Recently the Italian and international press have reported the uneasiness of many Italian college graduates, postgraduates and researchers who are forced to work and do research abroad because of the lack of appealing opportunities in the academic institutions of our country. Part of the responsibility for this situation lies with the lack of financial support and appropriate incentives for research. In Italy, both in the public and in the private sector, resources devoted to research are limited and less productively targeted than in other advanced economies. Italian universities employ only a very small fraction of graduates and postgraduates, pushing “Italian brains” to emigrate.

Our academic labour market exhibits a combination of conventions and customs that protect those who already have jobs and harm those who are searching for their first job. Therefore, young people at the end of their studies are the ones most affected by the lack of financial support and appropriate incentives for research. In Italy, both in the public and in the private sector, resources devoted to research are limited and less productively targeted than in other advanced economies. Italian universities employ only a very small fraction of graduates and postgraduates, pushing “Italian brains” to emigrate.

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Needless to say, this phenomenon has affected young Italian cardiologists wishing to climb the academic ladder.

**General Aspects of Training in the Specialty**

The Italian postgraduate training system for cardiology fulfils the purpose of training doctors in the specialty according to the framework published by the European Society of Cardiology Core Curriculum for the General Cardiologist. The recommended duration of postgraduate education is a minimum of 4 years. During these years, to gain sufficient experience, the trainee is involved in the management of an appropriate mix and number of inpatients and outpatients. Practical participation in the clinical management of inpatients and provision of cardiac consultations for other services constitute a major part of training. The programme includes structured training sessions, the performance of a sufficient number of diverse practical procedures, and an annual assessment of the trainee’s progress.

Training institutions, recognised by national authorities, offer the opportunity for interaction with other major specialties and provide the necessary physical infrastructure for this postgraduate education. The Italian postgraduate specialist training programmes nationwide deliver a high level of competence both in “core” and “subspecialty” areas of cardiology (such as interventional cardiology, cardiac imaging, and invasive electrophysiology) and provide a wide range of skills and depth of knowledge. However, for young Italian specialists willing to climb the academic ladder, 2 issues appear to limit progress.

**Non–Merit-Based Selection Practices**

In recent years, the Italian word *concorso* gained currency all over the academic world as a term for the iniquitous selection process of infrequent competitions based on non–merit-based criteria. Fortunately, things are slowly changing, and we are increasingly seeing outstanding individuals from both university and nonuniversity organisations achieving academic positions. Despite this encouraging trend, the widespread feeling is that discrentional criteria still prevail in the selection practices. This happens because of a system that often fails to respect accredited scientific scoring systems and in which the quality of a candidate’s scientific work does not affect his or her selection.
Accordingly, after winning a concorso, once the successful candidate is in post, their subsequent productivity or lack of it does not matter.

Moreover, the selection committee is not responsible for a candidate’s future scientific output or effectiveness as a teacher. Whether the committee appoints a productive or unproductive candidate does not affect the position of the selection committee members or their research funding. This lack of accountability results in discretionary practices that are hardly ever merit-based. Winners of concorsi are almost invariably local candidates, the entire process resulting in a significant drop of national and international mobility and a general levelling down of research and teaching quality.

Inadequate Funding of Research and Development

Public expenditure on research and development (R&D) is known to correlate well with publication rates.\(^4\) The higher the funding, the higher the scientific output. In this respect, it should be pointed out that, despite the recent trend towards a globalisation of research, a marked difference in publication rates and quality of research exists across European countries. Italy’s output in scientific research is remarkable, despite low numbers of personnel and poor funding; Italy spends about half of the EU average on R&D. Our country is indeed a large producer of scientific articles in Europe. For example, there were 611 published articles per million of the population in 2003. However, this is only half that of countries such as the United Kingdom, Denmark, and Sweden.\(^5\)

In fact, funding research and promoting academic competition is not a current priority for Italy. Although it is commonly believed that inadequate funding mainly precludes access to the tools of research and the latest technology, the actual effect of research underfunding in Italy is the brain drain and a corresponding failure to attract foreign scientists and academics. Lack of R&D investments and the consequent constraint that places on research and teaching discourages young specialists from pursuing long-term and uncertain paths up the academic ladder. This discouragement happens after graduate or postgraduate training, since even entry-level positions, such as PhD fellowships, are few, poorly remunerated, and unsuitable for those who wish to start a family and need financial security.

Given the poor state of research funding and a non–merit-based process of academic hiring and promotion, the Italian university system is losing many of its best young specialists and researchers. Although these individuals express a willingness to dedicate their energies to academic research and teaching, they choose instead to move abroad or to embark on clinical careers by applying for positions in hospitals or other nonacademic institutions.

The question then arises whether we still need concorsi, or whether a more objective evaluation of scientific merit, relying on academic competition and including regular verification of an individual’s scientific productivity and quality of teaching, may lead to a renovation of Italian universities.

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The opinions expressed in Circulation: European Perspectives in Cardiology are not necessarily those of the editors or of the American Heart Association.
for the editorial post with the SWOT analysis (strengths, weaknesses, opportunities, and threats) he had to produce.

He believes that *Heart* has been in good hands with his predecessor, Roger Hall, MD, FRCP, FESC, professor and consultant cardiologist, University of East Anglia Medical School, Norwich, United Kingdom. Dr Timmis identified great opportunities for the journal, not only in the developed world, but also in the Third World, where cardiovascular disease is taking over from malnutrition and infection as a major cause of death. He suggested substantial changes to *Heart* to increase its impact factor and its international reach, and to improve its chances of publishing major randomised clinical trials and other significant papers. He also proposed that *Heart* publish more papers in important niche areas of cardiology, such as primary care, public health, and geriatrics.

So why would a busy clinical cardiologist apply for a job that will take him to retirement? Dr Timmis comments, “Clinical cardiology I thoroughly enjoy—but one of the great things about medicine is that there are plenty of avenues for diversification, whether it’s research, teaching, management, private practice, or getting involved in your national society. It’s very important to take the opportunity to diversify your career.” He continues, “Diversification is refreshing, and it keeps you interested. It’s an unusual person who finds enough within clinical cardiology to sustain himself or herself 24/7 for an entire career. I like *Heart*; I always have. I’ve published a lot of my own work in it. It’s a very successful journal. I wanted to be part of it. I was sufficiently vain to feel I could make a positive contribution.”

Although he has many ideas for change, Dr Timmis recognises that a new editor must tread carefully. “In the past 5 to 10 years, *Heart* has changed its title, has pursued international ambitions, and has largely achieved them. Only a minority of its submissions are from the United Kingdom, and we’re only able to accept about 15% of these for original research. So, it’s a successful journal by any standards, and it is consistently in the top 5 clinical cardiac journals. Of course, *Circulation* is number one!”

When considering his prospects, Dr Timmis explains, “I’m daunted to the extent that if you join an organisation at a time when it’s very successful, then you want to sustain that success.” The ideas he has decided to put into effect after he takes office in January 2007 include a section critically reviewing new technology; as he puts it, this section is intended to avoid “seduction by enthusiasts.” He also plans to complement the highly successful education section.

There will be an occasional series on medicolegal and ethical issues, with an international remit. Scientific letters, “tiny research observations that rarely get cited,” will be discontinued. The *Images in Cardiology* section will be slimmed down, with a new emphasis on novel clinical applications of diagnostic techniques. Another innovation is a change of format to US letter size, “which fits more easily on library shelves.” He intended to make other cosmetic changes, but he was restrained by the plans of the BMJ Publishing Group to make over all of its journals to give them the appearance of coming from the same stable.

Dr Timmis speaks of journals as if they were animate beings. “They go on and on and on—editors are brief interludes in their lives. Most journals are big enough to survive their editors! But, that said, the character of a journal can be influenced significantly by an editor and the choices he or she makes to the content and, in particular, the editorial flavour. But, in the real world, the only yardstick by which an editor is judged is the impact factor of the journal.”

He intends to encourage the submission of original research papers from anywhere in the world across the whole spectrum of cardiovascular research, and to reflect what is happening in all parts of the planet, rich and poor. “I think it’s important that our cardiovascular interest is not focused on the minutiae of cardiology as it affects a small proportion of the world’s population. Cardiology is a global problem and requires a global solution,” he says. However, the impact factor—the Holy Grail of publishing—requires the publication of cutting-edge research from major European and US centres. “That’s the uncomfortable reality,” he says, “that I’d like to soften, if not with original research from elsewhere in the world, then at least with review material, to enlighten closeted academics of the Western world.”

Dr Timmis says that he does not really see other journals as competitors. “There is a natural order of things. What I call the ‘big’ papers, the results of large international trials for example, find themselves going to the very highest-impact journals, such as *Circulation* and perhaps the *Journal of the American College of Cardiology*. And, although *Heart* aspires to attract such work, there is very good research that won’t get into the most competitive journals, yet needs to be published. Journals like *Heart* and the *European Heart Journal* represent important outlets for that work.” He sees scope for cooperation, such as the purchase by the European Society of Cardiology of the rights to an education series in *Heart* that will soon be available to European Society of Cardiology members on its Web site.

In addition to his clinical work, Dr Timmis now spends a good deal of time viewing new submissions on the Bench Press electronic system used by the journal and distributing the submissions to associate editors, who, in turn, send scripts to reviewers. Once a week, he crosses London from the deprived area of Tower Hamlets, where he works, to BMA House, where he and his editorial colleagues make the big decisions as what he terms a “hanging committee,” where the hopes of authors are raised or dashed.

Dr Timmis recognises that, ultimately, the place that *Heart* takes as an international cardiac journal will depend very much on his performance. He is determined to move the journal even further from its origins as the house journal of the British Cardiovascular Society and to make it truly international. A new challenge will be the question of whether to outsource the copyediting to India, which will be decided soon. And in this age of teleconferencing, he speculates that one day *Heart* may be edited from outside the United Kingdom.

*BARRY SHURLOCK IS A FREELANCE MEDICAL WRITER.*
History of Cardiology: René Laënnec, MD

Dr René Laënnec’s interest in auscultation led to his invention of the stethoscope, a key element of the cardiologist’s art. Diana Berry tells his story.

Dr René Théophile Hyacinthe Laënnec was born in Quimper, France in 1781 and grew up very much a child of the Revolution in those dark days of political turmoil, horror, and bloodshed. He would have witnessed the sharp blade of “Madame Guillotine” at work in the square outside his home. On the death of his mother, René and his brother Michel were sent to live with an uncle, Guillaume-François Laënnec, MD, who was professor of medicine at the University of Nantes and a former pupil of John Hunter, MD.

Dr Laënnec’s medical studies began at the age of 14 with his uncle Guillaume at l’Hôtel Dieu, a hospital in Nantes. His early studies were interrupted by the ongoing civil wars, and in 1800 he joined the army, where he served in the medical corps. In 1801, he was sent to study in Paris, where he enrolled at l’École de Médecine. He received wise tutorship from Jean Nicolas de Corvisart, MD, from whom he learned, among other things, the fine art of percussion in the tradition of the renowned Vienna physician Leopold Auenbrugger, MD. Dr Laënnec also had another famous tutor, Baron Guillaume Dupuytren, MD.

Dr Laënnec received his MD in 1804. His thesis was Propositions on the Doctrines of Hippocrates in Regard to the Practice of Medicine. In the same year, he gave a lecture on tuberculosis, establishing that phthisis was simply a disease of the lungs; from that time, phthisis was known as “pulmonary tuberculosis.”

In 1814, Dr Laënnec was appointed physician to the Necker hospital in Paris, France, where he developed the art of auscultation. Then in 1816 came his greatest triumph: his invention of the stethoscope, a vital legacy to cardiologists everywhere, which has justly immortalised his name. Laënnec’s Traité de l’auscultation mediate, first published in 1819, became, according to the medical historian Fielding H Garrison, MD, “the foundation stone of knowledge of diseases of the chest and of their diagnosis by mediate auscultation.”

Dr Laënnec described how he had been consulted by an extremely corpulent young woman suffering symptoms of heart disease. He found that “percussion and the application of the hand were of little avail on account of the great degree of fatness.” Application of the hand was also “rendered inadmissible by the age and sex of the patient.” He suddenly remembered a simple fact of acoustics: “the augmented impression of sound when conveyed through certain solid bodies, as when we hear the scratch of a pin at one end of a piece of wood on applying our ear to the other.” Thinking that this acoustic principle could be put to good use in this instance, Laënnec decided to try rolling “a quire of paper into a sort of cylinder,” applying one end to the region of the heart and the other to his ear. He was delighted. He could listen with much greater clarity to the heart action and sounds than had been possible with direct or “immediate” application of the ear. From that moment, he “imagined that the circumstance might furnish means for enabling physicians to ascertain the character, not only of the action of the heart, but of every species of sound produced by the motion of the thoracic viscera.”

The word “mediate” was used to distinguish between the immediate placing of the ear for auscultation (or the hands for percussion) directly on the patient, as opposed to this new method of interposing a tube between patient and physician, so preserving the modesty and dignity of female patients.

Laënnec’s first stethoscope was developed from that “quire of paper”; it consisted of a wooden tube about 9 inches long and 1.5 inches in diameter (see Figure). It was divided into 2 pieces, 1 screwing into the other, with a removable chest piece at 1 end. Such monaural stethoscopes were modified during the next 50 to 60 years in attempts to improve efficiency, but it was not until close to the end of the 19th century that the binaural stethoscope with rubber tubes leading to each ear came into use.

With his first simple stethoscope, Dr Laënnec started a new language of pathology, revealing thoracic lesions that, until that time, had been inaudible. Sadly, his discovery received much greater initial acclaim abroad than at home. Physicians from all over Europe visited him to hear his views on auscultation. He did eventually receive respect in his own country and was made professor at the Collège de France and a member of l’Académie de Médecine. In 1824, he was honoured with the Légion d’Honneur. Dr Laënnec has been described as “amongst the greatest physicians of all time” for leaving such a fine legacy to future cardiologists.

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References


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