Harry T. (Jack) Horner — Retirement at last

By Harry T. (Jack) Horner, University Professor Emeritus

Is being on the Iowa State University (ISU) faculty for almost 52 years a long time? Not if you are having “fun” and enjoying all that such a position has to offer – teaching; research; undergraduate and graduate advising and mentoring; committee work at the department, college and university levels; travel; and the opportunity to be creative “outside of the box” once in a while.

Early days
After joining the wonderful and supportive faculty of the Department of Botany and Plant Pathology in 1966, preceded by two years as a National Institutes of Health (NIH) postdoc in C.C. Bowen’s renowned microscopy facility, I found myself heavily engaged in undergraduate teaching of botany and exploring research directions. The interactions with world-recognized botany faculty, such as Walter E. Loomis, John E. Sass, Richard W. Pohl, Lois H. Tiffany and Robert E. Buchanan (bacteriology), made me keenly aware that hard work and commitment were necessary to succeed. Being promoted from a beginning assistant professor to full professor in seven years helped my confidence and allowed me to explore different paths professionally.

After Professor Bowen’s move to an administrative position in the College of Sciences and Humanities (CoS&H; now College of Liberal Arts and Sciences or CoLAS), I took over the directorship of the Bessey Microscopy Facility in 1970. The facility’s two functions were to teach formal, graduate-level courses in microscopy (679, 680, 681) and provide open access to on- and off-campus researchers either wanting their work done for them by the facility staff or be trained to do their own work through the formal courses. These two successful approaches continued until 2009 when the courses were dropped and replaced by an Individual Module Teaching (IMT) Program, allowing each researcher (student, staff or faculty) to tailor his/her training to specific needs.

Microscopy Facility
The facility has changed names three times since the 1960s: first, Bessey Microscopy Facility (to honor Charles E. Bessey the first person recognized to use his microscopes in the teaching of botany west of the Mississippi River); second, Microscopy and Nanolmaging Facility (to satisfy an administrative desire to “modernize” the name); and three, Roy J. Carver High Resolution Microscopy Facility (to reflect a major ISU donor source). The “Microscopy Facility” began in the early 1960s in the basement of what is now Catt Hall under the direction of Bowen, moved to the basement of Bessey Hall in 1967 when it opened, and then moved to the basement of the Molecular Biology Building in January 2018 to be combined with the atomic force and confocal and image analysis microscopy facilities. This facility is now under the stewardship of three managers. One of my major tasks as director was to find funds to purchase and replace major instrumentation and to convince ISU to continue its support. Grant support over the years from sources such as the National Science Foundation (NSF) and The Kresge Foundation provided acquisition of expensive electron microscopes, and the university, through various sources, provided ancillary instrumentation. In January 2016, the facility (when still in Bessey Hall) was generously gifted the value of about $2.5 million in-use instrumentation from Dupont/Pioneer (Pioneer is now Corteva Agriscience). All of these sources have allowed the “Microscopy Facility” to continue providing state-of-the-art instrumentation and experienced staff to all who desire using it.

Back to earlier days
Besides being active in teaching the microscopy courses (about 25 hours per week commitment) and directing the Microscopy Facility, advising undergraduate students and serving as major professor for both M.S. and Ph.D. students, my research took several different directions in the areas of micro- and megasporogenesis and male sterility, bacterial leaf

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nodulation and biomineralization, to name a few. It was supported in part by grants from NSF, U.S. Department of Agriculture (USDA) and private industry, as well as through cooperative grants with colleagues. In addition, I became involved in both the Iowa Academy of Science (IAS) and the Botanical Society of America (BSA), both as a contributor with my graduate students of both oral and poster research presentations (over 200 to date). I have had the opportunity to present invited papers in eight different countries and have visited 50 countries, most with my wife, Cecilia. At different times in my professional career, I served as both treasurer and president of both IAS and BSA and helped to develop (1970-1980) the IAS Farm into a model farm incorporating both the best farming and environmental practices. In addition, I helped to design the centennial logos, now official trademarks for both IAS and BSA. Today, I still chair the Investment Committee for the BSA and am a council member.

My 27 M.S. and Ph.D. graduate students were a joy to work with, and they all have been successful as they chose different paths as faculty members elsewhere, directors of microscopy facilities, private industry, USDA and U.S. Forest Service researchers, and U.S. governmental administrators. I am proud of their many accomplishments and have published jointly with them, colleagues, and individually about 160 peer-reviewed articles in 53 journals (and 12 cover images) involving a wide variety of research topics as previously mentioned. In addition, I mentored six domestic and foreign postdoctoral fellows.

Another area of pride has been my involvement as a mentor of high school and undergraduate interns over the years. Advising many undergraduate biology and biological/pre-medical illustration (BPMI) majors has always been a rewarding experience with eight to 12 advisees per year seeking help with their classes and planning their lives after graduation. A number of them entered medical, dental, veterinary medicine and law schools. Others went to graduate schools or found their niche in the world after graduating.

One of the most surprising and unexpected rewards of my undergraduate advising was having to deal with an undergraduate transfer student in 1974 who did not want to be a biology major or art major but wanted to pursue the major she was in before she transferred to ISU. Her undergraduate major had been medical illustration. Even though no such major existed at ISU, the CoS&H had created a new program called the Individual Major. A perusal of her previous program showed ISU had all of the remaining courses either in CoS&H or in the College of Design (CoD). Application to the undergraduate Individual Major with a comparable program of study was successful and the student graduated with the Individual Major: Medical Illustration. She became the top medical illustrator at the University of Wisconsin Medical School. Her program and success led to a large number of students seeking and requesting the same program. To make a long story short, the demand was overwhelming and a stand-alone individual major was created in CoS&H with cooperation from CoD (and the Veterinary College) in 1984. It is called the Biological/Pre-Medical Illustration (BPMI) Program. I served as its P.E.O. from 1984-1989 and have remained on its Advisory Committee. There are presently about 75 majors in the program who have been fortunate to have had a variety of excellent art and science faculty to teach and mentor them, excellent CoLAS advisors, and an administration who realizes this program is unique and world class.

**From 1966 to 2018**

During my almost 52 years on the ISU faculty, including one year on sabatical leave with my family in Konstanz, Germany, at the Universität Konstanz to study plant crystals, I have been a member of three departments (Botany and Plant Pathology [1966-1980], Botany [1980-2003], and Genetics, Development and Cell Biology [2003-2018]), served under one head and six chairs, seven ISU presidents and many intermediate administrators. One notable and very helpful administrator, among others, who was very supportive of the “Microscopy Facility” was Dr. Dan Zaffarano, graduate dean and vice president for research. He did indicate in 1985, when molecular biology was just becoming prominent, “there would be little or no need for microscopy.” This was the only thing I remember he completely misjudged!

There are other positive experiences I could include. However, I will stop here and end by saying many individuals have been very supportive of me throughout my professional life, too numerous to mention individually, except for my dear family. My wife Cecilia has been a wonderful partner, supporter and love of my life for now almost 57 years, and my three adult and dearly loved children (Kevin, Amy and Allison), who put up with me at times when I was in the lab or away on a trip and not at one of their important events. My sincerest thanks to them, my colleagues and friends both within ISU and around the World. You all have contributed to my success! Peace and love be with you all.