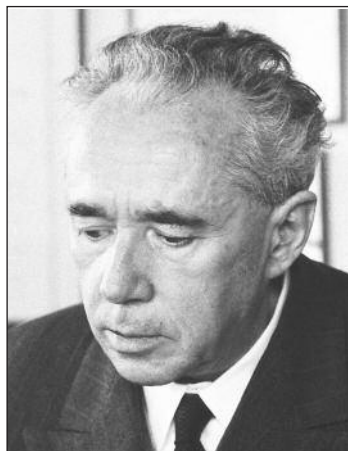


Honouring discovery and application

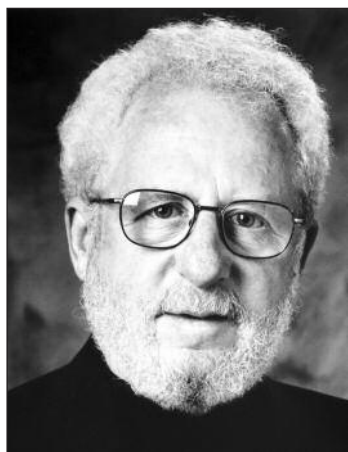
Receiving a Nobel Prize is considered by many to be the pinnacle of a scientist's career. It is one of the most prestigious and exclusive awards in the international scientific community. Since 1901, only 513 people have been awarded a Nobel in Chemistry, Physics and Physiology or Medicine. (Another 196 have received Nobels for Literature and Peace.) Nobel Laureates are selected based on the significance and influence of their discoveries, al-



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Giulio Natta

most all of which have been disclosed in scientific papers published in peer-reviewed journals. Few, however, are aware of the Nobel's connection to another form of technical literature, patents, or the fact that many laureates have patented inventions in their fields of research. This is unfortunate, given that patent literature can teach us much about the transformation of scientific discoveries into practical applications. Studying patents also provides insight into research trends and the motivations of scientists. Alfred Nobel, the Swedish chemist who gave his name and fortune to the prize, was best known for inventing dynamite, which he patented in 1868. Royalties from this and numerous other patents (he received more than 300 during his lifetime) made him a wealthy man. Shortly before his death in 1896,



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Alan Heeger

Nobel conceived the idea of an international prize, awarded annually in recognition of the best work in chemistry, physics and medicine, as well as literature and peace.

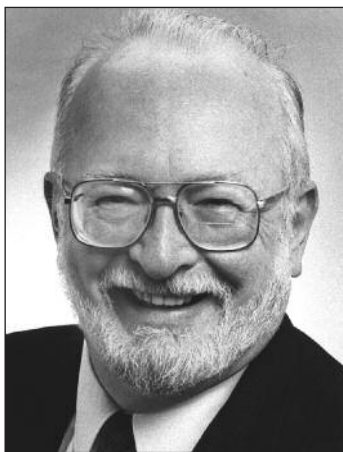
Scientists sometimes debate whether theoretical or experimental work is more deserving of a Nobel Prize, but Nobel understood the duality of science. Science is theory and experimentation, discovery and



MICHAEL WHITE

'TEQ Talk

application, scientific papers and patents. He stipulated that prizes should be awarded for the "most important discovery or invention within the field of physics," "the most important chemical discovery or improvement," and the "most important discovery in the domain of physiology or medicine." His choice of words was deliberate. "Discovery" is a term often associated with basic research, while "invention" and "improvement" are used in connection with patents. Of the five 2006 Nobel recipients in chemistry, physics and medicine, four are inventors or co-inventors on one or more patents and two have more than five patents each, a modest showing compared to some. Alan Heeger of the University of California Santa Barbara, one of three re-



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Paul Lauterbur

searchers who shared the 2000 prize in chemistry for the discovery and development of conductive polymers, has almost 150 patents and pending applications. Paul Lauterbur and Sir Peter Mansfield, recipients of the 2003 Nobel in Medicine for their work on magnetic resonance imaging (MRI), hold some 30 patents related to MRI technology. Giulio Natta, the Italian scientist who shared the 1964 Nobel in Chemistry for his research on polymers, was a prolific inventor, receiving more than 500 patents during his long and productive career. Of all laureates, Albert Einstein could perhaps claim the most first-hand knowledge of the patent system, having been a patent examiner in the Swiss Patent Office from 1902 to 1909. He later applied for patents in several countries for an automatic light intensity self-adjusting camera and a refrigeration system.

Patenting by academic researchers has increased dramatically in the last two decades, especially in life sciences and biotechnology. According to the Association of University Technology Managers, the number of patents granted to U.S. universities rose from approximately 800 in 1988 to more than 3,200 in 2003. In 2004, researchers at

Canadian universities and research institutes filed 572 patent applications while their American counterparts filed 10,517. Since 2000, Queen's researchers have filed more than 426 patent applications and received 97 patents.

As the number of academic patents increases, so do links between patent literature and scientific literature. The National Science Foundation notes that the number of scientific and engineering (S&E) articles cited by



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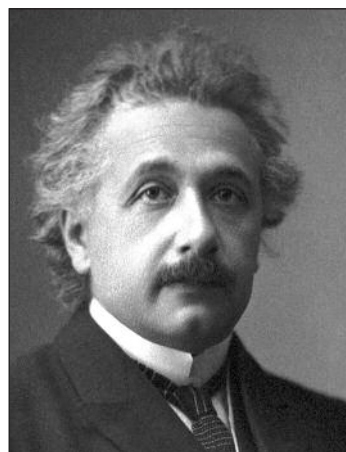
Sir Peter Mansfield

U.S. patents has increased tenfold since 1990 and that the average number of S&E citations per patent increased from .58 in 1990 to 2.13 in 2004.

There is also new interest in the role of patents in tenure and promotion reviews. In June 2006, the board of Texas A&M University voted to elevate patents or the commercialization of research to the same status as teaching, research and service. If this idea takes hold at other universities, even more faculty may be encouraged to file patent applications.

The patents of Nobel Laureates may not ever be as well known as their scientific papers, but current trends suggest that researchers are looking more closely at patent literature.

Laureates' patents are found in databases of national patent offices, including the Canadian



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Albert Einstein

Intellectual Property Office, European Patent Office and U.S. Patent and Trademark Office. For more information, visit the Engineering and Science Library's Patent Research Guide at library.queensu.ca/webeng/patent_s.htm.

Michael White is Librarian for Research Services in the Engineering and Science Library in Douglas Library.