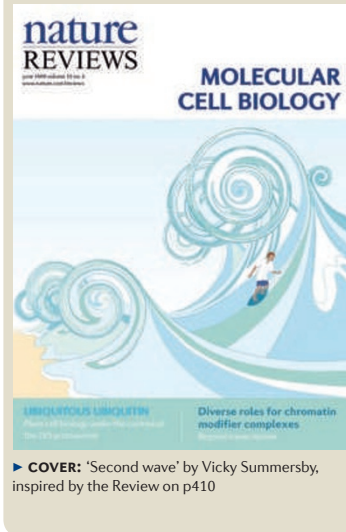




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**U**biquitylation is a post-translational modification with various roles, including protein degradation, membrane trafficking and signalling. The process of ubiquitylation involves the sequential transfer of ubiquitin between an activating enzyme (E1), a conjugating enzyme (E2) and a ligase (E3). E3 enzymes facilitate the transfer of ubiquitin to one or more Lys residues in the substrate. A substrate can be monoubiquitylated at a single Lys residue, multi-ubiquitylated at several Lys residues or polyubiquitylated, whereby the sequential transfer of ubiquitin (through Lys residues in ubiquitin) results in chain formation. Generally, the type of ubiquitylation determines the fate of the protein.

On page 398, Daniela Rotin and Sharad Kumar review the HECT family of ubiquitin ligases. In addition to ubiquitylating proteins for degradation by the 26S proteasome, HECT enzymes regulate the trafficking of many receptors, channels, transporters and viral proteins. Illustrating the central importance of the ubiquitin–26S proteasome system across kingdoms, Richard D. Vierstra summarizes our current understanding of this system in the plant kingdom (page 385). In addition to the essential housekeeping role of ubiquitylation in removing proteins through ubiquitin-mediated proteolysis, emerging evidence shows that it is a crucial regulator of plant hormone signalling, plant development and host defence against pathogen attacks.

Finally, a Research Highlight on page 370 discusses ‘unconventional’ polyubiquitin chains, the functions of which have been elusive. A new study demonstrates that unconventional polyubiquitin chains target proteins for proteasomal degradation, and that one particular chain — which is linked to the less commonly used Lys11 residue of ubiquitin — functions in endoplasmic reticulum-associated degradation. Stay tuned for further research updates and reviews of this exciting and fast-moving field!



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