Feast and famine

While researchers in Greece starve for government support, biomedicine is thriving at a lavish new centre in Athens, finds **Alison Abbott**.

Athens' newest research institute, the Bioacademy, is a grandiose structure of exquisite marble and sandstone that blends modern and classical styles. Its colonnaded wings enclose a triangular courtyard, which features a shimmering pool that mirrors the activity of the 400 scientists within. Athena, goddess of wisdom, would probably feel as much at home here today as she did in the nearby Parthenon, built to honour her in the fifth century BC.

Elsewhere in Greece, though, Athena might feel a little lost. The country has one of the lowest levels of national research funding in the European Union (EU) and the government has not held a competition for grants in five years.

That contrast makes the Bioacademy (pictured) all the more remarkable. Established by the Biomedical Research Foundation of the Academy of Athens, the Bioacademy opened for business in 2004, and has already recruited 50 group leaders and around 350 postdocs and doctoral students. Together, they have published more than 100 papers in strong journals. The Bioacademy coordinates two major EU biology infrastructure projects and has brought in more than €16 million (US\$21 mil-

lion) in competitive grant money, mostly from international sources. When a planned new wing is completed, it will be one of the largest centres for translational medicine in Europe.

The entire credit for the Bioacademy's existence is attributed to one man: Gregorios Skalkas, an 82-year-old surgeon who founded the first organ-transplant centre in Greece. Through political skill and force of personality, he made the €40-million building a reality. The Bioacademy's rapid scientific success, says Achilleas Mitsos, former head of the European Commission's research directorate, illustrates "the contradictions in the Greek scientific landscape, where the level of science is generally low but you'll find extraordinary pockets of excellence everywhere".

Greece is a relatively poor country where science is not a priority. In 2002, when the EU voiced its intention to raise its average research spending to 3% of its gross domestic product (GDP) within a decade, Greece was the lowest spender on research of the then 15 member states. It is the only one of those states to have actually reduced investment since that time — from 0.64% of GDP then to 0.57% in 2006. Many of the 12 states that have since joined the EU,

mostly from the poor eastern bloc, spend much more. The Czech Republic, for example, devotes 1.54% of its GDP to science (see chart).

As a result, Greek researchers depend on EU funding more than scientists elsewhere do. Without a national research council that gives out grants, small pots of money for competitive research tended to pop out of various ministries at irregular intervals, but now even these opportunities seem to have dried up.

Budget woes

Scientists get by mostly on grants from the EU's Framework research programmes, in which Greek investigators do exceptionally well. Until 2006, Greece received the highest proportion of Framework money per researcher than any other EU country. Now it is second to Slovenia. Its relegation could be because Greece does less well in the large integrated projects that the Framework programmes now favour. "Or it may be in part because of the running down of science in Greece," says George Thireos, who until last month headed another of Greece's top research institutions — the Institute of Molecular Biology & Biotechnology (IMBB) in Heraklion, Crete.

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EU dependence doesn't come for free — national governments are expected to match what the EU provides through its Framework and structural funds. But the Greek government says it will be able to give at most a 14% top-up this year, leaving institutes in the middle of multi-year projects with scorching debts. For example, the IMBB recently won EU money to develop a €1-million proteomics suite. The grant covered three-fifths of the costs, but then, half-way through the acquisition, the government contribution shrank. "I don't know where we are going to find the money," says Thireos. "This is a very serious problem for Greek scientists."

Thireos is now transferring to the Bioacademy — which has proved an irresistible magnet for many — to head up a new systems-biology centre. He says that Skalkas "has realized a true vision — the Bioacademy will allow Greece to attract back good scientists working abroad". The Bioacademy has already lured back many researchers, including two from Columbia University in New York — molecular biologist Dimitris Thanos, who heads the centre of basic research, and Argiris Efstratiadis who will direct a planned cancer centre.

A man of uncommon political influence, Skalkas has always thought big. He ventured into experimental and translational medicine decades before it became fashionable. In the 1960s, he set up a laboratory for experimental surgery at the University of Athens, which has since trained more than 200 research students. "But even back then I thought that if one day I ever had the opportunity, I'd like to do something bigger for medical science," he says.

That opportunity came with his election to the prestigious Academy of Athens in 1989. Within two years he had created the Biomedical Research Foundation under the academy's umbrella, and set about lobbying politicians to cough up money for it in order to build an internationally competitive medical research centre — the Bioacademy. "I'm old and honest, and I have an ability to persuade," says Skalkas. And his regal charm — he is one of those gentlemen who will kiss, rather than shake, the hands of ladies — no doubt also helped his quest to draw blood from what seemed to be stone.

Lots of blood, in fact. The Bioacademy's 25,000-square-metre main building has state-of-the-art equipment, for applications ranging from brain imaging to simulation surgery. It is not only well appointed but also, many would argue, a model of how a modern research institution should be run. In a country where most scientists are hired as civil servants with jobs for life, only 14 of its 50 principal investigators are tenured. The rest are on tenure-track contracts.

Next year, construction will begin on a

20,000-square-metre additional wing for the Bioacademy, which will house a further 300 scientists and cost another €25 million in government funds. When completed, the Bioacademy will be Greece's biggest-ever injection of research money.

Is the Bioacademy, with its €14-million annual running costs, sustainable in such a research-parched general environment? Many believe so. Its unusual status as a part of the powerful Academy of Athens gives it considerable political protection. The national economy, though, is now falling through the floor.

Pockets of success

The Bioacademy has something in common with the relatively few other success stories in Greek science, says Fotis Kafatos, a molecular biologist from Imperial College London who heads the European Research Council. "There are a few institutes that have done well because they were established by strong people."

But those few pockets of success in Greek science do not have a multiplier effect, says Mitsos, who is now an economics professor at the University of the Aegean. Apart from some very local connections, centres such as the Bioacademy and the IMBB are isolated from most universities and do not catalyse excellence within them. "The problems start at the top," he says. "No government has ever had any real interest in research — there are no institutions like a research council, and no serious science planning."

Four years ago, the conservative government

Gregorios Skalkas created a bioacademy in Athens.

of Kostas Karamanlis launched an attempt to create an efficient national science system. What particularly excited scientists was the government's intention to establish an agency like the US National Science Foundation, which would be able — finally — to offer competitive grants on a regular basis.

Filippos Tsalidis, head of the development ministry office for research and technology, consulted extensively with the academic community, and a law was passed last year. But the legislation turned out to be unworkable. It required a large number of administrative actions in a short time — something the government was not able to deliver. Tsalidis has unofficially told the directors of research institutes that the law needed some rewriting and that he had formed a committee to suggest changes. "Amateurish," says

Mitsos scornfully. The scientific community is bewildered and disappointed. "We are in the dark," says George Kollias, director of the Alexander Fleming Biomedical Sciences Research Center in Athens. Tsalidis declined to comment to *Nature*.

A few positive things have happened in Greek research policy of late, though. In 1995, the government's office of science and technology started to evaluate its research institutes every five years, using foreign reviewers. Since 2000, these evaluations have been linked to distribution of EU structural funds for research. And in 2005, the government passed a law requiring that universities be similarly evaluated. Although professors and students have put up enormous resistance, the evaluations began last year. Also, Greece joined the European Space Agency (ESA) in 2005. Although the nation's small community of astronomers and astrophysicists is still finding its feet among the big players in European space science, ESA membership has raised their aspirations.

Greece processes plenty of PhD students — more than 21,000 were registered in 2006–07 — but many go abroad when they graduate and then find it hard to justify coming back. The Bioacademy will help to stop that leakage of talent. But scientists in Greece say that the government must also create a systematic, balanced and appropriately funded national plan for science so that fewer researchers will be lost. They know that Athena would be happy to see the spirit of the great ancient Greek civilization rekindled.

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SOURCE: EUROPEAN COMMISSION