

Briefings

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Canine Genome Project

Call it a kinder, gentler type of animal research. In a study modeled on the first phase of the human genome project, researchers are developing a genetic linkage map to help find the genes responsible for several hundred diseases in man's best friend.

The ultimate goal is a simple blood test a vet or breeder can use to determine whether a dog is carrying a gene for, say, hip dysplasia, blindness, or copper toxicosis.

The project is being conducted by two human geneticists, George Brewer and Vilma Yuzbasiyan-Gurkan of the University of Michigan, and three veterinarians, William Schall, George Padgett, and Ulreh Mostosky of Michigan State University. They have received a \$750,000, 5-year grant—the largest ever for dog health research—from the American Kennel Club, the Morris Animal Foundation, and the Orthopedic Foundation for Animals, Inc.

The first task is to find 400 DNA markers or "landmarks," spread around the chromosomes, for construction of a map with landmarks spaced every 10 million bases or so. It should then be possible to find the rough location of a disease gene by seeing whether it is inherited along with a marker. From there, developing a diagnostic test is relatively straightforward.

How many genes are ultimately detected this way will depend on research money, says Brewer, who estimates that, once the map is in hand, it will still cost about \$20,000 to \$40,000 to seek out each disease gene.

But he is optimistic, saying that the genetic map will be a far more powerful tool in dogs than in humans. "In species



Brobdignagian Robot. Giant, 12-foot-tall robots like the prototype above being developed at Carnegie Mellon University may one day be stalking the hills and valleys of the moon and Mars. Dubbed Ambler, the creature will traverse rough terrain wheeled vehicles can't get to, propelling itself on its six legs like a cross-country skier. The electrically powered Ambler, unlike previous interplanetary vehicles, will be "autonomous"—capable of making its own decisions with a general set of instructions. It will be able to construct three-dimensional maps of its environment which it will study to decide where to go and what samples to collect. Commissioned by NASA, the Ambler is one of the concepts being looked at under the agency's planetary Rover Program. Now that Ambler has shown it can rove, the next step is integration of its perception and planning and control functions.

where breeding is controlled, you can have a big impact on gene frequency."

Perils of Perestroika

What have Soviet economic planners been doing for the past 5 years? Getting increasingly confused, apparently. U.S. scientific policy-makers got a first-hand impression last

week of the chaos that threatens perestroika when a group of them met at the National Academy of Sciences for a free-ranging discussion with members of visiting President Mikhail Gorbachev's delegation.

Present were ten high-ranking Soviets including economist Stanislav Shatalin, member of the President's Council, who talked at length about the dilemma facing the economy.

He described a system floundering in a void between centralized planning and a market system. At this point, said Shatalin, there's no going back—the centralized economy is "a shattered base that can't be glued back together . . . the whole system of government ownership is now bankrupt." But the costs to society of moving ahead are tremendous in terms of rising prices and unemployment. What's more, no one knows how to ease the transition.

"In '88 we had the impression our economy would get moving," said Shatalin. But now "we see the methods we have been applying simply don't work. We are trying to prop up this table with two rocky armchairs—the market system and the central plan. The attempt at symbiosis between these . . . has produced rather regrettably sad consequences," he said through an interpreter. "To be frank, the economic situation has not only worsened, but it is getting still worse with every passing day." He said, "it has now become clear there is no resolution to our problems without a market system in every sense."

How to do it? Soviet economists have experience in shifting from a market system to a planned system, said Shatalin, but shifting back is much hard-

Malaise Amid Russian Dreams

You might not have guessed it from man-on-the-street interviews on the nightly news of angry Soviet citizens, struggling to get a loaf of bread or a sausage from depleted supermarket shelves, but Mikhail Gorbachev's theories of economic perestroika are far from dead in Russian hearts: in one surprising result from an otherwise gloom-ridden survey of Soviets, about half the respondents favored private enterprises and fewer than 25% were opposed. An "entirely unexpected" finding, considering what is being reported in the Soviet press, was that close to one-third would not mind starting their own businesses. And the proportion favoring private ownership was even higher among farmers.

These were among findings from a survey conducted by the new National Public Opinion Research Center established in Moscow in 1988. Reporting on the results during a recent visit to

the United States was the center's director, leading Soviet sociologist Tatiana Zaslavskaya, who is also president of the Soviet Sociological Association and an adviser to Gorbachev.

Zaslavskaya told a Georgetown University audience last month that findings from the survey as a whole show that Soviet citizens are becoming increasingly cynical, pessimistic, and polarized by ethnic antagonisms. The unprecedented set of public opinion polls, conducted in 1989 and early 1990, found that, while a majority of respondents said they "completely supported" Gorbachev last year, substantially fewer than half do now as the country's economic crisis has deepened.

The survey, based on face-to-face interviews, involved a set of questionnaires administered to various subgroups in a sample of about 3000 people representing the population of the U.S.S.R. It contained a vast range of detailed questions on social, economic, and political issues.