

Report urges Europe to combine wealth of biobank data

Europe should take greater advantage of the wealth of information sitting in its special libraries of genetic and medical samples known as biobanks. That's the conclusion of a report published 27 May by the European Science Foundation (ESF), a nongovernmental organization located in Strasbourg, France. "There is an urgent need for coordination and harmonization of the biobanking and biomolecular resource infrastructure," according to the ESF analysis.

There are nearly 200 biobanks scattered across Europe, says Dolores Ibarreta of the European Commission's Institute for Prospective Technological Studies in Seville, Spain; these typically house DNA, cell tissue samples, medical records and environmental and lifestyle data collected from study participants. Biobanks range from large projects such as the UK Biobank, which plans to collect samples and information from 500,000 adults, to small-scale university projects involving a few hundred subjects. "We do have a lot of extremely valuable material. This represents an enormous amount of public investment over the years," says GertJan van Ommen, head of Human Genetics at Leiden University Medical Center in the Netherlands and chair of the committee that produced the new ESF report.

Experts hope that analyzing the information collected in biobanks will shed light on the complex interplay of genetic, environmental and lifestyle factors behind various diseases—and ultimately lead to new preventions and cures. But in order to untangle the intricate causal webs of diseases such as Alzheimer's, scientists need to compare data from large populations, and this requires sample sizes far beyond that of any existing biobank, according to the ESF report.

Moreover, the mission of pooling resources, sharing samples and exchanging data represents a difficult task because each country in Europe operates under its own legal and ethical framework. A person enrolling in a biobank in Finland, for example, signs a different consent form than someone enrolling in a study in Germany, and the laws protecting the privacy of those individuals are not the same.

To complicate things more, biobanks use diverse methods of obtaining, storing and transporting biological specimens and a multitude of computer platforms to analyze data and communicate results. There is not even a common standard for measuring people's waistlines and blood pressure. The absence of an established infrastructure to cultivate

collaboration among Europe's biobanks, van Ommen says, "is really hampering the scaling up of research."

"I look at Europe as having the richest history in biobanking," says Thomas Hudson, scientific director of the Public Population Project in Genomics (P3G), an international consortium that fosters worldwide biobank collaboration. He notes, however, that there is a need for "harmonizing, making similar tools and database structures."

"From a scientific standpoint it's not that hard," says geneticist George Church, who leads Harvard's Personal Genome Project, an effort to sequence the DNA and create personal disease risk profiles for 100,000 people. But he adds that difficult ethical issues may arise. "There is a potential conflict between the language of earlier consent forms and that used in the new system," he says, noting that agreements signed by patients years ago might contain promises that the new system cannot accommodate. "Consent can be difficult," agrees Hudson. "What happens if a person dies? Can you still use the sample?"

"It's quite probable that some data will not be able to be shared," says van Ommen. But he adds that there are ways of using data and still protecting people's anonymity, he adds.

Earlier this year, the European Union set aside €5 million (\$7.7 million) for the Biobanking and Biomolecular Resources Research Infrastructure (BBMRI), a group of representatives from academia, government, and funding agencies, to launch the effort to unite Europe's biobanks. Over the next few years, a BBMRI working group will create a set of contracts to submit to the health ministries of European governments. The contracts are intended to guide nations toward a similar set of legal, ethical, and technical guidelines for biobanking.

The idea of setting biobanking guidelines is analogous to the standardization of Europe's rail system, von Ommen says: "Every country pays for its own train line, but they have agreed to put their rails at the same distance so it's easy to go from the Netherlands to Greece without changing trains."

Coco Ballantyne, New York

Healthy actions reverberate strongly

"Tell me who your friends are and I'll tell you who you are." In the context of recent scientific findings, the old Russian proverb could be revised to also include your friends' friends, and their friends, too.

Researchers have found increasing evidence that certain health-related behaviors ripple through social circles like fashions coming into style. Smokers are more likely to kick the habit when family, friends and colleagues are doing it, according to a study by Nicholas Christakis of Harvard Medical School and James Fowler from the University of California in San Diego (*N. Engl. J. Med.* **358**, 2249–2258; 2008).

By analyzing 32 years of data on thousands of participants in a cardiovascular study, the scientists discovered that a person's likelihood of smoking decreases by 67% when a husband or wife kicks the habit, 36% when a friend quits and 34% when a co-worker quits.

Notably, the effect does not stop with close relationships but reverberates across large social webs, spreading as far as three degrees of separation. "Whenever



Kick the habit: It's a chain reaction

you experience a change, that change will ripple to your friend, your friend's friend, and your friend's friend's friend," says Fowler.

With every degree of separation, the influence diminishes by at least half, but the collective impact is powerful. "People were quitting in droves," Christakis says of the smoking study findings.

Previously, Christakis and Fowler had published research suggesting that obesity is socially contagious up to three degrees of social separation (*N. Engl. J. Med.* **357**, 370–379; 2007). They are now probing the effect of social networks on a variety of other phenomena, including alcohol consumption and prescription drug use.

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