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Letters

What's wrong with DNA patent rights

If scientists wonder why the public sometimes seems hostile to their endeavors, they need look no further than this business (and I use the word advisedly) of trying to patent parts of the human genome ("All Rights Reserved," SN: 9/4/93, p.154).

Religious arguments aside, it seems clear that the answer to the question posed on your cover, "Who owns the human genome?" must be "All of us" or "No one." Medical treatments based on discovering which genes control what in human development or metabolism, and possibly replacing defective genes with "normal" ones, must be freely available to the world.

We have come a long way down a wrong road since Marie and Pierre Curie refused to patent their radium-purifying process and Dr. Gladys Dick and her husband were ostracized for patenting their scarlet fever test and antitoxin.

Autumn Stanley
Portola Valley, Calif.

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Cover: If all goes according to plan, astronauts will dock the Hubble Space Telescope in the payload bay of the space shuttle early next month for a historic repair mission. During a record five walks in space, astronauts will attempt to fix a host of Hubble troubles, including the telescope's flawed optics, jittery solar arrays, and failed gyroscopes. (Illus.: Ball Corp./Scott Kahler)



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Science Service, which publishes SCIENCE NEWS, is a nonprofit corporation founded in 1921. It gratefully accepts tax-deductible contributions and bequests to assist its efforts to increase the public understanding of science, with special emphasis on young people. More recently, it has included in its mission increasing scientific literacy among members of underrepresented groups. Through its Youth Programs it administers the International Science and Engineering Fair, the Science Talent Search for the Westinghouse Science Scholarships, and publishes and distributes the *Directory of Student Science Training Programs for Precollege Students*.

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If DNA is an "invention," it is someone else's invention, and those attempting to patent it are merely cribbing off the inventor's lab notebooks, knowing that the inventor will never show up to point the finger. More hypocritically, a person who attempts to get a patent on existing DNA is apparently trying to deny the right of others to do exactly what he or she has done — copy nature word for word.

James Bell
Vancouver, Wash.

Patents ought to be given for innovations, not identifications. I can foresee, for example, astronomers filing for patents on the latest quasar discovered. For 17 years no other stargazer would be allowed to focus their telescope on that heavenly body.

Ridiculous! It is the telescope that deserves the patent, not the quasar. Likewise, it is the mapping process that ought to garner the patent, not the gene sequence that is revealed. Let's get real.

Robert V. Tuček
Austin, Texas

Rather than being a cause for worry, the patenting of the human genome promises to solve two of the major problems of our time: sexually transmitted disease and the population explosion.

Clearly, anyone setting out to utilize the full human genome in the act of procreation will have to pay a stiff licensing fee. The added cost can be expected to cause a dramatic decline in the incidence of these problems.

Robert E. Adler
Fremont, Calif.

I'm sorry, but I am not going to stop producing one of my genes for 17 years just because some researcher has a patent on it. Besides, my parents hold the patent rights — they created my genes.

Elliott H. Sigman
Pasadena, Calif.

The analogy often used in writing about genetics is that the nucleotide bases are the

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Reversal on nuclear waste tests

The Department of Energy (DOE) last month announced a major change in its plans to open an underground repository for high-level radioactive waste beneath the desert in south-eastern New Mexico. Under the Bush administration, DOE had fought for the right to load waste canisters into the completed facility as part of a test designed to demonstrate that the storage site can meet environmental safety standards. But the department now acknowledges that it can conduct the necessary tests without placing radioactive wastes underground, a view many scientists had long maintained.

"This is a major break with the last administration's approach, which frankly did not give full considerations to the concerns of the scientific community, EPA, and the public," said Energy Secretary Hazel R. O'Leary.

The facility in question, called the Waste Isolation Pilot Plant (WIPP), lies 653 meters below ground and consists of 56 cavernous rooms carved out of a salt formation. Construction of the repository has cost \$1.5 billion so far and is running years behind schedule. DOE built WIPP to dispose of some 900,000 drums of waste contaminated by plutonium and other highly radioactive elements during the production of nuclear weapons. Before opening WIPP to full-scale operations, DOE must demonstrate that the facility can meet federal regulations governing the long-term disposal of radioactive and hazardous wastes.

The department has argued for many years in favor of placing some waste in WIPP to demonstrate that the site complies with environmental regulations. In the early 1980s, DOE had planned to store 193,000 drums underground for these tests, but that number has steadily dropped in the last decade.

In 1991, the department sought to move as many as 9,000 drums into WIPP but was blocked by the courts following a petition by the state of New Mexico. The proposed number of drums dropped to 95 earlier this year. According to DOE, the experiments were required to measure the amount of gas generated by the waste.

Many groups reviewing the WIPP program have opposed the underground tests, contending that the department has never demonstrated that the data are important for the permitting process. DOE also has not proved the necessity of conducting such tests at WIPP rather than at above-ground locations, where the waste could easily be retrieved should the need arise, says Robert H. Neill, director of the Environmental Evaluation Group, an Albuquerque-based committee funded by DOE to oversee the WIPP project. Neill and others reason that the department wanted to conduct the tests at WIPP mostly for the symbolic value of finally bringing some waste into the facility. "We compliment DOE in taking the courage to say, 'We've been on the wrong path,'" Neill says.

Rather than putting test waste into WIPP, the department plans to conduct the necessary experiments in selected above-ground research sites, where investigators can collect the data faster and cheaper than underground, says Thomas P. Grumbly, DOE's assistant secretary for environmental management in Washington, D.C. The tests will involve both real and simulated wastes and are designed to demonstrate that the WIPP facility can keep unsafe levels of radioactivity out of the environment for 10,000 years. DOE plans to use the results of the laboratory tests when it submits its application for certification to the Environmental Protection Agency in 1995.

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four-letter "alphabet" used to write genes. Extending the alphabet analogy, it sounds like the cDNA are the "words." If you can patent those, let's talk about copyright law.

I want all rights to the words *the, it, a, and and* because I think they might be parts of some really interesting sentences and phrases (although I'm not certain at this time what those are, how long they are, or even in what context they might be useful), and I want royalties anytime they are used. Not big royalties, just a penny or two. Oh, yes, I'd also like all rights to *ridiculous* and *stupid*.

Anthony M. Castaldo
San Antonio, Texas

Wuethrich strains to cast lawyers in a stereotypic role they do not fill. At the bottom of the second column, she states, "Genica patent lawyers . . . threatened to file a lawsuit. . . ." Lawyers only provide a service to their employer — Genica corporate officers are responsible for the business decision to threaten the Toronto group with a lawsuit.

She later refers to "lawyers at the patent office . . . argu[ing] for years" before making a decision. Many patent examiners and policy makers at the patent office are not lawyers.

Aggressive corporate management and the Patent Office's need for thoughtful, deliberate policy making on the issue of gene patenting are the real drivers.

Pepi Ross
Patent Advisor
Lawrence Berkeley Laboratory
Berkeley, Calif.

Staying grounded in current issues

In "EMFs Run Aground" (SN: 8/21/93, p.124) it says, "Current always takes the path of least resistance." The truth is that current flows down every available path. The amount of current flow is determined by an inverse relation to the amount of resistance in the conductor. So, while it is correct to say that *most* of the current will take the path of least resistance, it is definitely not true that *all* of the current will flow down that path.

Jerold K. Ham
Antioch, Calif.

I've examined and measured the electromagnetic fields generated by the two hair dryers in our home. The small, travel-size unit produces fields of 7 to 8 mG at typical hair-drying distances (7 to 8 inches from the head). The standard-size unit produces fields of 300 to 400 mG at typical hair-drying distances! (The highest field strength in your house survey graph was less than 20 mG.)

If alternating magnetic fields are linked to cancer, anyone concerned about this (especially people with long hair) should seek out low-field hair dryers.

Ken Robart
North Vancouver, B.C.

The basic purpose of the electrical grounding system in residences is to send dangerous stray electricity back to the soil through a path of least resistance before the electricity can start a fire, shock, or kill an occupant. This purpose is so important, I have seen experienced, knowledgeable electrical inspectors who are pressed for time accept residential

wiring based only on an electrician's proper treatment of its grounding.

Neutral and ground wiring should only be bonded back at the "main," where their unbalanced current is promptly sent to earth. The use of water pipes to carry this current alone is against the law in every community in which I've worked as an electrician.

Finally, there is a difference between earth and ground. "Ground" refers to potential current routes in human-built systems, and "earth" refers to currents that flow in our planet. Buried iron water pipes, being of lower resistance than most dirt, will carry electricity from location to location because the surface of our planet has different voltages in different places. Current is always flowing in earth, even in uninhabited country.

Pete Cronburg
Haleiwa, Hawaii

The not-so-ancient art of making tea

It is amazing that the question of tea scum is thought so difficult that we must apply the heavy analytical artillery of electron microscopy to it ("Tea scum? Try a little lemon juice," SN: 8/21/93, p.122). As a tea drinker, I prefer peer review.

Make tea with water at 80°C, as the British do, and you'll get tea scum. Boil the water, however, and you'll get no tea scum — and the tea will taste better. Although the authors propose to free up the carbonate by acidity from lemon juice, boiling works better. Their problem is simply that they don't know how to make tea.

Irwin B. Margiloff
Duarte, Calif.