correspondence

Comment on Jack Parker's article 'How much is a scientist worth?' in *EMBO reports*, November 2002

What is frequently overlooked when comparing scientists' salaries is the situation in the pre-accession countries to the European Union (EU) that are likely to soon join the EU and its labour market. This will definitely change the comparison of average postdoctoral salaries as laid out by Jack Parker in his article. As an example, the lowest possible salary for a postdoc in the EU mentioned is €17,700. This is twice the minimum standard salary of a professor in the Czech Republic and more than three times the salary of a postdoc here, which, incidentally, is actually below the national average income. No further compensation for these researchers is available, and their whole income is subject to further taxation. Yet the wages in the Czech Republic exceed those in Slovakia by 40%, which has already caused an enormous brain drain from Slovakia to the Czech Republic. And since funds for research and universities come, in general, from governmental sources, there will be little chance for change after entering the EU.

There are two major consequences of this situation for scientists in Europe. First, in the short term, there is no danger of Western Europe's scientific potential being completely drained away to the USA, because it can always recruit scientific talent from the Central European countries. Second, unless action is taken at the European level, the education standards in Central European countries will decline swiftly in parallel with the overall competitiveness of these countries. Optimistically, one could wait for some investment in

research by Western European high-tech companies and the subsequent support of universities in these countries. However, the market has already been open for at least 10 years without any indication that this is taking place.

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Comment on Frank Gannon's editorial 'The foot soldiers of science' in *EMBO reports*, November 2002

In his editorial, Frank Gannon points to perhaps not a new, but an important problem in science. We are often only aware of those scientists who have made discoveries or have contributed outstanding and ground-breaking results to a field. And we tend to overlook colleagues who are less fortunate, those whom Gannon calls "the foot soldiers of science". Edmond H. Fischer interjected a joke in one of his recent talks: "What is serendipity in science?" he asked. "It is as if one is looking for a needle in a haystack and one finds there instead a farmer's daughter." Not everyone has the good luck to find a farmer's daughter or to make an important discovery. But that does not mean that his or her work is not important.

In the 1960s, there was a series of articles on the chemistry of DNA, published by two scientists. They treated DNA with various kinds of chemicals, such as mustards, and published data that I—at that time

a Ph.D. student—considered unimportant, simply filling journals with data nobody was interested in. Only later did I realize that their data helped to develop many important methods of molecular biology, including chemical DNA sequencing. And I remember my Ph.D. supervisor telling me at that time that no results, as long as they are correct, can be underestimated. But also that nothing can be more damaging than results that are not correct. Now I know he was right.

Which brings me back to the editorial. Many scientists today are contributing valuable data, but not making discoveries. Their lives are often difficult and full of tension. They may not obtain grants, and they have to defend their programmes again and again at departmental meetings. Most of them love research, and do not want to leave it. Gannon discusses possible ways the scientific community could deal with this problem, and I would also like to comment on that. At a recent meeting of the European Union (EU) 6th Framework Programme Committee for Life Sciences, Genomics and Biotechnology for Health, one delegate articulated the concerns of some countries that their scientists would not be involved in the final selection of supported projects. This would mean that the top tier of European scientists, with well-endowed laboratories, would get even more money compared to those from poorer countries. In other words, the less wealthy countries would support research in rich countries. This may not only be a problem for EU candidate countries, but for others as well.

As the Czech delegate to the European Molecular Biology Council (EMBC), I have had an ongoing dispute with our Ministry of Education, which pays the membership fee of the Czech Republic to EMBC, about joining the European Molecular Biology Laboratory (EMBL). This would be more costly than our EMBC membership, and the argument of the ministry was that we were not even recouping what we paid to the EMBC in fellowships and other means of support. To achieve a balance, it was very important to inform the Czech

scientific community about the possibilities that the EMBC provides, and thus increase the number of applications for various means of support. This took some time, and it is difficult to explain to the responsible officers of the ministry that Czech scientists are now benefiting from EMBC membership, and that they would also eventually benefit from joining EMBL.

There are ways the wealthy European countries can help the more impoverished countries. Perhaps the leading institutions

in the field should encourage collaboration, and those whose projects are selected in the 6th Framework Programme should include good teams from poorer countries. This would pay off in the long term, as Europe would be in a position to exploit its human resources more effectively. But of course, each country must first help itself. How? Probably through the wise policy of supporting research in the fields where excellent results—whether they be new discoveries or high quality products—are

likely to be achieved. This, of course, is not easy to assess, and the responsibility must lie with the governments of each country. But the wise governments will ask the scientists for their opinions.

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Immunology at the crossroads (*EMBO reports*, November 2002) (Erratum)

ERRATUM:

In the November 2002 issue of *EMBO reports*, we published a viewpoint article by Antonio Coutinho with a table “A short history of immunology” that contained some errors. The author is not responsible for the content of the table, which was compiled by the News Editor. A corrected version is printed here.

A short history of immunology

1798	Edward Jenner develops first vaccine against smallpox	1953	Morton Simonsen & William Dempster explain graft versus host reaction
1877	Paul Ehrlich discovers mast cells	1955	Niels Jerne, David Talmange & Macfarlane Burnet's clonal selection theory
1879	Louis Pasteur develops attenuated chicken colera vaccine	1957	Alick Isaacs & Jean Lindemann discover interferone
1883	Ilya Ilyich Mechnikov describes cellular theory of vaccination	1960	Peter Medawar & Macfarlane Burnet receive Nobel Prize
1885	Louis Pasteur develops rabies vaccination	1961	Noel Warner describes difference between cellular and humoral responses
1900	Ehrlich's antibody formation theory	1964	Anthony Davis describes cooperation of T- and B-cells in immune responses
1901	Emil Adolf von Behring receives Nobel Prize for serum therapy against diphtheria	1970	Richard Gershon discovers suppressor T-cells
1906	Clemens von Pirquet coins the term allergy	1972	Gerald Edelman & Rodney Porter receive Nobel Prize for discovering the structure of antibodies
1908	Paul Ehrlich & Ilya Ilyich Mechnikov receive Nobel Prize	1980	Baruj Benacerraf, Jean Dausset & George Snell receive Nobel Prize for their work on the regulation of immune reactions
1910	Peyton Rous's viral immunology theory	1983	Mark Davis, Susumu Tonegawa & Tak Mak identify genes for the T-cell receptor
1913	Charles Robert Richet receives Nobel Prize for description of anaphylaxis	1984	Niels Jerne, Georges Köhler & César Milstein receive Nobel Prize for their work on the control of the immune system
1919	Jules Bordet receives Nobel Prize for his work on immune reactions in infectious diseases	1987	Susumu Tonegawa receives Nobel Prize for his identification of immunoglobulin genes
1926	Lloyd Felton isolates antibodies	1996	Rolf Zinkernagel & Peter Doherty receive Nobel Prize for their work on cell-mediated immunity
1930	Karl Landsteiner receives Nobel Prize for his discovery of human blood groups	2000	Alain Fischer uses gene therapy to treat SCID
1934	John Marrack's antigen-antibody binding hypothesis		
1944	Peter Medawar's hypothesis of allograft rejection		
1948	Astrid Fagraeus demonstrates that plasma cells produce antibodies		