

## **In Memory of Emily Jutkiewicz, PhD, 1975-2024**

Submitted by Margaret Gnegy, PhD

It has been my pleasure and privilege to know and work with Dr. Emily Jutkiewicz for the last 25 years. The vivid light that was Emily was extinguished on September 21, 2024, but she will not be forgotten. This piece is a paean to an extraordinary and multi-talented woman who touched numerous lives and careers in highly significant ways.

Emily graduated from Tufts University in 1997 with a B.S. degree, *cum laude*, in Biology. The seeds for her life-long interest in animal behavior and pharmacology were sown during an undergraduate project at Tufts with Klaus Miczek, but they developed more fully during her post-baccalaureate years in the laboratory of Dr. Jack Bergman at McLean Hospital, Harvard Medical School. She arrived at the University of Michigan (UM) in 1999 with a clear plan for her graduate studies. Emily was in the first class of the newly formed Program in Biomedical Sciences (PIBS) and she chose pharmacology as her interest. As Chair of our graduate program, I had rarely seen a student so utterly certain of her research goals. She maintained that assuredness for the rest of her life. She entered the laboratory of Dr. James Woods with her feet squarely on the ground and, by the time her doctoral degree was conferred in 2004, she was nearly running the laboratory.

Following her doctoral studies, Emily remained at UM where she expanded her repertoire and found her life soulmate, giving us the good fortune of retaining her in our department. With her typical enthusiasm and thoroughness, Emily established collaborations that gave her experience in mass spectrometry, dopamine transporters, nicotinic receptor ligands and opioid receptor signaling pathways.

When the opportunity to hire a new faculty member arose in 2012, Emily joined the instructional track as an Assistant Professor. She rapidly set up her lab and assumed teaching responsibilities. She was a master at time management. In addition to team teaching, she creatively developed two important new courses. One course, co-conceived with Dr. Jorge Iniguez in 2015, taught students proper statistical analysis of data. It became a mandatory course for pharmacology graduate students. Soon afterwards, Emily created a seminar course in pharmacology for undergraduates. This is especially significant for the discipline because pharmacology is not generally taught to undergraduates. Each term she would discuss the discovery and mechanism of a specific drug, e.g., metformin or buprenorphine. The class became so popular that there were waiting lists of students. Students learned about drug mechanism, experimental design, scientific evaluation, formulating and testing original ideas, and presenting cohesive scientific presentations. In 2018 she was awarded the Basic Sciences Teaching Award in Pharmacology. It was well-deserved.

Emily's research focused on investigating the developmental and opioid-related mechanisms contributing to psychiatric diseases, such as depression and addiction, particularly those involving delta opioid receptors (DOR). Agonists of DOR showed anticonvulsive and pain relieving activity, but also caused convulsions. Emily wanted to find a way to separate the two activities in order to develop safer DORs. Her lab showed that different signaling molecules (arrestins and G<sub>o</sub>-regulators of G-protein signaling) underlay the convulsive effects of the DOR as opposed to its antihyperalgesic and antidepressant-like effects, thus opening the door to development of a safer delta opioid agonist.

Emily's expertise in animal behavior and her understanding of so many facets of pharmacology led to numerous collaborations with scientists within and outside of the university. Emily's skill at behavioral pharmacology was integral to the research of others. For instance, a group at UM worked collaboratively to develop opioid analgesics with less abuse liability through the analysis of structure-activity relationships of novel chemical entities. Emily's use of translationally-relevant animal models

was critical to evaluating the utility of the compounds and understanding their mechanisms. She was also part of a drug development effort across institutions to generate novel, selective muscarinic acetylcholine receptor antagonists as rapid-acting antidepressants. She is Co-Investigator or Co-PI on grants designed to investigate the following: the efficacy of G protein beta gamma subunit inhibitors in opioid analgesia; delta opioid receptor agonists for the treatment of opioid withdrawal-associated behaviors; efficacy of allosteric modulators of the mu-opioid receptor; and the efficacy of enkephalin-degrading enzymes in pain perception. Emily was the lynchpin of a great deal of research for many scientists, including me. She had great skill in designing experiments that would reveal unusual aspects of the behaviors elicited by drugs and contribute toward understanding their mechanisms.

An administrative assignment that showcased her dedication to students was that of the Chair of the Graduate Program in the Pharmacology Department. She familiarized herself with the current educational climate and made sure that the department was responding accordingly. She was named Associate Chair for Education in 2022, in charge of all teaching in the department. But more important than the charts and notes and designs, was the extreme amount of time that Emily spent counseling and guiding students. For instance, our preliminary exams require students to come up with an original proposal and write an NIH-style proposal. She would spend hours with students helping them to revise their documents and better understand the principles involved. Any time a student needed help, she was available.

Emily was an excellent mentor to the students in the department, but she never short-changed her lab. Her students have extremely high regard for her. She would spend hours going over their data and papers and helping with their plans for the future. Throughout her career, Emily mentored an extraordinary number of students: 21 undergraduate students in extended lab work and honors theses, not including over 110 students through the Undergraduate Research Opportunities Program; 15 Master's students; 8 doctoral students; and 6 post-doctoral students. In 2022 she was awarded the Master's Mentoring Award from UM Rackham Graduate School. This award, like the teaching award, was well-deserved.

In addition to research and teaching, Emily accepted a number of administrative assignments. Until her passing she was Associate Editor for *Behavioural Pharmacology* and on the Editorial Board of the *Journal of Pharmacology and Experimental Therapeutics*. She was highly active in the Behavioral Pharmacology Division of the American Society of Pharmacology and Experimental Therapeutics, serving as Secretary/treasurer and as Chair. She faithfully attended the annual EB meetings with her students, who won many poster and travel prizes. Emily was also a member of the executive committee of the International Narcotics Research Society, organizing a highly successful meeting of this group in July 2024.

As a culmination of her excellence in teaching, research and administrative service, Emily was awarded an honorary Chair, the Pfizer/Upjohn Research Professor of Translational Pharmacology. She was to be inaugurated to this chair in November 2024. She was very proud of this honor and, again, it was well-deserved.

In spite of her loaded schedule at work, Emily's heart lay with her family, to whom she was devoted. She left behind her husband, David Traynor, two young sons, Jack and Sam, her parents and in-laws, one of whom is John Traynor, Professor of Pharmacology at UM.

It was a privilege to know Emily and to work with her and be her friend. She was joyful, fun to be with, generous and kind, but strict when necessary. She had high standards and lived up to them. The discipline of pharmacology lost a dedicated champion for the field. She will be sorely, sorely missed by all.