

Funding Basic Research: Continued

Three responses to my editorial of 19 July (p. 291) by Louis Ianniello, Monroe Burke, and Arthur Kornberg (Letters, 16 Aug., p. 857) are about the responsibility of all scientists to help improve and reform our own institutions to respond to the changing dynamics of national and international finances. The letters by Burke and by Kornberg contain the same imperial message: we, scientists, know better how to allocate the nation's resources. These two letters are innocent of specifics and contain little reference to the recent relevant literature. On the end-of-science issue, may I refer the letter writers to *The End of Science* by John Horgan (Abrams, New York, 1996); *Frontiers of Illusion* by Daniel Sarewitz (Temple University Press, Philadelphia, PA, 1996) and *The End of the Future* by Jean Gimpel (Praeger, Westport, CT, 1994).

Arthur Kornberg's superb credentials force us to examine his championing of the possible value of public support for bioscience research. The examples he cites of useful technologies developed are largely outside his field. In most cases the flow was from technologically useful discovery to science, not vice versa. Nor was any bureaucratic funding "process" involved.

On the matter of who should support research, however, times have changed dramatically from the era when only the government could support *relevant* basic research. I cite only one major challenge to such outmoded "golden age of science" axioms: a book by Cambridge University biochemist Terence Kealey, *The Economic Laws of Scientific Research* (St. Martin's, New York, 1995), which provides detailed technical support for the position that most *non-targeted* basic research should be privatized. Over the last 15 years, I have written two books and some two dozen papers with the same approach, giving data and argument and constructive alternatives to the present, unsustainable system. I have yet to find one similarly reasoned book or paper replying to these arguments.

Rustum Roy

Intercollege Materials Research Laboratory,
Pennsylvania State University,
University Park, PA 16802-4801, USA



Keratinocytes and the Danger Model

In their report "Neonatal tolerance revisited: Turning on newborn T cells with den-

dritic cells" (22 Mar., p. 1723), John Paul Ridge *et al.* demonstrate that the neonatal immune system was not uniquely poised for tolerance induction upon encountering antigen, but that neonatal T cells could be primed if antigen was presented by activated professional antigen-presenting cells (APCs) such as dendritic cells (1). On the basis of this finding and of previous studies (2), they are quoted in a Research News article by Elizabeth Pennisi (22 Mar., p. 1665) on the topic of the danger model, which holds that the immune system does not provide intrinsically for self:nonself discrimination, but rather responds to activated APCs, which are found only at sites of tissue destruction and inflammation. Activated APCs are able to induce T cell responses to antigen, in part through the provision of costimulatory signals to the T cell. The degree to which the regulated provision of costimulatory signals is important in maintaining peripheral tolerance is not known, although Ridge *et al.* and others suggest that the absence of costimulatory signals on "normal, healthy peripheral tissues . . . should continuously induce T cell tolerance . . ." (1). This concept is illustrated in the figure in the Research News article (p. 1665), in which skin is portrayed as being unable to deliver signal two. Although

Are you spending hours at the bench staining gels? You don't have to anymore. Now you can push a few buttons, walk away and return to reproducible staining results.

Hoefer Automated Gel Stainer: the entire staining process is now automated

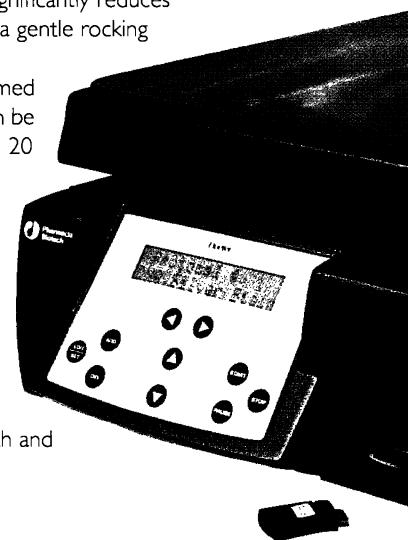
The new Hoefer Automated Gel Stainer makes it happen. It automates reagent delivery and development times to stain your DNA and protein gels reproducibly. It significantly reduces reagent consumption and maximizes mixing while handling your gels with a gentle rocking motion.

The Hoefer Automated Gel Stainer gives you eight pre-programmed protocols for standard silver and Coomassie blue staining—all of which can be modified to your specific needs. What's more, you can design up to 20 protocols of your own and save any of them on a removable "smart key"—keep the key to protect your protocol and simplify your start-up times in the future.

Together with our PlusOne Silver Staining Kits and Coomassie tablets, Pharmacia Biotech can provide you with everything for staining electrophoresis gels automatically. Call us: 1 (800) 526 3593 from the USA; +81 (0)3 3492 6949 from Japan; or +46 (0)18 16 50 11 from Europe and the rest of the world.

Or visit us on the Internet at <http://www.biotech.pharmacia.se>.

Ask for a free brochure; it details how you can save hours at the bench and get reproducible staining results by pushing a few buttons.



"Manual staining
is an obsolete concept.
It exists no more."

Doug Burtrum,
Immunologist/Research Scientist,
Haiku writer,
New York, NY.

**Pharmacia
Biotech**
Uppsala, Sweden. (And the rest of the world.)

Circle No. 62 on Readers' Service Card