

Albert Schatz (left) felt that he deserved a share of the Nobel prize awarded to Selman Waksman (right).

NOBEL PRIZE

A dark edge to the glory

An examination of the battles behind the prestige of top awards grips **Hidde Ploegh**.

Those who enjoy making predictions ahead of each year's Nobel announcements, only to criticize the winners when their choices lose out, may find satisfaction in *Prize Fight*.

Two stories of contested Nobel prizes drive the narrative in this readable book by the distinguished radiologist Morton Meyers. Meyers succeeds in chronicling these events without being overtly partisan, and includes a few vignettes of well-known and not-so-ennobling kerfuffles, with elliptical references to current events. Finally, Meyers discusses the general and fascinating ethical, professional and philosophical issues that arise from the prize fights.

Meyers first tackles biochemist Selman

Waksman's 1943 discovery of streptomycin, and the ensuing altercation with Albert Schatz about attribution, intellectual property and commercial exploitation of this early antibiotic. Waksman — who developed soil microbiology and recognized that actinomycetes bacteria are nature's drug store for antibiotics — assigned to Schatz, his graduate student, the search for compounds active against Gram-negative bacteria. Schatz soon came up with *Streptomyces griseus* as a source of streptomycin.

This drug, the lucrative patent for which lists both Schatz and Waksman as its inventors, turned out to be highly active against *Mycobacterium tuberculosis*. It was responsible for remarkable therapeutic successes

until the emergence of streptomycin-resistant strains and isoniazid, an antibiotic used in combination therapy, in the early 1950s.

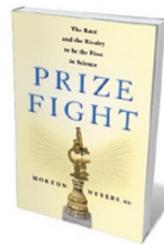
Drawing on historical records and interviews with Schatz's widow, the author lays out a plausible and fascinating story. The failure to communicate and manage expectations led to a painful clash between Schatz and Waksman. A culture that viewed the appropriation of subordinates' discoveries by laboratory chiefs as legitimate deepened the chasm.

Schatz's attempts to redress the perceived injustice — including a lawsuit against Waksman and Rutgers University in New Brunswick, New Jersey, later settled out of court — probably excluded him from academic positions to which he was entitled by talent and previous accomplishment. Reclamations of this type inevitably invite the opprobrium of the larger scientific community, not unlike the fate of many a whistle-blower similarly castigated for attempting to right a wrong. On the fiftieth anniversary of streptomycin's discovery, however, Rutgers finally awarded Schatz its highest decoration: the Rutgers University Medal.

Meyers's second story deals with the development of nuclear magnetic resonance (NMR) imaging as a tool in medical diagnostics, featuring physician Raymond Damadian and his battle with the late Paul Lauterbur, a chemist. This is the livelier portion of the book. Meyers — as a radiologist, effectively gardening in his own backyard — had the added benefit of interviewing both Damadian and Lauterbur.

With physicist Peter Mansfield, Lauterbur in 2003 bested Damadian to Nobel recognition of magnetic resonance imaging (MRI). This outcome prompted the appearance of full-page ads financed by the Friends of Raymond Damadian in a number of newspapers, including *The New York Times*.

As Meyers shows, Damadian was the first to suggest using NMR in imaging to distinguish healthy from cancerous tissues. But he could not claim to have made the essential steps leading to wider practicability of the method. He built a massive machine, 'Indomitable', a prototype of which included a permanent magnet, as well as cardboard and copper foil components. Damadian used this monster to produce a low-resolution image of postdoc Larry Minkoff's chest — which was, indeed, a first. However, many



Prize Fight: The Race and the Rivalry to be the First in Science.

MORTON MEYERS
Palgrave Macmillan:
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£16.99/\$27

of the financial dividends from Damadian's inventions accrued from patent infringement suits, not from building commercially successful instruments. Lauterbur's and Mansfield's contributions were what ultimately brought the technique to diagnostic practice.

More generally, Meyers uses *Prize Fight* to muse on the obsession with awards and publication in top-flight periodicals, which can ultimately devalue the passion and ingenuity of so many who will never share that limelight. External validation by one's peers is an important, but not the sole, driver of ambition. Taken to pathological extremes, the drive to satisfy this need fuels unethical behaviour and scientific misconduct. Those victimized by it may bear permanent scars or decide to leave science entirely. Milder cases abound. Disagreements and fights over authorship, priority and recognition occur wherever science is practised.

Meyers emphasizes the human nature of scientific pursuit. He reminds us that the individual scientist's contribution is ephemeral: the field moves on. Moreover, every scientist who assembles and leads a team of graduate students, postdocs and technicians has to contend with issues of priority, authorship and, less frequently, assignment of intellectual-property rights. The book has yet to be written that lays out such points of friction for the kinds of research that will never be recognized by the Nobel committee, yet drive entire disciplines relentlessly

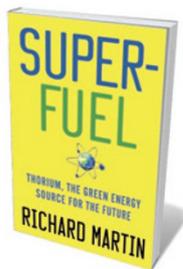
“Obsession with awards can devalue the passion and ingenuity of so many who will never share that limelight.”

forward — a category into which most of the science that has a positive impact on society probably falls. In the airline industry and medicine, checklists have become an essential step in preventing human error, whether in tightening bolts or measuring drug dosages. In the coda to *Prize Fight*, Meyers provides a checklist of sorts on how to avoid landing oneself in the intellectual and emotional morass that permanently colours the outlook of deserving but unrecognized scientists.

This starts with being aware of the problem, making an effort to be consistent in attribution of authorship, and setting criteria for establishing credit. Easier said than done: these issues are unlikely to disappear any time soon. But we ignore them at the risk of creating toxic working environments. ■

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Books in brief



SuperFuel: Thorium, the Green Energy Source for the Future

Richard Martin PALGRAVE MACMILLAN 272 pp. £18.99 (2012)

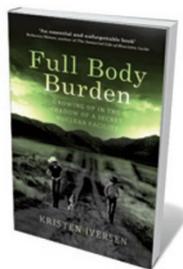
Post-Fukushima, uranium-powered plants face being phased out in many countries. But there is a nuclear alternative, argues clean-energy-research analyst Richard Martin: thorium. Less volatile than uranium, four times as abundant, energy-dense and efficient, thorium has major potential, not least because liquid fluoride thorium reactors create no nuclear waste. Martin's investigation reveals how the technology, developed at Oak Ridge National Laboratory in Tennessee, was dropped by President Richard Nixon in 1972 — and how interest is now picking up in China, India and elsewhere.



Born Together — Reared Apart

Nancy L. Segal HARVARD UNIVERSITY PRESS 416 pp. £36.95 (2012)

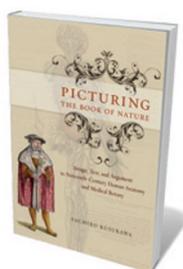
The 'Jim twins' constituted a watershed in the nature–nurture debate. When Jim Lewis and Jim Springer — twins separated at four months — were reunited at 39, both were found to have loved maths, worked as sheriffs and practised carpentry, among other startling parallels. The case underlined the importance of genetics and led to the Minnesota Study of Twins Reared Apart. In this inclusive overview, Nancy Segal, director of the Twin Studies Center at California State University, Fullerton, examines the study that turned ideas on parenting, teaching, health and sexual orientation upside down.



Full Body Burden: Growing Up in the Shadow of a Secret Nuclear Facility

Kristen Iversen HARVILL SECKER 416 pp. £14.99 (2012)

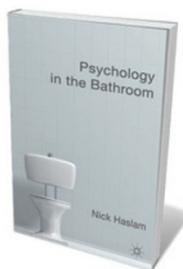
For years, Kristen Iversen's mother thought that the industrial complex in their small Colorado town manufactured cleaning agents. But this was Rocky Flats — the US government facility where the plutonium 'pits' of nuclear weapons were manufactured. And, as Iversen reveals, it was plagued by safety issues. Among the appalling twists in this tale are high levels of testicular cancer among teenage boys in the area. After an inter-agency raid in 1989, pit production ceased; but Rocky Flats makes for a story with a long half-life.



Picturing the Book of Nature: Image, Text, and Argument in Sixteenth-Century Human Anatomy and Medical Botany

Sachiko Kusakawa UNIVERSITY OF CHICAGO PRESS 304 pp. £29 (2012)

Science historian Sachiko Kusakawa probes the role of illustration in sixteenth-century medical treatises, before the advent of the microscope. Looking at Leonhart Fuch's *De historia stirpium*, Vesalius's *De humani corporis fabrica* and the unpublished *Historia plantarum* of Conrad Gessner, Kusakawa argues that such anatomical and botanic images were not simply records of natural phenomena, but varied visual experiments. His book is studded with illustrative gems, not least John Dee's 'pop-up' pyramids in *Of Euclid's Elements*.



Psychology in the Bathroom

Nick Haslam PALGRAVE MACMILLAN 184 pp. £50 (2012)

Arcane sexual behaviours are the stuff of cocktail-party chat, whereas the "psychology of flatulence" and incontinence remain taboo. Psychologist Nick Haslam eases open the bathroom door on the many human behaviours associated with excretion. Drawing on clinical research, psychoanalytical theory, language, gender and more, he conducts a fascinating neurogastroenterological journey, from scatological slang and toilet graffiti to the psychological aspects of constipation and diarrhoea. 'Toilet reading' of a high order.