

Geneticist Heather McDermid, who led the only Canadian research team contributing to the *Nature* paper, believes that “this is the start of a big boom in genetic research.” McDermid, along with a technician and graduate student at the University of Alberta, mapped the cat-eye syndrome region, associated with a genetic duplication, and the 22q13 deletion syndrome region, associated with a genetic deletion. Cat-eye syndrome can lead to heart, eye, kidney and facial defects, anal atresia and mild mental retardation. The deletion syndrome causes mental retardation and loss of expressive speech.

The HGP is 1 of 2 research groups racing to complete the sequencing of the human genome. Celera Genomics Sys-

tems, a private company in Rockville, Md., started sequencing in September using the “whole genome shotgun” method. With this approach, researchers shatter the entire genome into fragments and read them simultaneously by feeding them into a supercomputer. Aside from methodology, the other major difference between the 2 groups is that Celera sells its information, while the HGP presents all its findings free to the public ([www.ncbi.nlm.nih.gov/genemap99/](http://www.ncbi.nlm.nih.gov/genemap99/)). “The human genome is the common property of all humankind, not just of those who can afford to pay for the information,” emphasizes Bruskiwich. “The imposition of any embargo upon that free exchange stifles the progress of scientific understanding.” — *Barbara Sibbald, CMAJ*

## Chromosome 22 disease list

At least 27 human disorders are known to involve chromosome 22. Other genes may also be associated with some of these disorders.

Amyotrophic lateral sclerosis, susceptibility to  
Breast cancer, t(11:22) associated  
Cat-eye syndrome  
Cataract, cerulean, type 2  
Bernard-Soulier syndrome, type B  
Breakpoint cluster region (CML)  
Colon cancer (deletions)  
Deafness, autosomal dominant 17  
Dermatofibrosarcoma protuberans  
DiGeorge syndrome

Ewing's sarcoma breakpoint region 1  
Glioma of brain (deletions)  
Glucose-galactose malabsorption  
Glutathionuria  
Heme oxygenase-1 def.  
Hirschsprung disease (dominant megacolon)  
Hyperprolinemia type 1  
Lysosomal a-N-acetylgalactosaminidase deficiency  
Malignant rhabdoid tumour  
Meningioma  
Mental retardation, chr. 22-associated  
Metachromatic leukodystrophy  
Myoneurogastrointestinal encephalomyopathy

Neurofibromatosis, type 2  
Opitz G/BBB syndrome, autosomal dominant  
Ovarian cancer (deletions)  
Pheochromocytoma  
Pulmonary alveolar proteinosis (rare cases)  
Schizophrenia 4  
Schwannomatosis  
Sorsby's fundus dystrophy  
Spinocerebellar ataxia 10  
Succinylpurinemic autism  
Thrombophilia due to heparin cofactor 2 def.  
Transcobalamin 2 deficiency  
22q13 deletion syndrome

## Socioeconomic status at the heart of health care inequality

A recently published Canadian study suggests that our health care system may not be doing enough to direct cardiac care and promotional strategies to poor patients — the people who generally need these services the most (*N Engl J Med* 1999;341:1359-67).

Researchers with Ontario's Institute for Clinical Evaluative Sciences found that patients living in neighbourhoods with the highest average income received coronary angiography 23% more often and had 45% shorter waiting times for treatment than patients living in the lowest-income neighbourhoods. As well, each \$10 000 step up in neighbourhood median income brought with it a 10% drop in the risk that a person would die within 1 year because of acute myocardial infarction (AMI). “Our findings raise the question: Could we as a system be doing a better job in reaching patients of lower socioeconomic status with health care and preventive strategies?” says Dr. David Alter, a cardiologist with Toronto's Sunnybrook and Women's College Health Sciences Centre.

The study followed 51 591 Ontario patients admitted to

hospital for an AMI between April 1994 and March 1997. Researchers defined patients' socioeconomic status according to the average incomes of the communities where they lived. All data were adjusted for age, sex, severity of illness, specialty of the attending physician and hospital characteristics.

Alter says the results are evidence of real differences in the health status of patients that appear to be related to socioeconomic status. As such, they lend weight to findings of previous studies that there are disparities between classes in the prevalence of cardiac risk factors. “Why is that? Is it genetic? Or is it related to the way we deliver services and educate the public?” Psychosocial factors such as depression and job stress are also believed to cause worse outcomes for poorer or less educated people with coronary disease, although the precise mechanisms are not fully understood. “What's needed now is a study to address and disentangle all the different factors at play here,” says Alter. “I suspect that when we finally do answer the ‘why’ question, we'll find it's not just diet, or just lifestyle, but rather a whole multitude of factors and how they interplay.” — *Greg Basky, Saskatoon*