support $6,000.00
Drs. Cameron, Mattson (1/2 year: Werner, Nizhnikov) 2014 Air Gas (weekly dry ice) $6,592.15
Dr. Nicole Cameron 2/14 Travel contribution to Alcohol and Nervous System Conference $350.00
Dr. Michael Nizhnikov 2014 Analox Instruments (alcohol research) $196.00
Dr. Peter Gerhardstein Dr. Brandon Gibb Dr. Sarah Laszlo 2014 Commitment for Near-Infrared Spectroscopy System (NSF Major Research Instrumentation Program (MRI) $10,000.00

Total = $ 27,790.59

Expenses of Visiting Scientists/Speakers:

Dr. Marvin Diaz 5/14 Dinner $162.78
Dr. Ryan Vetreno 9/14 Travel $244.60
Dr. Toni Pak 12/14 Lunch $100.00

Total = $ 507.38
Expenses of Visiting Prospective Graduate Students:

Nicole Chambers 3/14 Housing $194.00

Total = $194.00

Administrative/Secretarial Support:

Teri Tanenhaus Administrative support $13,722.78

Total = $13,722.78

Miscellaneous Center Purchases:

Supplies (paper/toner) for large-format printer used by all member of CDBN and their students $1,417.04

Total = $1,417.04

TOTAL 2014: $49,231.79

d. Space occupied by Center. The Center meeting room is located in Science 4, room 216.
Attachment 4:
Center for Development and Behavioral Neuroscience

4. New Budget Request and Justification

a. b. Requested funds/internal support.

We have tried to minimize requests for internal funds. We were nevertheless grateful for the $2000 - $5000 allotted to the CDBN in the last few years. We have put it to good use for office supplies and supplements for travel expenses associated with attendance at research meetings by graduate students presenting papers. We will be grateful for whatever can be allotted this year.