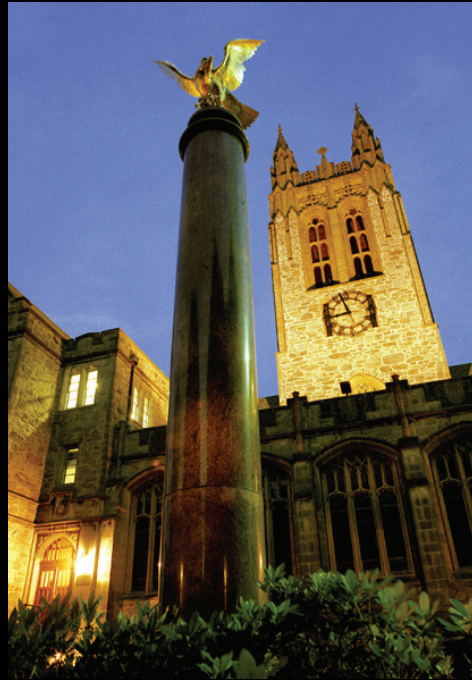


# BOSTON COLLEGE

GRADUATE SCHOOL OF ARTS AND SCIENCES



GRADUATE PROGRAM

# PSYCHOLOGY

# THE GRADUATE PROGRAM

**P** sychology—the scientific study of thought, feeling, and behavior in humans and other animal species—is one of the most exciting areas of study today. The study of the relationship of mind, brain, and behavior is at the frontier of science, and discoveries in the field of psychology have profound effects on other domains – e.g., philosophy, economics, law, education, and public policy.

We offer both M.A. and Ph.D. graduate training programs. Both programs offer training in the five core areas of psychology, listed alphabetically: Behavioral Neuroscience, Cognitive Neuroscience, Developmental Psychology, Quantitative Psychology, and Social Psychology.

The department admits students whose interests fall within or bridge these areas. Once admitted to the program, students can participate in a cross-area training program in Neuroscience, and/or minor in Graduate Statistics. All students collaborate closely with a faculty advisor.

Our website, [www.bc.edu/psychology](http://www.bc.edu/psychology), provides a description of our program and ongoing research in the department. Current faculty members are listed below along with selected publications. Full CVs of faculty can be found on our website. Please also contact the individual with whom you are considering working.

## Behavioral Neuroscience

### MICHAEL NUMAN

**Ph.D. 1973, University of Chicago**

**Email: [numan@bc.edu](mailto:numan@bc.edu)**

Michael Numan's research focuses on the neurobiology of motivation, emotion, and social behavior. His work examines the neurobiology of parental behavior in rodents and the effects of hormones and experience on the relevant hypothalamic, limbic, and striatal circuits.

❖ Stolzenberg, D.S., McKenna, J.B., Keough, S., Hancock, R., Numan, M.J. and Numan, M. (2007). Dopamine D1 receptor stimulation of the nucleus accumbens or the medial preoptic area promotes the onset of maternal behavior in pregnancy-terminated rats. *Behavioral Neuroscience*, 121, 907-919.

❖ Numan, M., and Stolzenberg, D.S. (2009). Medial preoptic area interactions with dopamine neural systems in the control of the onset and maintenance of maternal behavior in rats. *Frontiers in Neuroendocrinology*, 30, 46-64.

❖ Numan, M., & Woodside, B. (2010). Maternity: Neural mechanisms, motivational processes and physiological adaptations. *Behavioral Neuroscience*, 124, 715-741.

### GORICA D. PETROVICH

**Ph.D. 1997, University of Southern California**

**Email: [gorica.petrovich@bc.edu](mailto:gorica.petrovich@bc.edu)**

Gorica Petrovich's research explores the neurobiology of the motivational and emotional control of feeding behavior. She is particularly interested in interactions between the forebrain and the hypothalamus in the control of food intake and how basic hunger mechanisms can be influenced by learning and stress. She accomplishes the

research goals through the use of advanced neuroanatomical, molecular, and behavioral techniques in animal models. Her research demonstrates that the brain network formed by the amygdala, medial prefrontal cortex and lateral hypothalamus mediates control of food consumption by learned motivational cues.

❖ Petrovich, G.D., Forebrain circuits and control of feeding by learned cues (2011). *Neurobiology of Learning and Memory* 95:152-8. (Epub 2010 Oct 19).

❖ Petrovich, G.D., Ross, C.A., Mody, P., Holland, P.C., and Gallagher, M. (2009). Central but not basolateral amygdala is critical for control of feeding by aversive conditioned cues. *Journal of Neuroscience* 29:15205-12.

❖ Petrovich, G.D., Ross, C.A., Holland, P.C., and Gallagher, M. (2007) Medial prefrontal cortex is necessary for an appetitive contextual conditioned stimulus to promote eating in sated rats. *Journal of Neuroscience* 27:6436-6441

### ALEXA H. VEENEMA

**Ph.D. 2003, University of Groningen, the Netherlands**

**Email: [alexa.veenema@bc.edu](mailto:alexa.veenema@bc.edu)**

Alexa Veenema studies the neural circuitry underlying social and emotional behaviors and the role of stress in mediating changes in these behaviors. She is particularly interested in how early life stress alters the development of the brain and behavior. Are stress-induced brain and behavioral changes stable across development? Can early life stress-induced brain and behavioral changes be restored, and how? To answer these and other questions animal models are used in which behavioral analysis (play-fighting, aggression, social cognition, social anxiety) is combined with molecular, neuroanatomical and in vivo brain techniques (e.g. intracerebral microdialysis) to study its underlying neurobiology, mainly by focusing on the roles of neuropeptides and monoamines.

❖ Lukas, M., Bredewold, R., Landgraf, R., Neumann, I.D., Veenema, A.H. (2011). Early life stress impairs social recognition due to a blunted response of vasopressin release within the septum of adult male rats. *Psychoneuroendocrinology* in press.

❖ Veenema, A.H, Beiderbeck, D.I, Lukas, M., Neumann, I.D. (2010) Distinct correlations of vasopressin release within the lateral septum and the bed nucleus of the stria terminalis with the display of intermale aggression. *Horm Behav.*, Mar 15, in press.

❖ Veenema, A.H. (2009). Early life stress, the development of aggression and neurobiological correlates: What can we learn from animal models? *Front Neuroendocrinol.* 30:497-518.

❖ Veenema, A.H., Blume, A., Niederle, D., Buwalda, B., Neumann, I.D. (2006). Effects of early life stress on adult male aggression and hypothalamic vasopressin and serotonin. *Eur. J. Neurosci.*, 24:1711-20.

## Cognitive Neuroscience

### HIRAM BROWNELL

**Ph.D. 1978, Johns Hopkins University**

**Email: [hiram.brownell@bc.edu](mailto:hiram.brownell@bc.edu)**

Hiram Brownell's work examines selective deficits in linguistic and cognitive ability associated with injury to the brain and remediation

of those deficits. His interests include theory of mind, discourse, narrative, lexical semantics treatment, and methodology.

- ❖ Griffin, R., Friedman, O., Ween, J., Winner, E., Happé, F., & Brownell, H. (2006). Theory of mind and the right cerebral hemisphere: Refining the scope of impairment. *Laterality*, 11, 195-225.
- ❖ Lundgren, K., & Brownell, H. (2011). Remediation of Theory of Mind Impairments in Brain-Injured Adults. In J. Guendouzi, F. Loncke, F., & M. J. Williams (Eds.), (2011). *The handbook of psycholinguistic and cognitive processes. Perspectives in communication disorders* (pp. 579-602). New York: Psychology Press.
- ❖ Lundgren, K., Brownell, H., Cayer-Meade, C., Miliione, J., & Kearns, K. (2011). Treating metaphor interpretation deficits subsequent to right hemisphere brain damage: Preliminary results. *Aphasiology*, 25(4), 456-474.

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#### ELIZABETH KENSINGER

**Ph.D. 2003, Massachusetts Institute of Technology**

**Email: [elizabeth.kensinger@bc.edu](mailto:elizabeth.kensinger@bc.edu)**

Elizabeth Kensinger's research combines behavioral and brain imaging techniques to examine how emotion affects the processes that are used to remember information. She is interested in understanding these cognitive and neural processes in young adults, and in identifying how these processes change across the adult lifespan.

- ❖ Kensinger EA (2009). Emotional Memory across the Adult Lifespan. *Psychology Press*, New York, NY.
- ❖ Kensinger EA (2009). How emotion affects older adults' memories for event details. *Memory*, 17, 208-219.
- ❖ Kensinger EA (2007). How negative emotion affects memory accuracy: Behavioral and neuroimaging evidence. *Current Directions in Psychological Science*, 16, 213-218.

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#### SEAN MACEVOY

**Ph.D. 2003, Brown University**

**Email: [sean.macevoy@bc.edu](mailto:sean.macevoy@bc.edu)**

Sean MacEvoy studies the mechanisms of human visual perception, using both using functional magnetic resonance imaging (fMRI) and psychophysics. He is particularly interested in the neural processes underlying object perception and recognition in complex environments, the integration of "what" and "where" information in temporal lobe visual areas, and the functional organization of visual cortex.

- ❖ MacEvoy, S.P. & Epstein, R.A. (2009). Decoding the representation of multiple simultaneous objects in human occipitotemporal cortex. *Current Biology*, 19, 943-947.
- ❖ MacEvoy, S. P., Tucker, T. R., & Fitzpatrick, D. (2009) A precise form of divisive normalization supports population coding in primary visual cortex. *Nature Neuroscience*, 12, 637-645.
- ❖ MacEvoy, S. P. & Epstein, R. A. (2007). Position selectivity in scene- and object-responsive occipitotemporal regions. *Journal of Neurophysiology*, 98, 2089-2098.

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#### SCOTT SLOTNICK

**Ph.D. 1998, University of California, Berkeley**

**Email: [scott.stotnick@bc.edu](mailto:scott.stotnick@bc.edu)**

Scott Slotnick's research program aims to understand the nature of visual memory (i.e., memory for visual items or events). Drawing on the foundation of research in visual perception, he employs

cognitive modeling (based on behavioral measures), event-related potentials (ERPs), and functional magnetic resonance imaging (fMRI). His research indicates that memory retrieval is a continuous process that is constructive in nature, where features or components from disparate cortical regions bind together to form a unified memory.

- ❖ Slotnick, S. D., Moo, L. R., Kraut, M. A., Lesser, R. P., & Hart, J. (2002). Interactions between thalamic and cortical rhythms during semantic memory recall in human. *Proceedings of the National Academy of Sciences of the United States of America*, 99, 6440-6443.
- ❖ Slotnick, S. D., & Schacter, D. L. (2004). A sensory signature that distinguishes true from false memories. *Nature Neuroscience*, 7, 664-672. Supplement.
- ❖ Slotnick, S. D., & Dodson, C. S. (2005). Support for a continuous (single-process) model of recognition memory and source memory. *Memory & Cognition*, 33, 151-170.

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#### JOSEPH TECCE

**Ph.D. 1961, Catholic University**

**Email: [tecce@bc.edu](mailto:tecce@bc.edu)**

Joseph Tecce studies the role of attention in the understanding of stress-health associations and in the achievement of stress reduction by cognitive-behavioral methods. He also investigates the use of eyeblinks as an indicator of emotional arousal and the control of computer functions by eye movements.

- ❖ Tecce, J. J., Pok, L.J., Consiglio, M.R., and O'Neil, J.L. (2005). Attention impairment in electrooculographic control of computer functions. *International Journal of Psychophysiology*, 55, 159-163.
- ❖ Tecce, J. J. (1992). Psychology, physiological and experimental [a review of eyeblink research]. In McGraw-Hill Yearbook of Science & Technology (6th ed.) (pp. 375-377). New York: McGraw-Hill.
- ❖ Tecce, J. J. (1991). Dopamine and CNV: Studies of drugs, disease, and nutrition. *Electroencephalography and Clinical Neurophysiology* (Suppl. 42), 153-164.

SEE ALSO SARA CORDES, ELLEN WINNER, AND LIANE YOUNG

## Developmental

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#### SARA CORDES

**Ph.D. 2005 Rutgers University**

**Email: [sara.cordes.1@bc.edu](mailto:sara.cordes.1@bc.edu)**

Sara Cordes studies cognitive development. Her primary research focus is on understanding how infants, children, and adults keep track of basic quantities such as number, time, and amount and how these abilities relate to early counting abilities and mathematics achievement in the classroom. Using primarily looking-time measures with infants and psychophysical tasks with children and adults, her work investigates the impact of contextual, linguistic, and social factors on these preverbal representations of quantity.

- ❖ Cordes, S. & Brannon, E. M. (2008). Quantitative competencies in infancy. *Developmental Science*, 11(6), 803-808.
- ❖ Cordes, S. & Brannon, E. M. (2008). Discrimination of continuous quantities in 6-month old infants: Using number is just easier. *Child Development*, 79(2), 476-489

❖ Cordes, S., Gelman, R., Gallistel, C. R., & Whalen, J. (2001). Variability signatures distinguish verbal from nonverbal counting for both large and small numbers. *Psychonomic Bulletin & Review*, 8(4), 698-707.

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#### MICHAEL MOORE

**Ph.D. 1978, Harvard University**

**Email: moorem@bc.edu**

Michael Moore studies parent-child interactions, cognitive and emotional development, memory organization, and automatic processing. His current research interests focus on children's participation in organized sports and their understanding of the "rules of the game."

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#### GILDA MORELLI

**Ph.D. 1987, University of Massachusetts, Amherst**

**Email: morellig@bc.edu**

Gilda Morelli examines social and cultural aspects of young children's learning and development, focusing on communities in the U.S. and Central and West Africa. She brings an interdisciplinary perspective to her research drawing on scholarship in psychology, anthropology, sociology, economics, and public policy to inform her research. Currently, Dr. Morelli is examining the role of national parks in Gabon on the well-being of children and families, and young children's emotional regulation.

❖ Rothbaum, F., Morelli, G., Rusk, N. (in press, 2011) Attachment, learning and coping: The interplay of cultural similarities and differences. In M. Gelfand, C. Y. Chiu, & Y. Hong (Eds), *Annual Series Advances in Culture and Psychology*, New York, NY: Oxford University Press.

❖ Verhoef, H., Morelli, G. A. (2007). "A Child is a Child": *Children's Fostering Experiences in Northwestern Cameroon*. *Ethos*, 235(1), pp. 33-64.

❖ Morelli, G.A., Rothbaum, F. (2007). Situating the Child in Context: Attachment Relationships and Self-Regulation in Different Cultures. In S. Kitayama, D. Cohen (Eds) *Handbook of Cultural Psychology* (500-527). New York, NY: Guilford Press.

❖ Wilkie, D. S., Morelli, G. A., Demmer, J., Starkey, M., Telfer, P., Steil, M. (2006). Parks and people. Assessing the human welfare effects of establishing protected areas for biodiversity conservation. *Conservation Biology*. 20 (1), 247-249.

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#### KAREN ROSEN

**Ph.D. 1984, Harvard University**

**Email: rosenk@bc.edu**

Karen Rosen's work focuses on social and emotional development during infancy and early childhood. Her research on parenting and early attachment relationships has included both mothers and fathers. She has studied questions about the effects of these early attachments on emotion regulation, on sibling relationships, and on the development of problem behaviors.

❖ Rosen, K.S., & Burke, P. (1999). Multiple attachment relationships within the family: Mothers and fathers with two young children. *Developmental Psychology*, 35, 436-441.

❖ Rosen, K., & Rothbaum, F. (2003). Parent-child attachment and its implications for child development. In J.J. Ponzetti (Ed.), *International encyclopedia of marriage and family relations* (2nd edition). New York, N.Y.: Macmillan.

❖ Rothbaum, F., Rosen, K., Ujiie, T., & Uchida, N. (2002). Family systems theory, attachment theory, and culture. *Family Process*, 41, 328-350.

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#### ELLEN WINNER

**Ph.D. 1978, Harvard University**

**Email: winner@bc.edu**

Ellen Winner's work focuses on cognition and emotion in the arts. She studies typical and atypical development in the arts, and the relationship between artistic learning and other forms of cognition.

❖ Hawley, A., & Winner, E. (2011). Seeing the mind behind the art: We can distinguish abstract expressionist paintings from highly similar paintings by children, chimps, monkeys, and elephants. *Psychological Science*, 22, 4.

❖ Drake, J.E., Redash, A., Coleman, K., Haimson, J., & Winner, E. (2010). 'Autistic' local processing bias also found in children gifted in drawing. *Journal of Autism and Developmental Disorders*, 40, 762-773.

❖ Goldstein, T.R., & Winner, E. (in press). Imagining others: Enhancing empathy and theory of mind. Under revision for *Journal of Cognition and Development*.

SEE ALSO JAMES A. RUSSELL

## Quantitative Psychology

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#### EHRI RYU

**Ph.D. 2008, Arizona State University**

**Email: ehri.ryu.1@bc.edu**

Ehri Ryu's research interests include multilevel modeling, structural equation modeling, and analysis of longitudinal data. She is particularly interested in the assessment of goodness of model fit in multilevel structural equation modeling, different approaches to analyzing multivariate multilevel data, and modeling longitudinal relationships between multiple variables.

❖ Ryu, E. & West, S. G. (2009). Level-specific evaluation of model fit in multilevel structural equation modeling. *Structural Equation Modeling*. 16, 583-601.

❖ Ryu, E., West, S. G., & Sousa, K. H. (2009). Combining mediation and moderation: Testing relationships between symptom status, functional health, and quality of life in HIV patients. *Multivariate Behavioral Research*, 44, 213-232.

❖ Ryu, E., West, S. G., & Sousa, K. H. (2010). Between-person and within-person relationships in longitudinal data: Latent intercept model with correlated residuals and multivariate multilevel model.

SEE ALSO HIRAM BROWNELL, SEAN MACEVOY, AND SCOTT SLOTNICK

## Social Psychology

### DONNAH CANAVAN

Ph.D. 1969, Columbia University

Email: [canavang@bc.edu](mailto:canavang@bc.edu)

Donnah Canavan's research interests focus on the development of individual differences, including narcissism, psychological separateness, and three orientations to achievement (fear of success, conventional success, and healthy success). Her recent studies of the effects of shared affect and enthusiasm have led to a series of studies on a new concept she calls "social energy."

- ❖ Canavan, D. (1991). Fear of success. In R. C. Curtis (Ed.), *Self-defeating behaviors: Experimental research, clinical impressions, and practical implications*. New York: Plenum Press.
- ❖ Canavan, D. (2001). Social Energy: The Consequences of Shared Affect. Symposium at New England Psychological Association Conference, Danbury, Connecticut.
- ❖ Canavan, D. (2002). Success and Beauty: The Motive to Contribute and the Motive to Win. Presidential Address at the 2002 New England Psychological Association Conference. Rivier College, Nashua, New Hampshire

### JAMES A. RUSSELL

Ph.D. 1974, University of California, Los Angeles

Email: [james.russell@bc.edu](mailto:james.russell@bc.edu)

James A. Russell's work focuses on emotion. He studies the expression and recognition of emotion through faces, children's understanding of emotion, the structure of emotional experience, cultural influences on emotion, and the distinction between mood and emotion and scientific taxonomies of each.

- ❖ Russell, J. A. (2003). Core affect and the psychological construction of emotion. *Psychological Review*, 110, 145-172.
- ❖ Russell, J. A., Bachorowski, J. A., & Fernandez Dols, J. M. (2003). Facial and vocal expression of emotion. *Annual Review of Psychology*, 54, 339-349.
- ❖ Widen, S.C. & Russell, J.A. (2008). Young children's understanding of other's emotions. In M. Lewis, J.M. Haviland-Jones, L.F. Barrett (eds.), *Handbook of Emotions*. New York, NY: Guilford.
- ❖ Russell, J. A. & Carroll, J. M. (1999). On the bipolarity of positive and negative affect. *Psychological Bulletin*, 125, 3-30.

### LIANE YOUNG

Ph.D. 2008, Harvard University

Email: [liane.young@bc.edu](mailto:liane.young@bc.edu)

Liane Young studies the cognitive and neural basis of human moral judgment. Her current research focuses on the role of theory of mind and emotions in moral judgment and moral behavior, as well as cultural and individual differences in moral cognition. She is also interested in conceptions of the self and free will. Her research employs methods of social psychology and cognitive neuroscience, including functional magnetic resonance imaging (fMRI), examination of patient populations with selective cognitive deficits, and modulating activity in specific brain regions using transcranial magnetic stimulation (TMS).

- ❖ Young, L., Phillips, J. (2011). The paradox of moral focus. *Cognition*, 119, 166-178.
- ❖ Young, L., Bechara, A., Tranel, D., Damasio, H., Hauser, M., Damasio, A. (2010). Damage to prefrontal cortex impairs judgment of harmful intent. *Neuron*, 65, 845-851.
- ❖ Young, L., Camprodon, J., Hauser, M., Pascual-Leone, A., Saxe, R. (2010). Disruption of the right temporo-parietal junction with TMS reduces the role of beliefs in moral judgments. *PNAS*, 107(15), 6753-8.

SEE ALSO GILDA MORELLI

## NEUROSCIENCE CONCENTRATION —

### PH.D. PROGRAM

#### Neuroscience: Brain Mechanisms of Behavior and Cognition

Graduate students will be able to receive a Ph.D. in Psychology with a concentration in Neuroscience. The goal of the Neuroscience Concentration is to promote research training in the basic neural processes and brain mechanisms that regulate behavior, cognition, and emotion. This concentration offers flexible programs of study and will be appropriate for students with interests in behavioral and cognitive neuroscience. The concentration is housed within the Psychology Department, but may include courses taught in the Biology Department.

HIRAM BROWNELL

ELIZABETH KENSINGER

SEAN MACEVOY

MICHAEL NUMAN

GORICA PETROVICH

SCOTT SLOTNICK

ALEXA VEENEMA

LIANE YOUNG

## GRADUATE STATISTICS MINOR

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Graduate students in psychology and other departments can complete a minor in statistics through completion of courses in the mathematics and other departments.

EHRI RYU  
HIRAM BROWNELL

## OTHER RESOURCES

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Students may also draw on the expertise of Professors Peter Gray and Ali Banuazizi (Political Science), and those at the Lynch School of Education ([www.bc.edu/schools/lsoe](http://www.bc.edu/schools/lsoe)) and the Carroll School of Management ([www.bc.edu/schools/csom](http://www.bc.edu/schools/csom)).

## PLACEMENT OF OUR STUDENTS

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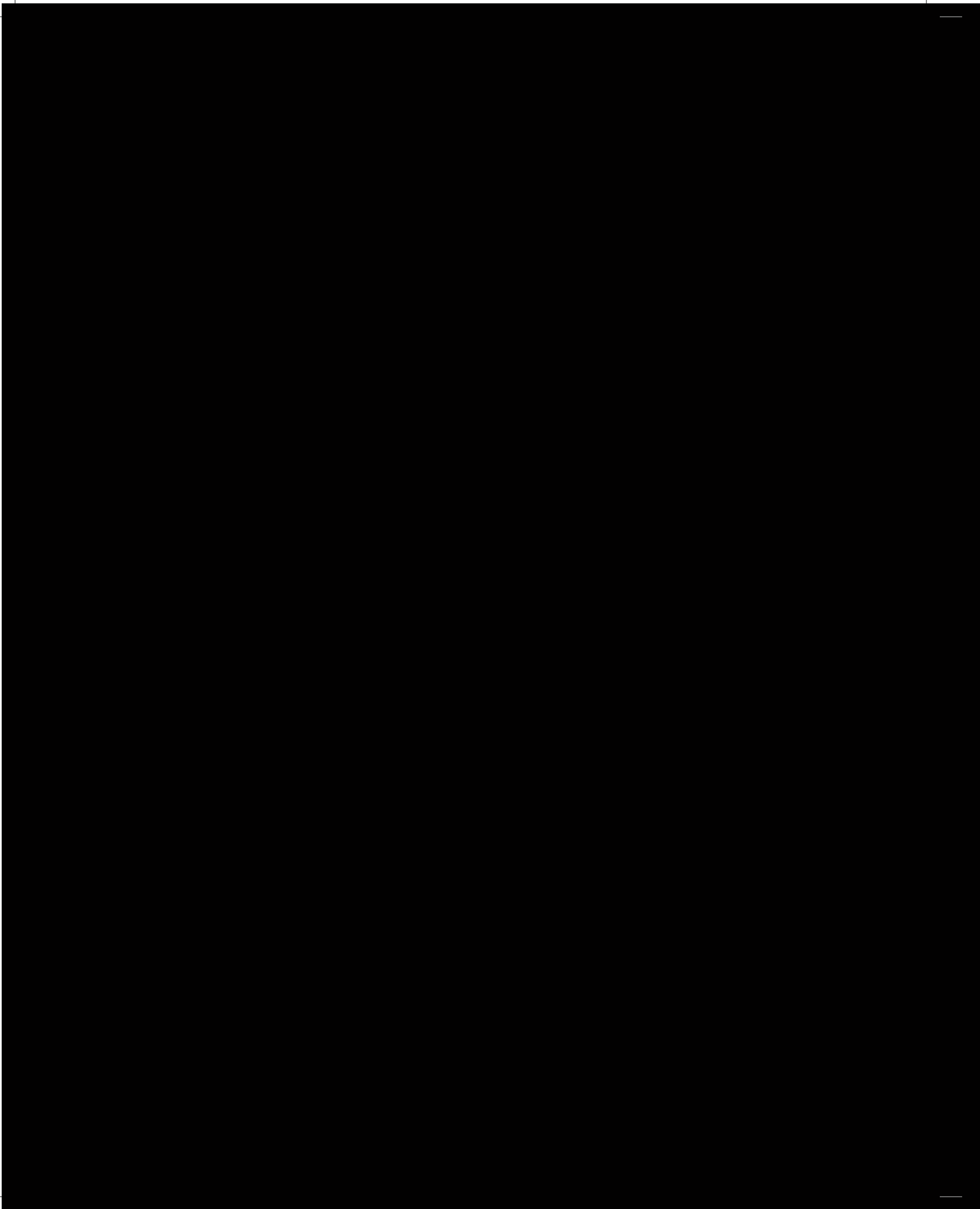
Our recent graduates have received post-doctoral fellowships (Stanford University, Yale University, Martinos Center at Mass General Hospital, University of Virginia, UC Davis, Broad Institute, Boston Children's Hospital, Rutgers University Center for Cognitive Science, Yale University School of Medicine, Princeton University, Tufts University, University of Massachusetts), or have gone on to take tenure-track faculty positions (Elon University, University of OTAGA, New Zealand, University of Wisconsin at Eau Claire, University of Waterloo, California State University at Sacramento, Washington and Lee University, Manhattanville College) and to work in research positions outside of the academy (Zeldis Research Associates, BAE Systems, Gillette Advanced Technologies Center)

## ADMISSION

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Requirements for consideration include the application form, abstract of courses, statement of purpose, a writing sample, G.R.E. scores and three letters of recommendation. The subject G.R.E. test is optional. In addition, the Graduate School of Arts & Sciences requires that international students submit TOEFL scores.

The doctoral application deadline is December 15. Applications for masters programs are due February 1. Information about how to apply and links to the online application form can be found at [www.bc.edu/gsas](http://www.bc.edu/gsas).





# BOSTON COLLEGE

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