WHEN DANIEL J. KLIONSKY, Ph.D., STARTED STUDYING autophagy as a junior faculty member at the University of California, Davis in the early ’90s, the topic wasn’t exactly cool. In fact, he wasn’t particularly excited when twists and turns in his protein targeting research led him there. “Autophagy was kind of a backwater,” says Klionsky, who has been on the faculty of the University of Michigan Life Sciences Institute since its inception. “It was a degradation pathway that got rid of cellular garbage — who would be interested in that?”

But times have changed. Last year, *Nature* highlighted autophagy as “sexy,” and a “hot topic in biomedical research.” “The field just exploded,” Klionsky told the journal.

That’s because scientists have come to realize that autophagy plays a much more important role than merely serving as the cell’s garbage recycling system. Autophagy helps cells to stay in good, working order, and problems with it have been linked to cancer, neurodegenerative disorders, aging and other areas of human health.

The broad outlines of autophagy had long been known, but Klionsky and a handful of other pioneers really kicked off the study of its molecular underpinnings, says Randy Schekman, Ph.D., a Nobel prize-winning cell biologist from UC Berkeley. “Once they had obtained the genes in yeast, it was trivial to find that the same genes operate in mammalian cells,” notes Schekman, adding that years ago Klionsky applied to be a postdoc in his lab. “Regrettably, there wasn’t any space at the time,” Schekman says. “I should have made space.”

Klionsky’s group has made its most important contributions around autophagy pathways that are selective toward certain cell components, and regarding the regulation of autophagy.

“Regulation is a critical part of the process,” Klionsky says. “Either too much or too little autophagy is a problem.” Building an open, vibrant community of researchers has also been a hallmark of Klionsky’s career. He has been editor-in-chief of the journal *Autophagy* since it launched in 2005, and has nurtured it into an influential journal within the crowded field of cell biology publications.

More than many other researchers, Klionsky is passionate about his role as an educator, and has helped pioneer innovative teaching methods with support from prestigious grants from the National Science Foundation and Howard Hughes Medical Institute. His approach to undergraduate biology courses emphasizes active problem solving and eschews the traditional lecture format.

“Many people view teaching as an aspect of their career that has nothing to do with the research part,” he says. “I don’t see it that way. I’ve tried to apply the scientific method to my teaching — Is this method working? Is there a better approach? If I try something different, how am I going to assess it?”

In 2013, Thomson Reuters named autophagy as an area of Nobel-worthy work, based on an analysis of citations from its Web of Science database — singling out contributions by Klionsky and two Japanese researchers in particular.

“I’m excited about the work that’s currently underway in the lab to understand the regulation of the pathway, and the structure and function of autophagy components,” says Klionsky, who is also the Alexander G. Ruthven Professor of Life Sciences at the U-M College of Literature, Science, and the Arts. “It promises to help advance a more integrated understanding.”