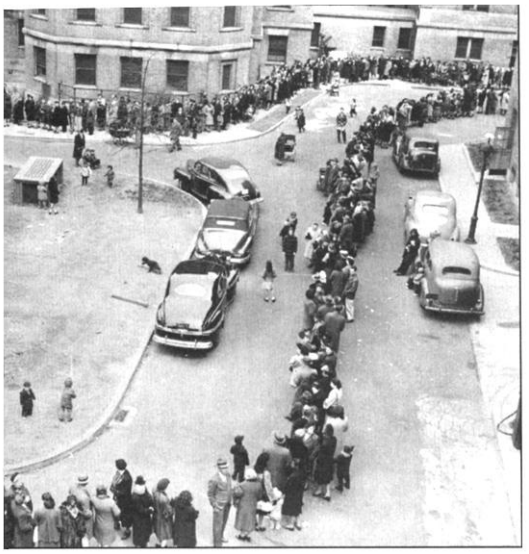

CREDIT: BETTMAN/CORBIS

New Yorkers wait in line for a vaccine during the 1947 smallpox outbreak.

ther case had prolonged, direct contact with the index patient. The outbreak was contained after the city underwent a massive vaccination campaign in which over six million people were vaccinated in less than a month (*2*).

Policy-makers who conclude that smallpox is difficult to transmit are making a dangerous assumption. Although rare, there are examples of airborne transmission of smallpox. The most concerning situation would be the spread of the disease to an unvaccinated, susceptible population from a deliberately dispersed plume of viral particles. Any future smallpox outbreak would most likely be the result of a terrorist attack, not a naturally occurring event. Therefore, planning for a worst-case scenario such as the one envisioned in "Dark Winter" makes the most sense.

LAURA H. KAHN

Woodrow Wilson School, Princeton University, Princeton, NJ 08540, USA. E-mail: lkahn@princeton.edu

References

1. W. J. Broad, J. Miller, "Report provides new details of Soviet smallpox accident," *New York Times*, 15 June 2002, sect. A, p. 1.
2. I. Weinstein, *Am. J. Public Health* **37**, 1376 (1947).

Calling It Something Other Than Cloning

B. VOGELSTEIN AND COAUTHORS ("PLEASE don't call it cloning!," Policy Forum, 15 Feb., p. 1237) suggest that the term "nuclear transplantation" should be used for "somatic cell nuclear transfer to create stem cells." The use of the term in this context was preempted some 45 years ago to mean a process that leads to cloning—precisely what Vogelstein *et al.* are trying to avoid! The studies by King and Briggs (*1*) and Gurdon (*2*) on amphibia are described as nuclear transplantation and remain the classic examples that have been included in numerous textbooks ranging from the second edition of Srb *et al.* (*3*) through Suzuki *et al.* (*4*) to Campbell and Reece (*5*). Although most of these texts concentrate on the totipotency of the nuclei transferred, some emphasize [e.g., (*4*)] that it is the production of series of clones of the original individuals that shows the ultimate success of the nuclear transplantation process. Thus, generations of biology students will immediately think of cloning regardless of the context in which "nuclear transplantation" is used.

DAVID ALWYN JONES

Department of Botany, University of Florida, Post Office Box 118526, Gainesville, FL 32611–8526, USA. E-mail: djones@botany.ufl.edu

References

1. T. J. King, R. Briggs, *Cold Spring Harbor Symp. Quant. Biol.* **21**, 279 (1956).
2. J. B. Gurdon, *Q. Rev. Biol.* **38**, 54 (1963).
3. A. M. Srb, R. D. Owen, R. S. Edgar, *General Genetics* (Freeman, San Francisco, ed. 2, 1966).
4. D. T. Suzuki, A. J. F. Griffiths, R. C. Lewontin, *An Introduction to Genetic Analysis* (Freeman, San Francisco, ed. 2, 1981).
5. N. A. Campbell, J. B. Reece, *Biology* (Benjamin Cummings, Menlo Park, CA, ed. 6, 2002).

VOGELSTEIN *ET AL.* SUBSCRIBE TO THE WIDELY held belief that a human being at an early developmental stage does not qualify as human.

Certainly, we can all agree that a preimplantation embryo is not sentient and that it is not viable to survive without assistance. But making distinctions about the "humanness" of genetically human organisms on the basis of their developmental stage falls within the realm of opinion, not scientific fact.

Regardless of what opinions are popularly held by members of the scientific community, we need to be careful to preserve the distinction between opinion and fact. An opinion held on a matter of philosophy by a majority of scientists is, nonetheless, an opinion, and is not brought any closer to the realm of testable fact by virtue of being held by highly regarded profesionals.

Vogelstein *et al.* write "Both of these research goals ["creating stem cells with the patient's own nuclear genome" and "creating stem cell lines by using the somatic cell nuclei of individuals with heritable diseases"] have nothing to do with producing a human being." On the contrary, both do indeed involve creating a human being. The authors suggest that certain avenues of research would wrongly be caught by a matter of semantics in legislation, because of the inclusion of the word "cloning"; I argue that such legislation would quite intentionally catch these avenues of research, and it is in fact their assertion that these studies would not involve production of human beings that is relying on semantics to justify its exclusion from these regulations.

Supporting stem cell research and holding to philosophical distinctions between the rights of human beings from different developmental stages are quite a different thing from arguing that human embryos are not human. Our cause is only weakened by relying on such arguments to support it.

ELI MEYER
University of Southern California, AHF 210, 3616 Trousdale Parkway, Los Angeles, CA 90089, USA. E-mail: elishame@usc.edu

Response

WE THANK JONES FOR THE HISTORICAL context. We can think of no one better to emulate than King, Briggs, and Gurdon, who have contributed so many elegant studies to modern embryology. "Nuclear transplantation" was a good term when they coined it, and it remains good. It is far more accurate than "therapeutic cloning" and much more easily pronounceable than "somatic cell nuclear transfer."

Meyer has, unfortunately, missed the point of our Policy Forum. Human cells growing in a Petri dish are not equal to a human being. This is fact, not opinion. Cells in a Petri dish can't talk, think, move, love, laugh, or cry, to name a few of the numerous and obvious differences. Thousands of laboratories around the world already grow human cells (fibroblasts, lymphocytes, etc.) in Petri dishes. Each of these cells has the theoretical capacity to develop into a human being after experimental manipulation. The major medical goal of nuclear transplantation is to produce human cells growing in Petri dishes that can be used for regenerative medicine. The public needs to understand that there is a huge difference between such cells and an actual human being. It is important that the current confusion about these issues does not lead to a ban on the production of certain types of human cells growing in Petri dishes, precluding potential therapies for the millions of human beings who currently suffer from otherwise incurable diseases.

BERT VOGELSTEIN,[1]* BRUCE ALBERTS,[2] KENNETH SHINE[3]
[1]Howard Hughes Medical Institute and the Kimmel Cancer Center, Johns Hopkins University, Baltimore, MD 21231, USA. [2]National Academy of Sciences, Washington, DC 20418, USA. [3]Institute of Medicine, Washington, DC 20418, USA.
*Vogelstein chaired the recent National Research Council report on stem cells.