OBITUARY FOR JAMES LENARD GOODSON, JR (1965 – 2014)

James (Jim) Goodson, winner of the 2004 Frank A. Beach Award and a leader in the study of the neuroendocrinology of sociality, died of cancer August 14 at the age of 48.

Jim earned his B. A. in psychology in 1992 from the University of North Florida and his PhD in psychology in 1998 from Cornell University. Following a two-year period as an NIH postdoctoral fellow at Cornell, he became an Assistant Professor of Psychology at the University of California-San Diego in 2000, where he was promoted to Associate Professor with tenure in 2005. In 2007 he joined the Department of Biology at Indiana University, where he became a Full Professor in 2011. In addition to his Frank A. Beach Award, Jim was made a Fellow of the American Association for the Advancement of Science in 2012.

As a graduate student, Jim became passionately interested in the emerging field of animal social neuroendocrinology. New findings about the role of the nonapeptides in social behavior in rodents inspired in him the goal of discovering mechanisms responsible for species differences in major dimensions of social organization, especially sociality itself. As an enthusiastic birder, he was familiar with the ways in which some birds are highly gregarious and always live in flocks, while others are strongly territorial and attack conspecifics that get too close. Other vertebrate species also show this same striking variation. He hypothesized that species differences in the actions of nonapeptides in the lateral septum might underlie this important dimension of social behavior. His doctoral dissertation experiments with zebra finches and field sparrows, involving manipulations of the lateral septum and its nonapeptide mechanisms, provided evidence in support of his hypothesis. The two field sparrow studies also showcased Jim's exceptional scientific daring and creativity, for they were carried out not with captive birds in a lab, but instead with wild birds living on their own territories just outside Ithaca, New York. Those were quite possibly the first (and still among the only) published brain manipulation field experiments in behavioral neuroendocrinology (Goodson, 1998; Goodson et al., 1999).

As a postdoctoral researcher, Jim further developed a sophisticated and deep appreciation for comparative neuroanatomy and acquired state-of-the-art skills in both neuroanatomy and neurophysiology. He was as fearless and determined an investigator in the lab as he was in the field. Working with midshipman, a fish with two male types, he discovered neuromodulation of vocalization by vasotocin and isotocin and its dissociation from gonadal type (Goodson and Bass, 2000). At the same time, he provided a comprehensive map of the circuitry in midshipman underlying the influence of forebrain neuroendocrine centers on brainstem audio-vocal integration sites and the hindbrain pattern generator for vocalization (Goodson and Bass, 2002). The results revealed a remarkable convergence with tetrapods in the general organization of vocal-acoustic and, even more broadly, descending forebrain modulatory circuitry. By harnessing the techniques for multi-

colored visualization of neurons expressing more than one neurochemical, he made the midshipman brain come alive with vibrancy reminiscent of the colorful adornments of birds he so cherished (Goodson et al., 2003), a stylistic signature of later publications as well (e. g., Kingsbury et al., 2011; Goodson and Kingsbury, 2013). During this time he also produced a magisterial review of the social behavior functions of vasotocin/vasopressin systems across all vertebrates that supported the case for considerable conservation of function (Goodson and Bass, 2001). Jim's ability to absorb and recount a vast amount of detailed behavioral and neuroanatomical information and then to synthesize a seemingly unwieldy database into a cohesive and insightful framework was matched by few.

At UCSD Jim returned to his beloved birds, further strengthening the evidence for a critical role of nonapeptide actions in sociality by comparing different species of estrildid finches, some highly gregarious, like the zebra finch, some moderately gregarious, and some territorial. His daring and willingness to take risks came into play again, both when he went into the African bush to capture the necessary species for his lab and when he rescued his valuable birds from their aviaries outside San Diego as wildfires approached. His studies now looked at nonapeptide mechanisms and actions in multiple brain regions. Jim had been influenced by Sarah Newman's concept of the social behavior network as originally described in the hamster brain. The results of his experiments using immediate early gene expression to examine neuronal responses to social stimuli were consistent with the existence of a similar network in avian brains. His 2004 Frank A. Beach Award address presented a compelling case that a homologous network (i. e., homologous nodes, connectivity and nonapeptide mechanisms) was present in all vertebrates (Goodson, 2005). The species differences in sociality then arose from the properties of valence-sensitive neurons in these regions (Goodson and Wang, 2006).

At Indiana University, Jim developed new testing paradigms for getting directly at sociality (preference for being with a flock) in zebra finches and did the critical nonapeptide manipulation experiments to confirm the roles of mesotocin and of nonapeptide receptors in sociality (e. g., Goodson et al., 2009). In addition, he expanded the array of social behavior to include pair formation, nest behavior, aggressive behavior and personality. Two of his recent reviews served to move the field forward by providing critiques of over-simplification with respect to both social behavior and brains (Goodson, 2013; Kelly and Goodson, 2014a). Behavior and sociality have to be "deconstructed." The roles of the nonapeptide mechanisms depend critically not only on sex but also on the specific brain regions where they are located (Kelly and Goodson, 2014b). They must be studied by manipulations that specifically target individual regions instead of impacting large chunks of forebrain. Jim was adamant that the systems are too multi-faceted and region-specific for blanket statements like "vasotocin reduces X" or "oxytocin receptors promote Y" to be scientifically accurate. In positive and constructive ways he showed how the systems should be approached to make progress.

It is not easy to capture the essence of Jim in writing. As a scientist he was brilliant, enthusiastic, ambitious, courageous and a consummate scholar. As a person he was energetic, colorful, witty, warm and generous. He was a commanding and entertaining storyteller, able to nimbly take those of us around him back in time to a moment in his own life as if we were all living the experience together with all of its twists and turns. He faced his illness with humor and optimism. His death is a great loss to our field and to his many friends, collaborators and colleagues. He is survived by his wife, neuroscientist and SBN member Marcy Kingsbury, and by their two daughters, Claire and Katie, his parents, his sister and three nephews.

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