

## Historical keywords

### Protein

From the Greek *proteion*, meaning “first in rank” among the material substrates of life, protein was coined in 1838 by the Dutch physician, Gerhardus J Mulder (1802–80) in connection with his investigations into albumin. His belief that he had discovered a chemical molecule with its own distinct properties was soon challenged, however. The work of the German chemist, Justus von Liebig (1803–73) left protein a general term to denote a whole class of substances that shared the same atomic composition but not the same atomic arrangement.

Late 19th-century cell theory and genetics ultimately led to a view of protein as the basic genetic material. This was confirmed in 1935 when Wendell Meredith Stanley (1904–71) purified and crystallised the tobacco mosaic virus. But the protein model of genes—an idea that conformed with all the experimental data from the previous half century—was in turn challenged by the research of James Watson and Francis Crick in the 1950s. DNA theory undermined the importance of protein as the carrier of genetic information; genes now came to be seen as controlling the aminoacids that formed proteins.

It was in this context that Linus Pauling (1901–94) recharacterised protein by revealing how genes control both the nature and the position of the aminoacids. This work contributed to the development of the central dogma of molecular biology articulated by Francis Crick in 1957: that information can go from a nucleic acid to another nucleic acid, and from a nucleic acid to a protein, but not from a protein to a protein, nor from a protein to a nucleic acid. The reign of protein as the first-ranking basic unit of life seemed to be over.

But the fortunes of protein were reversed in the 1980s. Research on transmissible spongiform encephalopathies highlighted abnormalities in the folding of protein chains (prions). The controversial “protein-only” hypothesis of Stanley Prusiner—that in protein-related diseases the replication of protein does not require specific nucleic acids, so that one protein can modify the form of another simply by transmitting its form—has gradually gained acceptance. Many scientists now believe that prion protein is not a virus, and does not contain its own genetic material. Hence, heredity of form, as distinct from genetic heredity, is an increasingly viable concept. Its potential is to shake the very foundations of molecular biology. By no means has protein relinquished its *proteion* status.

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## Lunch with *The Lancet*

### Anne Philpott



“Telling people about this work can be like ‘coming out’”, says Anne Philpott. “That I’ve been a safe sex adviser on erotic films unsettles some people, but then they think ‘health advice, that’s ok’. But if I add that I’ve just been to the Erotic Awards then they get uneasy. At the same time, though, they’re fascinated—what I call ‘scandalised’.”

Philpott is not referring to her day job (health adviser on the AIDS team of the UK’s Department for International Development), but to her work on The Pleasure Project (<http://www.the-pleasure-project.org>). Launched at the XV International AIDS Conference in Bangkok last year, the project’s aim is to put “the sexy back into safer sex”. I meet Philpott on Friday night (yes, it is in fact “Dinner with *The Lancet*”) in the Soho Hotel, smack in the middle of London’s red light district: the perfect location to discuss sexuality and safe sex. The absolute opposite of seedy, the hotel restaurant is an oasis of calm from the hectic Friday night streets.

I suggest that erotica and UN global health conferences seem to be, well, unusual bedfellows. “Yes, in fact, the project launch was the first time that issues of pleasure and desire had been the focus of an international AIDS conference session”, says Philpott. “People were very nervous. We were showing *Modern Loving*—an erotic guide to having better, and safer, sex for couples—and people were saying ‘Make sure you lock the doors’. At AIDS conferences it is as if everyone is talking about an airborne disease, the sex is so stripped out of the agenda—to the extent that people won’t even use the words penis and vagina—I’ve been at talks where the terms ‘insertive probe’ and ‘receptive cavity’ were used instead.” Such prudishness may be surprising, but I am still uncertain as to how promoting pleasure leads to safer sex. Philpott explains that “people get turned on watching couples having safe sex and want to try it out themselves. Using condoms stops being an ‘ought’ and just looks like something exciting and fun to do.”

Philpott’s vision for the future includes increasing the links between the sex and health industries—getting both to learn from one another. The Pleasure Project website will soon include a global mapping of projects that use pleasure and desire in some aspect of their safer sex work, as well as a toolkit that sexual health professionals can use to help them discuss pleasure and desire in relation to sex. “The ultimate goal of the Pleasure Project is to reduce sexually transmitted infections, but by improving people’s sex lives”, Philpott says, as we get ready to leave. “How can you have safe sex if you can’t have good sex?”

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