Cardiovascular Research Funding in Europe: The United Kingdom

Scientists with a really good track record of grants should be given research miles, and when you get to a certain level of miles, you get awarded a grant to do anything you like,” says Denis Noble, PhD, CBE, FRS, FRCP (Hon), FMedSci, director of Computational Physiology at the Oxford Cardiac Electrophysiology Group, University of Oxford, United Kingdom. He would like the research councils to take up such an idea because he feels that applying for funding in the United Kingdom has become too tightly regulated and restricted compared with 40 years ago when he started out. “Those who are genuinely trailblazing find it harder because if you put in a very very speculative project, which is what trailblazers will do, you are likely to get very strongly criticised.”

The BHF sponsors 27 professors at the moment, but it has further applications under consideration. Until last year, professors received their salaries until normal retirement age, subject to satisfactory reviews every 5 years. For new appointments, the professors receive their salaries for 10 years, subject to a satisfactory midterm review—after which the university must take over the salary—but the BHF continues to fund their teams. In addition, professors will usually have 1 extra support post funded by the BHF, a discretionary fund of more than £20 000 per year, and, in addition, they will hold a programme grant and other grants. In round figures, it costs about £2.5 million to £3.0 million to fund a professor and his or her research team for a 5-year period. Professor Noble says, “It is a very enviable position to be in, partly because it gives you a very good base for applying for further grants, from the BHF and elsewhere. And the flexibility of being able to use the funds according to your own judgment of what is needed from year to year—I cannot emphasise how important that is.”

The BHF funds 55% of cardiovascular research in the United Kingdom—more than the research councils, the Wellcome Trust, and the Department of Health spend combined. The BHF spends more than £50 million per year
funding research. Its project grants, of which 600 are currently running, last up to 3 years and usually amount to between £100,000 and £250,000. Applicants can apply at any time, and the project grants committee meets 6 times a year to consider applications. An applicant can expect a decision within 4 to 5 months.

Professor Noble usually held up to 3 project grants, in addition to the chair. At the end of 3 years he would report on papers published, patents achieved, and whether he had achieved the objectives of the grant.

More than 80 BHF programme grants currently exist across the United Kingdom; these grants last 5 years and provide funding between £0.5 million and £1.5 million. Renewal depends on a review at the halfway point. The deadlines fall in February, May, August, and November.

Professor Noble characterises applying for a programme grant as a much more ambitious process than applying for a project grant. “You need to demonstrate not just a particular focussed project but a programme of work with a variety of projects that are coordinated and linked together, and you must justify a much larger scale of funding. You have to demonstrate that you’re a leader in a field.” The BHF also funds more than 200 nonclinical and clinical PhD studentships.

The Medical Research Council Would Like More 5-Year Submissions to Develop an Area of Research

The Medical Research Council (MRC; Figure 2), which served as Professor Noble’s principal source of funding before he became a BHF chair-holder, distributes its main funding to universities and research institutes through research grants. The majority of these grants last between 1 and 5 years and have no set financial limit.

The MRC says it has a healthy turnover of grants in cardiology, but, as with other disciplines, it receives primarily 3-year applications and would like to see more 5-year submissions with a more strategic focus on developing an area of research rather than simply addressing a focussed hypothesis.

The council accepts applications for research grants at all times; its research boards meet 3 times a year to review them. The council posts the dates of the board meetings on its Web site, along with the deadline for applications. Additional funding opportunities are provided by strategic calls for proposals which are all advertised on the MRC Web site and circulated through news alerts.

The Wellcome Trust Makes Britain “the Envy of Much of the Rest of the World”

The Wellcome Trust, another major source of funding, makes Britain “the envy of much of the rest of the world,” says Professor Noble. “They fund across the board, but they do fund quite a lot of work in the heart and circulation.”

Professor Noble’s group had a Cardiac Physiome grant, a project that attempts to integrate at the whole-organ level. It yielded around £1.5 million for 5 years. The application process approached the scale of applying for a programme grant.

Most of the Wellcome Trust’s cardiology research comes under molecular and physiological sciences and can come in the form of programme or project grants. Programme grants provide support for up to 5 years for internationally competitive research. Principal investigators can apply, and they must have a strong track record of obtaining grant support from the Wellcome Trust or other organisations. Prospective applicants should initially discuss their research proposal with a member of the Trust’s scientific staff.

Recent awards have rarely exceeded £1.2 million. Project grants fund hypothesis-driven projects. They normally last for up to 3 years and provide £150,000 to £300,000. Programme and project grant applications have no particular deadline. Funding committees generally meet 4 times a year, and any application will receive consideration at the first available committee. Applicants need to allow at least 6 months from submission to their preferred start date.
Other Funding in the United Kingdom Depends on the Nature of the Research

Professor Noble’s work on developing the virtual heart, a computerised model of the heart, has enabled him to tap into other funders in the United Kingdom. Cardiologists doing work that overlaps with engineering, mathematics, or computing should consider the Engineering and Physical Sciences Research Council (http://www.epsrc.ac.uk/default.htm). Professor Noble has accessed the Engineering and Physical Sciences Research Council’s Life Sciences Interface programme. “They are interested in funding where the engineering and physical and mathematical sciences are relevant to biological sciences,” he says. “What they’re really funding is the maths and engineering involved in that.” Applying requires an effort similar to that of a programme grant.

The Biotechnology and Biological Sciences Research Council (http://www.bbsrc.ac.uk) supports work in systems biology. Professor Noble explains, “You are genuinely trying to integrate a lot of molecular and other processes in the biological system, to gain an understanding of it as a whole, and usually that involves quite a lot of computation and engineering, imaging, and so on, in addition to understanding the molecular processes.”

Since Professor Noble’s group received funding, the Biotechnology and Biological Sciences Research Council now funds centres in systems biology and hands out considerable sums of money. The Oxford Centre for Integrative Systems Biology, for example, raised about £8 million for a 5-year rolling contract. Applications for these grants require a more extensive process than for programme grants. “You’d have to establish yourselves as leaders of the field, but you’d also need to be capable of doing this relatively new approach to biological understanding.” Applicants need to show they can integrate the disciplines of mathematics, engineering, and computation, along with biology and medical science.

The European Union Has Become a Big Funder

Professor Noble opted out of applying for funding from the Biotechnology and Biological Sciences Research Council this year because he perceived bigger fish to be caught at the European Union (EU) level. The EU has become a big funder, but it supports specific projects, and the administrative requirements deter applicants.

“Applying for European funding is much, much more lengthy and administratively heavy than applying for any funding within Britain, so a lot of academics in the United Kingdom tend to say, ‘Oh don’t bother, it’s just too much trouble,’” says Professor Noble. “This is a common criticism, and it’s the reason why possibly quite a lot of work that could well have been funded by EU initiatives in the United Kingdom has not been, just simply because people haven’t applied. It’s easier to go to the Wellcome Trust or the BHF than to the EU.”

The EU has framework programmes that it puts out for its research budgets. Under Framework Programme 6, Professor Noble’s group became 1 of 36 laboratories in a European network of excellence called BioSim. His group alone received €300 000 spread across 5 years.

Oxford has just discovered (in January 2008) that it has secured €27 million for itself and its European colleagues under the latest round, Framework Programme 7 (http://cordis.europa.eu/fp7/home_en.html). The money came under the Information and Communication Technologies call. Oxford-led projects, most of which involve cardiac modelling, will take an €8 million slice during a 3- to 5-year period. Framework initiatives begin every 3 to 5 years, but Professor Noble says that initiatives come out of Brussels in various areas all the time. He advises cardiologists to look at ways in which they can make a framework programme applicable to their area, because the EU, in its framework programme calls, has very specific ideas about what it wants. Successful applicants face intense monitoring, including annual reports, ad hoc site visits, and “fairly active interaction” with a programme officer in Brussels allocated to the project. Research workers even have to fill in time sheets.

Professor Noble says the level of bureaucracy “is partly because of the very strong suspicion here in the United Kingdom in particular, but also around Europe, that somehow Brussels budgets are not used for the right thing and that the money doesn’t go where we really need it to go.”

Professor Noble Spends About 30% of His Time Maintaining Funding

Maintaining funding has become much more time consuming and competitive than in the past. Professor Noble urges researchers to look at the options carefully and see how they fit in with their work (Figure 4), but he adds that some bodies, like the BHF and the Wellcome Trust, remain open to blue skies ideas. He also advises consulting one’s peers: “Your peers, of course, are also your competitors, so there’s a slight problem here. But, if you’re a young person starting out, you’re going to need to get the advice of some of your more experienced colleagues in order to get on the ladder.”

Jennifer Taylor is a freelance medical journalist.
Despite decreasing by 80% among working-age men during the past 30 years, cardiovascular mortality in Finland remains fairly high (Table 1) compared with other Western European countries. Myocardial infarction patients in Finland often receive delayed coronary angiography and fewer coronary angioplasties, and they have a lower life expectancy than such patients in many other European countries.1,2 Furthermore, beneficial reductions in serum cholesterol and changes in fat intake in men and women between 25 and 64 years of age between 1972 and 2002 seem to have reached a plateau, and preliminary data from 2007 show a decline in positive lifestyle choices.

In addition, few coronary heart disease patients in Finland currently undergo systematic rehabilitation. Pekka Puska, MD, PhD, MPolSc, president of the Finnish Heart Association (FHA), director general of the National Public Health Institute, and president elect of the World Heart Federation, says, “We are really lagging behind many countries with respect to secondary prevention and rehabilitation. Only about 10% of our patients, following discharge from hospital after being treated for an acute coronary event, are recruited to a systematic prevention and rehabilitation programme. This is clearly a lower proportion than in other Nordic countries—or at least in Sweden.”

The Finnish Heart Association

An Action Plan to Improve Finnish Heart Health

Pekka Puska, MD, PhD, MPolSc, president of the Finnish Heart Association, and his colleagues Marjaana Lahti Koski, PhD, MSc, manager of Health Promotion and Development, and Timo Ruoko, BSc, head of the Organisational Department, talk to Robert Short, BSc, about the association and its action plan.

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The Mission of the FHA is to Prevent Cardiovascular Morbidity and Mortality

The FHA is a powerful public health and patient organisation, with more than 85,000 members in a small country of 5.2 million people (Tables 2 and 3). Timo Ruoko, BSc, head of the Organisational Department, states, “The association’s goal is to reduce and manage cardiovascular diseases such that they will no longer be a significant health problem among working-age adults by the 2020s. In addition, the FHA wants to add more healthy and active years into the lifespan of Finns.”

The FHA has a strong influence on national policy and acts as a watchdog on the implementation of heart-healthy measures. Indeed, the Action Plan for Promoting Finnish Heart Health for the Years 2005–2011 by the FHA has a place in the national Finnish Heart Plan to promote

Aims of the Finnish Heart Association

- To provide information on health
- To encourage a healthy lifestyle
- To support rehabilitation

Finnish Heart Association Facts

- Over 85,000 individual members
- 19 regions
- 240 local societies
- Nationwide organisations for young heart patients (Finnish Association for Heart Children and Adults), heart or lung transplanted patients (SYKE ry)
- Nationwide organisations for cardiomyopathy patients (Karpatiat ry)

Mortality Rates for Cardiovascular Diseases in Finland in 2006

<table>
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<tr>
<th>Cardiovascular Disease</th>
<th>Mortality Rate (per 100,000)</th>
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<tr>
<td></td>
<td>Men</td>
<td>Women</td>
<td></td>
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<tr>
<td>IHD</td>
<td>248.4</td>
<td>119.4</td>
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<tr>
<td>CVD</td>
<td>74.1</td>
<td>59.7</td>
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Figure. Top, Professor Puska. Middle, Dr Koski. Bottom, Mr Ruoko.
cardiovascular health and prevent cardiovascular disease. Marjaana Lahti-Koski, MSc, PhD, manager of Health Promotion and Development at the FHA, stresses that the FHA addresses every link of the chain—from health promotion to tertiary prevention—in the battle against heart disease. Professor Puska agrees that, in effect, the FHA leads the fight for heart health in Finland. He says, “The reality is that the FHA is the strong agency that more or less runs the show. And there is not really any conflict between the Health Ministry and the FHA or my institute, because this is a small country and the Ministry itself is small. The FHA head office in Helsinki has about 30 to 40 experienced people, so it is a great resource for the nation.”

An Emphasis on Dietary and Lifestyle Counselling
The FHA puts an emphasis on acquiring a healthy lifestyle early on in life (Table 4). Dr Marjaana Lahti-Koski says, “We at the FHA are convinced that a healthy lifestyle, including a healthy diet, should be adopted from the very beginning.”

Indeed, the University of Turku recently published in Circulation a study on the impact of repeated dietary counselling between infancy and 14 years of age on dietary intakes and serum lipids and lipoproteins in the Special Turku Coronary Risk Factor Intervention Project for Children (STRIP) study. This first-ever continuous lifestyle intervention study to start in infancy is ongoing. The study involves 1062 children and families in Turku, Finland. The intervention families receive individualized dietary and lifestyle counselling at 1 to 6-month intervals. The project has shown so far that counselling can influence children’s lifestyles.

The FHA has developed, as part of the Finnish Heart Plan, a family counselling programme called Smart Family (Neuvokas Perhe in Finnish). The programme has implemented the most relevant parts of the STRIP intervention for use at the maternity and child welfare clinics that reach most (99%) of the families with small children in Finland. The programme aims to develop for the clinics a nationwide model focusing on strengthening the role of family-based lifestyle guidance. In particular, this programme aims at providing support, tools, and knowledge for professionals at the clinics to promote good dietary and physical activity habits for all family members.

Health Service Deficits Are Improving
Patients who undergo angiography and receive statin prescriptions are more frequently relatively well-educated people with high socioeconomic status. The FHA’s action plan addresses the current health service deficits in Finland. Professor Puska says, “I think there has been a lot of progress since the action plan was written. The Ministry of Health during the last 2 years has undertaken activities that shorten waiting lists in particular.” A specific law regulates maximum waiting times for patients, and the Ministry’s statistics show that healthcare providers have followed the law well.

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<tr>
<th>Slogan</th>
<th>A healthy lifestyle from the very beginning</th>
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<tr>
<td>Key Messages</td>
<td>• The little one follows the big one’s example</td>
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<td></td>
<td>• It is up to adults</td>
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<tr>
<td></td>
<td>• You have the responsibility</td>
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<td>• You are the example</td>
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Table 4. Messages of the Finnish Heart Association’s media campaign.

Good rehabilitation and good secondary prevention on leaving hospital are particularly important because the treatment time at hospital has decreased significantly. Professor Puska comments, “So, during the acute phase, the hospital has less time to start any systematic secondary prevention while the patient is with them.” He says, “We have named secondary prevention and rehabilitation as a major point for development and action in Finland.” The FHA therefore has development programmes now running in a number of hospital districts, backed by additional government money. For example, additional resources for secondary prevention and rehabilitation have made it possible to implement an outpatient rehabilitation programme in 7 hospital districts since 2006.

Professor Puska adds that healthcare providers should not neglect the psychosocial recovery of patients. Researchers have found an association between depression and a higher risk of death in heart disease. Coronary heart disease patients who have a higher risk of depression should receive systematic and more frequent additional therapy, and they should have access to psychosocial rehabilitation services.

“Nurses Very Often Are Much Better Than Doctors in Changing Behaviour”
Professor Puska commended the role of trained nurses in prevention through the encouragement of reducing risk factors in high-risk patients and also in the rehabilitation of patients. “This nursing model is not only good because of the great numbers of people that need to be seen, but because nurses very often are much better than doctors in changing behaviour—partly because they have more time with the patients.”

However, he stressed, “while frequently our models are based on nurses, this in no way undermines the role of doctors. We always emphasise that doctors, cardiologists and other doctors, are the medical experts. The doctors do the diagnosis and decide on therapy, and their authority is absolutely essential for [providing] the advice to the patient on secondary prevention and rehabilitation.”
The Future
Professor Puska feels optimistic about the future, saying, “We know what to do. There is no lack of good protocols for prevention and rehabilitation; we just need to organise and make it happen for our patients.”

References

Robert Short is a freelance medical journalist.

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**European Meetings Update**

**April–May 2008**

- **4–5 April**
  *The Florentine East-West Medical Congress*
  Florence, Italy
  For further details, contact info@fondazione-delbianco.org

- **9–10 April**
  *55th Annual Congress of the Israel Heart Society in association with the Israel Society of Cardiothoracic Surgery*
  Tel-Aviv, Israel
  For further details, contact team1@congress.co.il

- **17–18 April**
  *Spring Meeting of the Netherlands Society of Cardiology*
  Amsterdam, The Netherlands
  For further details, contact bureau@nvvc.nl

- **20–23 April**
  *XXIX Annual Congress of the Portuguese Society of Cardiology*
  Vilamoura, Portugal
  For further details, contact secretariado@mail.spc.pt

- **23–25 April**
  *Annual Meeting of the Swedish Society of Cardiology*
  Malmö, Sweden
  For further details, contact per.tornvall@karolinska.se

- **24–25 April**
  *Biomechanics in Vascular Biology and Cardiovascular Disease*
  Rotterdam, The Netherlands
  For further details, contact m.pruijsten@erasmusmc.nl

- **26–29 April**
  *The 77th Congress of the European Atherosclerosis Society*
  Istanbul, Turkey
  For further details, contact eas2008@kennes.com

- **1–3 May**
  *EuroPRevent 2008*
  Paris, France
  For further details, visit http://www.escardio.org/congresses/Europrevent/europrevent2008/
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