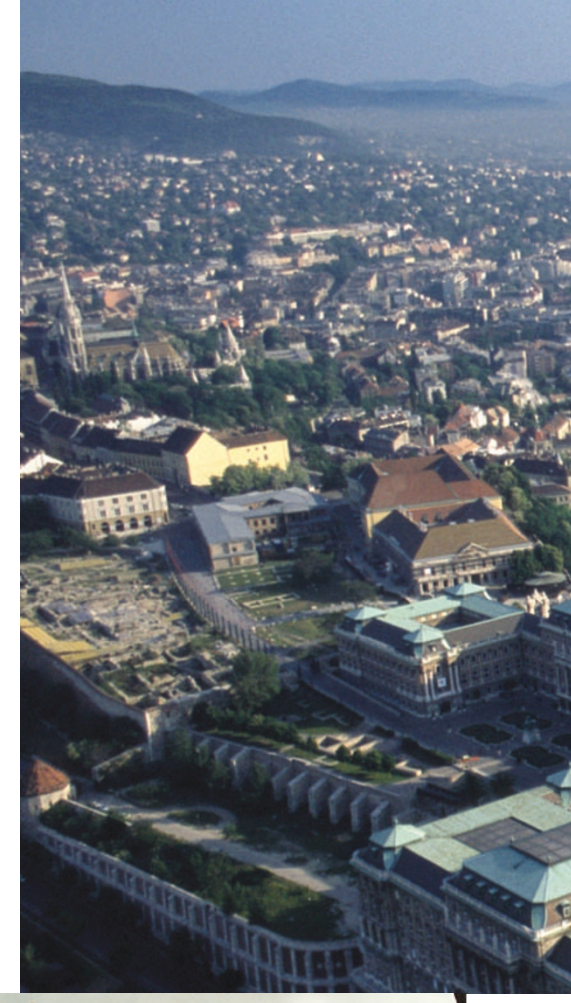
# Dreaming on the Danube



## Can Budapest regain its status as one of Europe's scientific hubs? Perhaps, if the generation gap between Soviet-era scientists and young, westward-looking researchers can be bridged. Quirin Schiermeier reports.

Budapest's intellectual heart beats in the city's historic castle district, in a beautiful baroque building on Trinity Square, just opposite the famous Matthias church. The former city hall of Buda, which sits on a hillside overlooking its twin city, Pest, now plays host to the Collegium Budapest. This haven for theorists has a rarefied, cloistered atmosphere — as befits an institute established in an unashamed attempt to emulate the Princeton Institute for Advanced Study in New Jersey.

That's an ambitious aim: launched in 1930, the Princeton institute's early fellows included such luminaries as Albert Einstein and the logician Kurt Gödel. The Collegium Budapest can't yet claim to compete in the same league, but after just a decade in operation, it has established itself as one of the most prestigious academic addresses in Eastern Europe. With five permanent research fellows plus a roster of 20 or so visiting scientists, the Collegium is carving out a niche for theoretical work in disciplines from physics, through linguistics, to evolutionary biology.

Hungarian scientists hope that the Collegium's success can serve as a springboard to reviving their country's past scientific glories. Budapest, they argue, is ideally placed to lead attempts to re-establish a cosmopolitan culture of science among the countries of the former Eastern bloc. "Hungary has left important fingerprints on science in the past, and I am optimistic that Budapest will be able to regain its traditional role of a premium intellectual centre for central and eastern Europe," says neuroscientist Sylvester Vizi, who in May 2002 became president of the Hungarian Academy of Sciences.

The timing is right: for Hungary and nine other countries in the region, full membership of the European Union (EU) lies just months away. But many of those who want to reach out to the West point to a nagging obstacle: the old guard of Soviet-era scientists who still dominate the Hungarian scientific establishment.

No one can doubt Hungary's rich scientific pedigree. The country has produced more Nobel laureates per capita than any other. Some say that Hungarians are predisposed towards logical thinking by the struggle to master their notoriously complex language. But whatever the reason, that language has filled the air at some of the most pivotal moments in twentieth-century science. Many of the discussions in the run-up to the explosion of the first atom bomb, for instance, were conducted in Hungarian — the presence on the Manhattan Project of Leo Szilard, Eugene Wigner, John von Neumann and Edward Teller saw to that.

"We always had strong links to the West, but the relation is lopsided," says Imre Kondor, a physicist at Budapest's Eötvös Loránd University and rector of the Collegium Budapest. While young Hungarian scientific talent continues to enrich leading labs around the world, few foreign researchers visit Hungary, even for short sabbaticals — the facilities just aren't attractive enough.

Thanks to funding from the EU and individual European governments, and by concentrating on inexpensive theoretical research, the Collegium has made itself an exception to this rule. Tamar Gendler, a philosopher and psychologist from Cornell University in Ithaca, New York, is one of 18 foreign fellows currently working at the institute. Gendler was attracted by "the ridiculous beauty of the guest house in walking distance to my office and the inspiring discussions with co-fellows", and is using her sabbatical to write a book on the neuronal basis of imagination, self-deception and 'fictional' emotions — such as the smile you wear when you imagine you're in a room with someone you like.

As well as isolated academic jewels such as the Collegium, Hungary also boasts a healthier high-tech industry than many of its East European neighbours. Multinational companies such as Ericsson, Nokia and Hewlett-Packard have established research centres in Hungary. And the nation's drug industry, which used to provide some two-thirds of the Eastern bloc's needs, has survived the collapse of communism. Although companies such as Richter Gedeon, EGIS and Chinoin are minnows in an industry dominated by huge multinationals, they each spend about US$20 million per year on research, and pay young PhDs roughly US$1,000 per month.

That's more than the average salary of a university professor — and therein lies the problem for Hungarian science. With spending on research languishing at about 1% of the country's modest gross domestic product, many of the best minds in Hungary are

I. JÁVOR

**Niche market: the Collegium Budapest is gaining an international reputation for theoretical research.**



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Making connections: Hungarian scientists believe that Budapest is ideally placed to act as a linchpin for science in the former Eastern bloc.

forced to migrate to the West, or to leave science altogether. "The main bottleneck is the poor technical infrastructure at universities and academy institutes," says Balázs Gulyás, a neuroscientist who now works at the Karolinska Institute in Stockholm, Sweden.

Like many Hungarian researchers abroad, Gulyás maintains close ties with his home country. Some eventually do return. Zoltán Nusser, a group leader at the Institute of Experimental Medicine in Budapest, spent eight years working in Britain and the United States. Although he is pleased to be back home, Nusser can only pursue his research thanks to grants from Britain's Wellcome Trust and the US Howard Hughes Medical Institute. These funds allow him to hire talented postdocs and buy expensive 'patch clamp' devices for electrophysiological recording.

All of this would be unthinkable if Nusser, like the majority of young scientists in Hungary, had to depend on domestic money. "There are many good scientists here, but only one out of a thousand can afford good equipment," he says. The average size of grants provided by the Hungarian Scientific Research Fund, known by its Hungarian abbreviation OTKA, is just US$10,000 per year — "far from enough", admits its president, neuroendocrinologist Gábor Makara.

OTKA's most prestigious funding programme, nominally intended for research leaders who will establish a 'school' of like-minded scientists, provides about 20 grants per year of around US$110,000 each. In theory, such grants might allow the likes of Gulyás to return home, or end the reliance of scientists such as Nusser on foreign funding. But the way in which the money has been distributed illustrates perhaps the biggest obstacle facing Hungarian science. The recipients have averaged 66 years of age, and are selected using backwards-looking criteria such as the number of PhD students they have produced over their careers — rather than their potential to make a real difference in the future.

## Hampered by history

To the younger generation, this is indicative of the grip that the old guard, and its Soviet-era thinking, still has on the Hungarian scientific establishment. "Old asses who grew up in a contra-selective system run the institutes and referee each other's grants — it's a disgrace," complains one young group leader. "This is what makes it really difficult here for talented young people to get on."

Unlike its counterparts in neighbouring countries, the Hungarian Academy of Sciences, which runs some 35 institutes across the country, was never radically cleansed of its communist heritage. Leaders of the country's universities have also resisted attempts to introduce an environment in which energetic young researchers can become independent and flourish.

The Academy of Sciences is at least now making positive statements about reform. "Yes, we'll need to increase competitiveness, give grants solely according to quality, and use more foreign reviewers," says Vizi. But the body's critics want to see action, and the harshest among them question whether the 70-year-old Vizi, despite a respectable international reputation for research, is the right person to catalyse such fundamental change.

Despite all the difficulties, the good news is that the pipeline of young Hungarian scientific talent shows no sign of drying up. Livia Meszaros, a medical student at Semmelweis University in Budapest, who in 2002 won the Hungarian Association for Innovation's prize for the best high-school researcher in Hungary, argues that science still has a certain glamour: "We don't have famous soccer players any more, and we never had big pop stars — so what else can you do than shine in science?"

The problem is that those who do shine are likely to join the brain drain to the West. Advocates for reform have grown cynical about the Hungarian scientific establishment's willingness to create an environment that could begin to reverse this exodus. But perhaps they might be shamed into action by the presence of Western scientists brought into Hungary under EU programmes. "What it would really take to change things are foreigners, who are unhappy here, to complain and make a noise," says Kondor. ■

**Quirin Schiermeier is *Nature*'s German correspondent.**

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