

Harold W. Kroto

Working at the coal face

Harold Kroto shares the Nobel Prize in Chemistry 1996 with Robert F. Curl Jr. and Richard E. Smalley for the discovery of buckminsterfullerenes.

How important is an interdisciplinary approach in addressing urgent scientific questions, and how can we foster such collaborations?

Vital – the best way is to change the traditional departmental structure from chemistry, physics, biology and engineering to a more overarching infrastructure: say atomic and molecular science (which subsumes molecular biology and condensed-matter physics) and high-energy physics and astrophysics.

How can the public be convinced of the importance of fundamental research with no applications in sight?

The only thing I can suggest is to continually stuff the infinite list of applications that have benefited mankind up the noses of the public and politicians alike. Lasers: from super-market checkouts to DVDs and eye surgery. Relativity: from GPS to nuclear power. Chemistry: anaesthetics and penicillin. DNA testing: freeing innocent people from death row.

Bell Labs and other corporate research sites, which led to many Nobel prizes, are on the decline or have closed. Is corporate, basic research critically needed, or is research in academia sufficient?

There are as many ways to do science as there are scientists and we need the whole spectrum of research options. The demise of Bell Labs (and IBM, Shell, Imperial Chemical Industries etc.) is an indication of the way in which short-sighted capitalist pressure has worked to the detriment of research in industry and society.

Many people consider the peer-review system broken. Do you share their view, and do you have a solution?

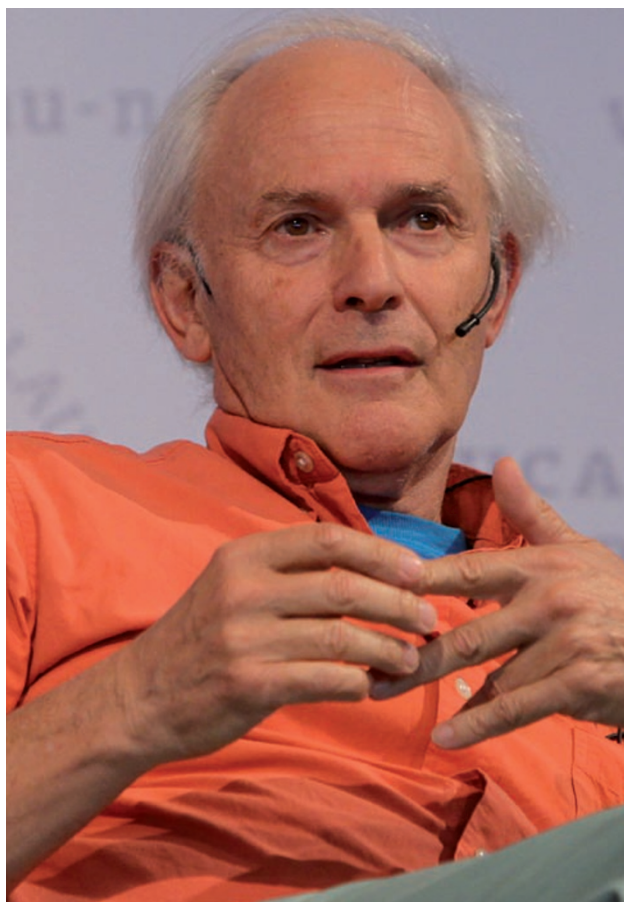
The peer-review system is the most ludicrous system ever devised. It is useless and does not make sense in dealing with science funding when history abounds with a plethora of examples that indicate that the most important breakthroughs are impossible to foresee.

The science budget should be split

into three (not necessarily equal) parts and downloaded to departments. The local institutions, and not government departments, should disburse funding as they are close to the coalface and can decide what needs support and what is in the long-term interest of the department. There should be no research proposals on which to waste time.

One part should go to young people chosen by their universities as the researchers on which their institution's future will depend — they have done the work, why waste time doing it again when people have no time and are too far away from the coalface and in general do not have the relevant expertise?

The second part should go to a group whose most recent report was excellent. This is the racehorse solution — if a scientist has just done some great work, let her or him run again.



PROFILE

- Based at Florida State University in 2004
- Born Harold Walter Krotoschiner in Wisbech, Cambridgeshire in 1939
- Moved to Bolton, Lancashire, in 1940
- Family shortened their name to Kroto in 1955
- Enrolled at Sheffield University in 1958, achieving a first class BSc and then a PhD
- Played for the university tennis team, and was president of the athletics council
- Married Margaret Hunter in 1963
- Joined University of Sussex in 1967
- In 1985 conducted an experiment with graduate students Jim Heath, Sean O'Brien and Yuan Liu, using Richard Smalley's laser vapourization cluster beam to simulate the gas around carbon stars. One unexpected discovery was a new carbon configuration: hollow, spherical C60 molecules, which he later named buckminsterfullerene
- 2002–2004 was president of the Royal Society of Chemistry

The final part should be split among scientists who might not have been funded in the second group, but have put in a proposal; let them get 50:50 matching funds from industry.

What is the most practical and relatively safe alternative energy source?

I suspect that until we have solved the problem of photocatalytic splitting of water and/or nuclear fusion we shall have little option but to turn to nuclear fission — it is the only proven alternative to fossil fuel.

You must have experienced a lull at some point in your research career. What kept you going?

I always had some niggling, little back-burner ideas (the Nobel project was one such idea) and always liked to work with university graduates and undergraduates — the undergraduates were a great stimulus and 50% of these neat projects were stimulated by the need to float a little project that did not seem very important at the time, but when initiated invariably turned out to be great.

Aside from as a Nobel laureate, how do you want to be remembered?

I think I would prefer to feel I had made a positive contribution to the education of young people to recognise the truth in general and perhaps to have struck a blow against the irrational forces which are presently undermining the Enlightenment, democracy and the freedom of individuals.