

In the news

SELF-EATING MACHINES

The 2016 Nobel Prize in Physiology or Medicine has been awarded to Yoshinori Ohsumi “for his discoveries of mechanisms for autophagy”. Autophagy is a process of ‘self-consumption’, whereby cellular components are degraded in the lysosome and recycled. It allows cells to adapt to various stresses and, perhaps not surprisingly, has been associated with several human diseases.

Although autophagy had already been observed in the 1950s, it remained largely understudied until the beginning of the 1990s, when the Ohsumi laboratory identified the first autophagy mutants in yeast. They then characterized autophagy genes, providing the first molecular description of this process. Ohsumi and colleagues also laid the groundwork for studying autophagy in higher eukaryotes and demonstrated its conservation from yeast to mammals. Since then, our understanding of autophagy has greatly advanced, and Ohsumi’s laboratory continues to make key contributions to this field. However, as Professor Ohsumi noted himself: “now we have more questions than when I started” (Nobelprize.org, 3 Oct 2016). His research career, which has been bumpy at times, should be a great inspiration for all young scientists, as it shows that finding the courage to pursue something that nobody else is doing can lead to great scientific achievements.

This year’s Nobel Prize in Chemistry also deserves the attention of biologists. It has been awarded to Jean-Pierre Sauvage, Sir J. Fraser Stoddart and Bernard L. Feringa “for the design and synthesis of molecular machines”. These cleverly constructed molecular assemblies convert chemical energy into force or motion. They hold great potential for biological applications, as one can imagine using them as improved versions of naturally occurring molecular machines.

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