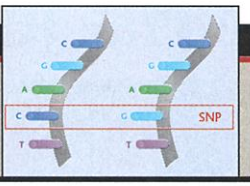


GLOBAL WARMING

World Starts Taming The Greenhouse

To the surprise of many, representatives of 178 countries agreed early Monday morning on how to begin fighting global warming. Seventeen hundred diplomats established a complex method of accounting for greenhouse gas emissions and uptakes, which will allow countries to receive due credit for their efforts. The agreement allows countries considerable flexibility in meeting their goals for reducing greenhouse emissions, an aspect that derailed negotiations in The Hague last fall. Enough countries are expected to ratify the agreement to put the Kyoto Protocol into effect next year, without the United States.

Accord. Conference chair Jan Pronk and Japan's environment minister Yoriko Kawaguchi found common ground.

The new agreement is seen by protocol supporters as the best start that could be expected under the circumstances. "Most people in the world do believe this was the only game in town," says Eileen Claussen, president of the Pew Center on Global Climate Change in Arlington, Virginia, an organization dedicated to reducing greenhouse emissions. After President George W. Bush rejected the Kyoto Protocol this spring as "fatally flawed," "countries had to rethink whether they wanted to do this," Claussen says. "They decided they did, and they made the needed compromises." The compromises are unlikely to entice the United States to ratify the protocol, but they do seem to promise broad enough support among other industrialized countries that the protocol will come into force.

The compromises encompass a range of policy issues. Flexibility will come from mechanisms such as emissions trading, the exchange of emission credits between countries able to cut emissions beyond their required amount and countries willing to purchase those credits; the Clean Development Mechanism, in which industrialized nations can receive credit for emission reductions achieved through projects such as hydroelectric dams in developing countries; and land use, the managing of soils and forests that can soak up carbon dioxide. The delegates failed to reach a compromise in one key area: compliance. Japan in particular was leery of harsh penalties for countries that don't meet their emission-reduction targets, so negotiators decided that enforcement will be determined once the protocol is in effect. That will be when the requisite 55 countries accounting for 55% of the industrialized countries' 1990 emissions have signed on.

Given the flexibility and the possibility of a light hand with enforcement, the environmental group Greenpeace has dubbed the current version of the protocol "Kyoto Lite," but a lightening up is not all bad, say some observers. "They've left the thing sufficiently loose that everyone's willing to join hands," says journalist-in-residence John Anderson of Resources for the Future, a Washington, D.C., economics think tank. "That's probably useful. Nobody knows how those mechanisms are going to work. Everyone needs to get real-world experience with what the costs are going to be before you can press hard. It's not a howling success, but it's not a disaster either." The protocol could be in effect, without the United States, by the 10th anniversary of the Rio Earth Summit next July.

–RICHARD A. KERR

GENOME RESEARCH

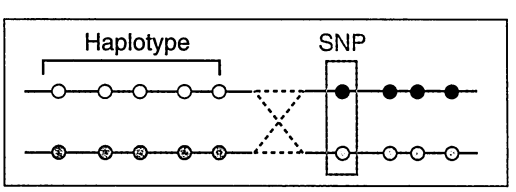
Map of the Human Genome 3.0

Like a traveler picking up a new language, geneticists are starting to recognize phrases and sentences as they read the babble of bases in the human genome. These grammatical constructs are discrete blocks of DNA that differ from one person to the next. And they may be common enough and account for enough of the genome, researchers concluded at a conference* held here last week, that it's time to create a new map of the genome, one that describes its blocky structure.

The new project is called a haplotype map—for desperate want of a better name. (In the hopes of finding a more palatable one, National Human Genome Research Institute director Francis Collins has informally launched a name-the-map contest.) Haplotypes are simply long stretches of DNA—including perhaps as many as 100,000 bases—at a given location on a chromosome. To their surprise, genome researchers have found that many such blocks come in just a few different versions, a discovery that should simplify the search for associations between DNA variations and complex diseases such as cancer, diabetes, and mental illness.

A haplotype map will thus, its creators hope, be a tool for pinning down the genes that contribute to the development of those conditions. "The reason for [the map's] existence," said Collins, "shall be to try to understand the reasons for disease and find therapeutics" to treat them.

The mapmakers emphasized this goal because a haplotype map could raise ethical concerns. More so than previous maps of the human genome, it might include markers that indicate someone's race and ethnicity. As a result, about half the meeting was devoted to figuring out the best scientific approach to building a haplotype map, whereas the rest was spent exploring social issues. Pilar Ossorio of the University of Wisconsin Law School in Madison pointed out one of the dangers. "As cognitive psychologists have shown," she said, "people take in information in a way that reaffirms their existing stereotypes," and creating a genome map that contains race-specific elements might imply a scientific seal of approval on race-based social perceptions.



Mix and match. Long stretches of DNA with a distinctive pattern of SNPs are called haplotypes. Successive haplotypes can combine in many different patterns.

* Developing a Haplotype Map of the Human Genome for Finding Genes Related to Health and Disease, 18–19 July, sponsored by the National Institutes of Health.

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