

No no Nobel

The past month has seen a couple of significant dates in the science calendar: one an annual event, the other an anniversary. At least one of these has far less to do with plant research than perhaps it ought to.

The second week in October is traditionally the time for the announcement of the Nobel prizes, popularly thought of as the highest accolade that a scientist can receive. This year's awards have produced relatively little controversy compared to the usual complaints about who should, or should not, have been honoured. Such criticisms seem hardly fair when the basis of the awards is Alfred Nobel's will (written in the closing years of the nineteenth century), which establishes prizes "to those who, during the preceding year, have conferred the greatest benefit to humankind" in just five areas: physics, chemistry, physiology or medicine, literature and peace.

It is no wonder, then, that plant biology has so rarely been placed in the Nobel spotlight. Many researchers studying plants are talented physicists or chemists and use those skills to great effect, but the discoveries they make rarely fall into most people's definition of either. Physiology could easily include plant physiology, but the addition of "or Medicine" makes it clear that mammals in general, and humans in particular, were what Nobel was thinking about.

Despite the odds stacked against them, there have been three indisputable plant biologists who have received a Nobel prize. The earliest of these was Melvin Calvin who received the prize for Chemistry in 1962 for the elucidation of the cycle of light-independent reactions, which is central to the synthetic part of photosynthesis; definitely a (bio)chemistry topic. However, this award has been much criticized for not including Calvin's colleagues James Bassham and Andrew Benson, who were heavily involved in the discovery.

In 1970, Norman Borlaug won the Peace Prize. Whatever your views on the aims and objectives of the Green Revolution, as discussed in a previous *Nature Plants News & Views*, it is clear that Borlaug was inspirational through his breeding of higher yielding, more disease-resistant varieties of wheat, and driving the adoption of farming practices to best exploit their characteristics. He was also gracious in acknowledging in his Nobel Lecture the "vast team made up of

many organizations, officials, thousands of scientists and millions of farmers — mostly small and humble — who for many years have been fighting a quiet, oftentimes losing war on the food production front", of which he considered himself but one member.

In 1983, Barbara McClintock was awarded the Physiology or Medicine prize "for her discovery of mobile genetic elements". McClintock's elegant and careful studies in maize established the concept of transposons, entities capable of moving around in an organism's genetic material, disrupting or activating genes as they went; experiments performed before the structure and nature of the genetic code had been established. McClintock waited some 30 years between the discoveries that brought her prize and her trip to Sweden to collect it. This is not the longest delay in Nobel history, but may suggest that recognition only came when it had been established that transposons were not some unique feature of plants, but ubiquitous across all kingdoms.

Similar 'plant blindness' may have resulted in researchers missing out on awards they would have received if only their experimental organism had been an animal. For example, the 1998 Physiology or Medicine prize was awarded to Robert F. Furchgott, Louis J. Ignarro and Ferid Murad for their work on nitric oxide signalling in the 1980s. This was fully deserved for an important discovery in medical research, but the many researchers who worked on ethylene signalling and its involvement in fruit ripening throughout the twentieth century could feel rightly aggrieved to hear the nitric oxide results described as "the first discovery that a gas can act as a signal molecule".

A number of plant scientists were unlucky in 2006 when the Physiology or Medicine prize went to Andrew Fire and Craig Mello "for their discovery of RNA interference — gene silencing by double-stranded RNA". Fire and Mello were working in the nematode *Caenorhabditis elegans*, but plant biologists (including Rich Jorgensen and colleagues at the DNA Plant Technology Corporation in Oakland, California) had identified essentially the same phenomenon in petunia in 1990 (around 5 years before it

was first described in worms) and spent the following decade elucidating its mechanism.

There have been a number of other Nobel prizes relating to plant topics, although not awarded to researchers who might consider themselves plant biologists. In 1988, Johann Deisenhofer, Robert Huber and Hartmut Michel were awarded the Chemistry prize "for the determination of the three-dimensional structure of a photosynthetic reaction centre", albeit that of the purple bacterium *Rhodospseudomonas viridis* (now reclassified as *Blastochloris viridis*). Long before this, chemists Richard Willstätter and Hans Fischer were honoured, in 1915 and 1930 respectively, for studies of pigments including chlorophyll. Other chemists studying plant products have also been rewarded: Robert Robinson in 1947 for work on plant alkaloids and, more recently, Tu Youyou received a share of the 2015 Physiology or Medicine prize for investigations into the antimalarial properties of artemisinin.

The history of plant biology in the Nobels doesn't make it easy to predict on which problem a plant researcher should concentrate to secure a trip to Stockholm. Photosynthesis has been popular with the Nobel committee, so perhaps there will be future prizes here for fundamental discoveries or applied engineering. Maybe there will be Peace laureates to succeed Borlaug who create crop varieties to better feed the world's expanding population. However, the best advice remains: don't think about the prize, think about the question!

The second important date in the last month was the 4 November, which marked the 150th anniversary of the publication of the first issue of *Nature*. The second item of that 1869 issue was *On the Fertilisation of Winter-Flowering Plants* by Alfred W. Bennett. It is pleasingly symmetrical that the cover of the 31 October 2019 issue of *Nature* — the last before the anniversary — also features a plant research Article, which is also discussed in a *News & Views*, by Patrick Wincker, in this issue of *Nature Plants*. □

Published online: 11 November 2019
<https://doi.org/10.1038/s41477-019-0561-2>