Györgyi's theory] in the scientific literature other than one or two papers in the *Proceedings of the National Academy of Sciences*." Some 30 years ago Szent-Györgyi published in *Nature* his prediction that proteins are semiconductors (*1*). Since then, a number of papers published in scientific journals indicate that charge transfer reactions occur in biological systems. Semiconductor properties have been demonstrated for collagen (*2*), deoxyribonucleic acid (*3*), and certain metalloproteins (*4*). Bone and tendon have been shown to exhibit photoconductivity, reflecting their electronic properties (*5*). Moreover, amide bond, the backbone of proteins, is a transmitter of electronic effect (*6*). Finally, most biopolymers, including proteins, nucleic acids, and mucopolysaccharides, are capable of mechanoelectrical transduction (piezoelectricity) (*7*).

In view of these facts indicating the potential importance of bioelectricity for controlling the growth of cells, to state that " . . . there are no data indicating that it [Szent-Györgyi's theory] might have validity" seems difficult to justify.

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Constance Holden's article on Albert Szent-Györgyi contains almost as an aside a statement of much that is wrong with American science. She says, "scientists connected with the NFCR [National Foundation for Cancer Research] agree with others that this is not a theory that is exactly ripe for government support. It is exceedingly unconventional, a leap into the unknown."

I could not disagree with these sentiments more strongly. Great discoveries in all fields from the sciences to the humanities have nearly always been the result of imaginative and innovative approaches to old problems. In the process of becoming the principal source of research funding, the federal government has exercised a subtle but pervasive control over the kinds of research that are performed. As one member of a funding agency remarked to me, "We admire innovation, but we don't trust it. And we fund what we trust."

American preeminence in science has historically been based on the willingness of past researchers to take imaginative leaps. Today, support for this kind of thinking is extraordinarily difficult to come by, even for persons with strong reputations (witness Linus Pauling and Albert Szent-Györgyi). For those with equally fertile imaginations but of less repute, the truly creative art of scientific research is an unreachable dream. Federal funding agencies would do well to mark out a portion of their budgets specifically for the researching of a few wild ideas. Otherwise, we may find ourselves lagging progressively farther behind those places "further East" which Holden says are more in sympathy with fantastic ideas.

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Cancer Incidence

Luther J. Carter, in his excellent article on cancer policy (News and Comment, 9 Feb., p. 525), misses an important consequence of assuming a proportional relationship between cancer incidence and dose—that the total number of cancers tend to stay constant if the pollutant is spread more widely in the population. Carter says, "With the current popularity of self-service pumps at gasoline stations, exposure to this chemical [the additive ethylene dibromide] is presumed to have been increasing." This is probably wrong.

Replacement of gas station attendants by self-service pumps will increase the number of persons exposed, but if the exposure per car filling remains the same, so will the total exposure—it is merely spread over more persons. There will be fewer cancers among the attendants but more among the customers. The decrease in one will be matched by an increase in the other to within statistical error.

If, as some people believe, there is a threshold exposure below which no cancer appears, then the customer may get no cancers at all, and the total number of cancers will go down.

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Erratum: Because of a printer's error, a line was dropped from the letter by Robert W. Berliner (16 Mar., p. 1066). The third sentence in the third paragraph should have read, "Schools of medicine have large fixed costs that do not vary with the number of students. . . ."