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NATURE REVIEWS MOLECULAR CELL BIOLOGY

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Most scientists are used to facing challenges — of all different sizes — throughout their career. An important challenge in modern-day biology is to understand the mysterious mechanism by which prion proteins propagate. Since prions were discovered in yeast, it has become clear that they can be inherited stably for many generations. As discussed by Mick F. Tuite and Brian S. Cox on page 878, the yeast model system has provided valuable insights into the mechanism that mammalian prions use to propagate and function as infectious agents, often with devastating consequences.

Another challenge can be to understand the link between different fields. And, on page 855, Steven I. Reed explains why ubiquitin-mediated proteolysis and cell-cycle control are so intricately connected. One important function of regulated proteolysis in cell-cycle control is to impose irreversible cell-cycle phase transitions — for example, by the rapid degradation of a negative regulatory protein that blocks such a transition. Regulated proteolysis can also restrict the period of accumulation of a regulatory protein to the specific time when that protein is needed, which prevents inappropriate events from taking place.

It is probably fair to say, though, that few scientists have had to deal with the kind of challenges that Dorothy Hodgkin encountered in her pursuit of scientific discovery. At a time when there were few female scientists — let alone women who studied the relatively new technique of X-ray diffraction — Hodgkin pushed back the boundaries of this field. Lacking today's sophisticated computer technology and diffractometers, she determined the structures of many biologically important molecules. For her groundbreaking work, she was awarded a Nobel Prize in 1964 and, on page 891, Judith A. K. Howard pays tribute to this remarkable scientist.



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