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LETTERS

Human Gene Therapy Protocols: RAC Review

Much discussion has focused on the Recombinant DNA Advisory Committee (RAC) of the National Institutes of Health review of clinical protocols in human gene therapy. We believe the time has come for the RAC to end its protocol-by-protocol review. This would be consistent with the RAC tradition of developing guidelines for new technologies and then turning them over to local institutions or other regulatory agencies. This has been done with laboratory experiments with recombinant DNA, "voluntary compliance," large-scale applications, and environmental release, for example.

Therefore, instead of the present system in which the RAC has the option to review all gene therapy clinical protocols, we urge the RAC to more clearly and directly define its review process. We urge the RAC not to review Phase I follow-up studies. This is done by the Food and Drug Administration (FDA) for all clinical trials, including gene transfer. Second, we urge the RAC to define by inclusion, not exclusion, what it will review. The RAC should review those clinical protocols that use new vector systems, new disease targets, and new technologies. All other gene protocols should be reviewed exclusively by the FDA. This would, we believe, be responsive to the public, investigators, and the field.

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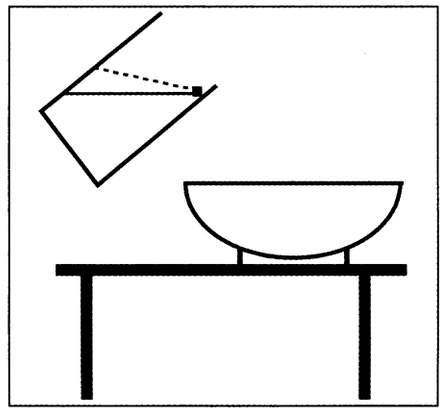
Accelerating Fluid

In the Random Samples item "Relative horizontality" (28 Apr., p. 503), it is reported that people who frequently move liquids rapidly in open containers (waitpersons and bartenders) seem not to appreciate that the static surface of a liquid is "horizontal."



Water level test. Acceleration could account for subjects' "error" (dotted line).

However, these people are paid not to spill the liquids, whose surfaces are often very near the rims of the containers. When one accelerates a liquid, its surface tends to be perpendicular to the effective gravity vector obtained by subtracting the acceleration vector from the ordinary downward gravity vector.

For example, a waitperson might accelerate a cup of coffee over its first meter of travel in 0.5 seconds, corresponding to an acceleration, $a = 2(\text{distance})/(\text{time})^2$, or 8 meters/(second)^2, which is nearly the pull of Earth's gravity ($g = 9.8$ meters/(second)^2. During this acceleration, the surface of the liquid would approach an angle, θ, where tangent $\theta = a/g = 8/9.8$, or $\theta = 39$ degrees.

To save his or her job, the waitperson would be well advised to tilt the cup during the initial acceleration, restoring it to the horizontal only during the steady walk to the table, and then giving it a reverse tilt as the cup is decelerated onto the table.

Thus, these workers might well respond to the psychologists' water level test by noting that in situations in which the surface of a liquid is not horizontal, the container has usually been tipped to keep the surface parallel to the rim.

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Hatching to Survive

The report by Karen Warkentin (*1*) of adaptive hatching of the eggs of red-eyed frogs when threatened by a predator (Random

Samples, 21 Apr., p. 371) is interesting and may indeed represent a unique case of predator-induced hatching. However, the further statement attributed to Gordon Orians that this may be the first case of hatching behavior "that might improve survival" is incorrect. The grunion, an atherinid (silverside) fish of California and Baja California, buries its eggs in the sand just following the peak of a high tide series. The eggs remain in the damp sand above the water line and are excavated 2 weeks later by the next ascending tide series. The embryos are ready to hatch in 1 week, but do not do so until dug out and tumbled by the waves. In fact, grunion eggs will not hatch unless agitated (*2*). The immediate and synchronous hatching of the mobile larvae as soon as they are freed of the sand has obvious survival value in terms of predator avoidance and possibly predator satiation.

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References

1. K. Warkentin, *Proc. Natl. Acad. Sci. U.S.A.* **92**, 3507 (1995).
2. B. W. Walker, *Calif. Fish Game* **38**, 409 (1952).

National Biological Service

In a Random Samples item (20 Jan., p. 335), it is stated that the National Biological Service (NBS), as envisioned by Secretary Bruce Babbitt "would . . . inventory every animal and plant species in the United States." This statement is at the heart of considerable confusion and erroneous perceptions concerning the NBS mission, which is to help provide the scientific understanding and technology needed to support the sound management and conservation of our nation's biological resources. Its primary role is to meet biological research needs of other bureaus in the Department of the Interior and provide information for other federal agencies, states, tribes, and private institutions and other users.

While survey functions are important to the NBS, they are not primary. Many national wildlife refuges, national parks, and other lands managed by the Department of the Interior still lack comprehensive biotic surveys of even the common plants and terrestrial vertebrates. Whatever the merits of an inventory of every plant and animal species in the United States, the NBS was not designed to attempt such a program.

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Radioactive Waste Storage

As chairman of Californians for Ward Valley, a broad coalition of individuals and organizations in the scientific, health care, business, and academic communities, I am concerned about the continuing attacks on the National Academy of Sciences (NAS) by the opposition to Ward Valley, as outlined in a recent article (News & Comment, 21 Apr., p. 358).

The kinds of erroneous and emotional charges leveled against the NAS by Senator Barbara Boxer (D–CA) and opposition groups led by the Committee to Bridge the Gap (CBG) are designed to achieve political goals by attempting to undermine the credibility and scientific integrity of the NAS.

It is important to recognize that the opposition is intent on stopping society's use of radioactive material. They do not seek to ensure a safely operated project, but rather to stop the facility altogether. Because of the delays in gaining approval of the Ward Valley facility, low-level radioactive waste is