



European Research Council – the life scientist's view

A document from the European Life Sciences Forum based on
consultations with the life scientists' community

October 2003

*»There is nothing more
powerful than an idea
whose time has come.«*

Victor Hugo



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Foreword

The establishment of a European Research Council (ERC) to promote and support basic research on the European level is one of the major science policy issues currently being debated. For a very long time, basic or fundamental research lacked the recognition that would make it a political priority in Europe, despite being a pre-requisite to and an essential motor of innovation. Recent developments, however, have made support for basic research a more stringent and pressing issue than ever and a central item in the agenda of the stakeholders of the European Research Area (ERA). Indeed, concerned by the ever increasing gap between the European Union (EU) and its competitors, the EU heads of government agreed at the Lisbon Summit in 2000 to turn Europe into the leading knowledge-based economy in the world. This goal was confirmed at the Barcelona Summit in 2002, by pledging to increase the investments in R&D and Innovation in the Union to approach 3% of the gross domestic product (GDP) by 2010. Achieving it fosters the need for EU member states to work together towards improving science quality and output and towards the establishment of a common market for research, which would help alleviate the structural weaknesses of individual countries and Europe as a whole. The creation of an ERC complementary to the Framework Programme (FP) of the European Commission (EC) and the national research programmes would make it possible to achieve the critical mass of expertise and resources that are needed to sustain, on a competitive basis, the generation of new knowledge through basic research and, subsequently, its conversion into economic and social benefits.

»There is nothing more powerful than an idea whose time has come.«

Victor Hugo

There is a consensus that an ERC, if established, should cover all disciplines, from physics and mathematics to the social sciences and humanities. Irrespective of the scientific area, however, basic research has characteristic features and a common philosophy that must be reflected in the structure and programmes of an ERC. The generation of new knowledge requires time, flexibility and reactivity. Preconceived ideas must be restricted and high scientific quality the sole criterion. Transparency must be the rule. Above all, basic research is a bottom-up, scientist-driven process; hence, scientists must be included in the ERC planning process right from the outset.

The life scientists, being probably one of the most structured communities in Europe, responded promptly with tremendous interest and enthusiasm to the challenges and opportunities provided by the prospect of creating an ERC. The present document is intended to provide a summary of the position of the Life Sciences community and has been completed following extensive and open consultation. It is hoped that its proposals will strengthen the justification for the establishment of an ERC and, more significantly, help define its mission as well as its actions and mode of delivery.



The road to a European Research Council

It is impossible to identify the moment at which some vague discussions on the possibility of a European Research Council crystallized into a road map that could lead to this goal. Discussions on support for basic research on a European-wide level can be traced back to the early 1960s, when a clear reference to this aspiration was made in the founding documents of the European Molecular Biology Organization (EMBO). The wishes of those who, at an early stage, considered that an ERC would be the logical progression in the support and structuring of research were not met for a variety of reasons. These include the fact that the role of research in the economy was, at that time, not fully appreciated and that the concept of Europe was relatively weak. Later on, the possibility that such a research council would emerge from the Framework Programme established by the European Commission seemed a realistic alternative. However, six Framework Programmes after its inception in 1984, it has become clear that the character of these important actions, as implemented so far, is not compatible with support for research that does not contribute directly to increased industrial competitiveness in Europe. The statements made in 2000 by the newly appointed EC Commissioner Philippe Busquin focused, in a relatively direct manner, on an increased awareness of the European Research Area and suggested that EU member states should work in a pan-European manner towards increasing the research competitiveness. The Framework Programme had achieved much both in terms of increased mobility and support for close-to-applied research, but the analysis of the Commissioner revealed that other important categories of research had not benefited in the same way from the Europeanization.

When the leaders of Europe met in Lisbon in 2000 and agreed to the goal of making Europe the leading knowledge-based economy by 2010, the gap in terms of support, at a European level, for fundamental or basic research became more apparent. Financial goals, which are a prerequisite for these ambitions, were agreed upon at the Barcelona Summit in 2002, but no

» *The context [for an ERC] is already there to get things moving because the European Research Area is accepted everywhere.*«



Philippe Busquin, European Commissioner for Research, European Commission, Brussels, Belgium

programmes were outlined for the next step forward in scientific and related industrial sophistication, i.e. the shift away from standard commodity manufacturing to the generation of more complex products.

In March 2002 an initial discussion regarding the possibility of establishing a European Research Council, bringing together opinion leaders, scientists and administrators, was organized by the Royal Swedish Academy. The positive outcome of the meeting led to a conference entitled "Towards ERA: do we need a European Research Council?", organized by the Danish Research Councils under the auspices of the Danish Presidency of the EU in Copenhagen in October 2002. The outcome of the Copenhagen meeting clearly pointed towards widespread, but not uncritical, support for an ERC (www.forsk.dk/dkeuformand/SummaryReportFinalok.pdf). The involvement of the Nordic countries in this process raised the level of the discussion to a point where it attracted the attention of the European Council of Ministers. At the November meeting of the EU Competitiveness Council, the Danish Minister for Science, Technology and Innovation, Helge Sander, announced that he was establishing a high-level working party, the European Research Council Expert Group (ERCEG), to explore options for possibly creating an ERC and to determine the purpose and scope of this new instrument (www.ercexpertgroup.org).

At the Copenhagen meeting, Julio Celis, the President of the European Life Sciences Forum (ELSF) offered

the support of the organisation to gather the scientific community's views on the possibility of establishing an ERC. After all, the European Research Council was envisaged as one where investigator-driven research would be supported and whose success would depend on a strong engagement and commitment by the scientific community. As a result, ELSF, with financial support from EMBO and the Federation of European Biochemical Societies (FEBS), organized an open meeting of life scientists, hosted by UNESCO in Paris in February 2003. This meeting, similar to the one held in Copenhagen, was based on the premise that the first question to resolve was whether or not the European Research Council would be a desirable development from the perspective of scientists. The answer was again resoundingly clear and positive. The report on the Paris meeting outlines 28 different reasons given by different speakers, including three Nobel Prize Laureates, on why an ERC would be a useful development at this time (www.elsf.org/elsferc/elsfercs1.pdf). Based on the support of the 250 scientists from 20 countries who came to Paris, ELSF, in conjunction with EMBO, FEBS and the European Molecular Biology Laboratory (EMBL), organized a follow-up meeting hosted by the UNESCO Regional Bureau for Science in Europe (ROSTE) in Venice in May 2003. This meeting was based on a workshop format at which the possible instruments and mechanisms of delivery of an ERC were debated. A summary of the outcome of the Venice meeting is available at www.elsf.org/elsferc/elsfercs2.pdf.

In parallel with these activities, another significant development was the establishment by the European Science Foundation (ESF) of a high-level expert group to examine the question of the creation of an ERC from the perspective of the broader-based Foundation. This group concluded that there were many reasons why an ERC should be established (www.esf.org/newsrelease/63/ERC.pdf). The input from the ESF, being based on an organization that includes almost 80 research councils and with expertise in all areas of science including the humanities and social sciences,

» *[Setting-up an ERC] is one of the most challenging proposals regarding the reorganisation of Science in Europe.*«



Professor François Gros, Perpetual Secretary of the French Academy of Science, Paris, France

is particularly significant. The ESF is continuing to debate internally in order to position itself for the next phase of delivery of an ERC, if it comes into existence.

Several other groups have been actively engaged in the debate on the ERC. EUROHORCs, a grouping that represents the major funders of research at a national level, has pronounced itself in favour of the establishment of an ERC (www.elsf.org/elsfercpubs/elsfercpubc6.pdf), and has taken concrete first steps towards such a European-wide activity with the establishment of a Euro Young Investigator. The European Union Research Advisory Board (EURAB) and organisations such as Academia Europea, EUROSCIENCE and All European Academies (ALLEA) also presented recommendations in favour of the establishment of an ERC. Their contributions can be found at www.elsf.org/elsfercc.html.

Building on these initiatives, ERCEG, the high-level group established by the Danish Minister Helge Sander and chaired by Federico Mayor, has also recently made known its preliminary views, which are supportive of the creation of an ERC, in a document intended for stakeholders' consultation (www.ercexpertgroup.org/erceg_views.html). The final conclusions of the group will be presented to the Minister in December 2003. At that time, the preparatory work will thus have been completed and the discussions will move on to a more political and, indeed, practical level, i.e. the sources of the funding, the identification of the founders and the selection of the structures for delivery.

Why support investigator-driven research?

There have been many analyses on the economic benefits of basic research. Although it is an area filled with complexities of precise interpretation, there is no doubt that the funding of basic research gives rise to more knowledge that, in turn, often has a direct and immediate impact on the economy. There is, therefore, a basis for supporting quality research judged by simple direct economic benefits. The impact, though, of supporting quality research goes much further, as new generations of scientists, while engaged in research, are trained in the latest methods. This increase in technical capacity is essential not only for the conversion of locally generated knowledge into economic benefit, but also for the integration of externally available knowledge into the system. The support of a vibrant, top-level scientific community is also the passport to active participation in international meetings, where networks of the drivers of the latest innovations are formed. The fact that industry establishes or moves its research facilities to the vicinity of top-class public research centres in the US, where a more competitive and challenging environment can be found, is well documented. To counterbalance this trend, Europe must become more attractive both in terms of the quality of basic research and research infrastructures. It follows that support for basic, fundamental, investigator-driven research is an essential component for sustaining economic growth in Europe. The current move away from manufacturing and towards high-tech industries, which is central to the EU concept of knowledge-based economy (Lisbon Summit, 2000), puts an even greater premium on these activities. In the absence of very intensive investment in fundamental research, one can anticipate that the economies of Europe will suffer in the future.

While accepting that basic and fundamental research is a worthwhile investment, others point to the so-called "European paradox" to explain the reluctance to support more research. The basis of this paradox is that Europe generates as many publications as other major geographic regions without having the apparent economic benefit from this work. The conclusion

» Industry is increasingly moving to the US to getting access to basic research. [Industry] calls for more funds, more long-term funds for basic research, especially to build top institutes. Only top institutes will be able to stop the brain drain, to attract and recruit new people and to advertise science.«

*Dr Hans van den Berg, Animal Cell Technology
Industry Platform and Akzo Nobel Pharma, Arnhem,
The Netherlands*

frequently drawn is that the need is not for more research but for more applied research. This analysis completely overlooks the fact that the quantity of publications is totally irrelevant, all that matters being the quality of the work. Publications in science are accepted in journals that have different quality criteria. The most dramatic developments, i.e. those which provide new insights that, in turn, are the basis of economic benefits, are most likely to be found in the journals publishing high-quality research. The salient point in the analysis of publication data is that Europe contributes roughly 20% of the publications in these high-impact journals, 80% coming from the United States (US). Consistently, the European share of prime intellectual property and patents is also proportionally low. It follows that, while addressing other European structural weaknesses hampering the innovation process such as the legal, financial, fiscal and regulatory issues, EU member states must strive to improve the quality and critical mass of basic research in order to bring European science to the front line. This is a primary objective of the ERC.

Why should there be an ERC?

Given the many national programmes that exist and the difficulties incurred in obtaining sufficient national funds for applications that are deemed worthy of support, raises the question by some as to whether an ERC is needed. This view is based on the concern that resources needed nationally will be directed to the “European” project. The Life Sciences community remains actively committed towards support at a national level, and both scientists and administrators widely accept the fact that additional money has to come into science. The alternative of shifting existing money between different agencies can only be entertained if one assumes that the root of the problem is the way in which money is spent on research today. The statistics, measured in terms of gross domestic expenditure on research and development (GERD), clearly show the need for additional new funds and not simply a redistribution plan.

The analysis, however, has to go further than financial considerations. Organising competition and the evaluation of applications on a European level would help bypass problems in countries where the pool of evaluators is too small or where the peer review is occasionally unjustifiably biased. Furthermore, an ERC based on the criterion of scientific excellence would act as an instructive indicator of the true international quality of the research that has been supported in a country. Indeed, international programmes often result in the selection of scientists from “weaker countries” and, conversely, the failure of “local heroes.” The lessons from an ERC could, therefore, be very beneficial to national scientific systems in the long-term, not only in the countries where selection systems are underdeveloped, but also in those countries where there may be some complacency, as they would have to adapt to higher standards. Collectively, the consequences of international competition would inevitably result in an overall improvement of research quality.

A further reality is that national systems are not always geared to support international collaborations, even when the required expertise is not available in the coun-

» For which reasons are we not taking full advantage of the European research potential? Mostly because of weaknesses in evaluation and geopolitical considerations [...].«

Professor Pierre Chambon, University of Strasbourg, France

try itself. Furthermore, infrastructure support is a potential problem when viewed from a national level, where critical mass in terms of expertise and financial resources can be limiting and fragmentation can be very counter-productive. The ERC can address both of these problems in a very direct manner. A final point relates to the scale and scope of the science that is supported nationally. Some countries have evolved systems that consciously or unconsciously have a built-in bias in favour of some research topics. This is occasionally reinforced by national programmes deriving their activities from the EC Framework Programmes to both optimise the potential return from EC programmes and make use of the FPs as a policy indicator for the directions that would be beneficial for a country to follow. While this can be necessary to create national niches, it can also give rise to gaps or exclusions which, when viewed in the long term, can be threatening to the economic or, indeed, the social well-being of a country. The ERC, whose mission is to support all areas of research, would help ensure that those particular restrictions are avoided.

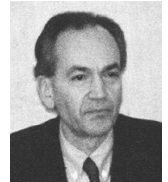
The other alternative to an ERC is, of course, the EC Framework Programmes themselves. The logic behind this approach is that adequate funding is already being transferred centrally to Europe for research activities and that the Framework Programme is the mechanism that is charged with the task of delivering the Europe-wide research programme. Some difficulties, however, are inherent in this solution. Firstly, the very essence of

the Framework Programme is to foster European industry competitiveness, which results in an emphasis on topics that are liable to yield relatively short-term benefits. Increased support for fundamental research within a FP is a theoretical possibility; indeed, aspects of the programme actions can be seen as evidence of a significant degree of such support. However, in order to increase the impact of its actions, the FP also focuses on a limited number of strategic priorities. Furthermore, the FPs are constantly being redefined. The political nature, and the resulting constraints, of the process that leads to the definition and adoption of each FP inevitably leads to frequent short-term changes in policy direction corresponding to the life time of an administration. This is simply incompatible with the continued, long-term support that is required to generate core knowledge from which products and processes can be derived in the future.

Another matter of concern is the delivery of the programmes. A responsive, rapid and transparent research funding process must be implemented for identifying and promoting high-quality basic research. The contractual requirements of the FP as well as the managerial, accounting and auditing constraints that are imposed on the EC are hardly compatible with support for scientifically driven projects. Furthermore, the EC has so far failed to implement an unchallenged peer review system, in part due to confidentiality requirements associated with the participation of industrial interests. Consequently, the need to engage top-class scientists, as would be required for the success of ERC programmes, could not be readily obtained within the Framework Programme.

Implementing ERC-like programmes within the EC Framework Programme context would thus neither be feasible nor desirable. Far from overlapping or competing, however, the underlying philosophies of the ERC and the EC FP are complementary and needed, as both institutions play an important role and follow a logical sequence in the innovation process.

» *[The European Commission] welcomes the move towards an ERC, but not with unconditional support [...]. The ERC should not duplicate or compete with the EC Framework Programme or the national programmes [...]. It should provide European added value and help to improve the quality of science [...]. It should raise new money for research.*«



Dr Peter Kind, Director, European Commission, Brussels, Belgium

An ERC — What do we mean?

1. *It should support investigator-driven research*
2. *It should select the actions to be supported solely on the basis of scientific quality*
3. *It should have no secondary criteria (e.g “juste retour”) as a component of the selection process*
4. *It should have programmes and motivation that are genuinely European*
5. *It should be characterized by a “light” and “lean” administrative process*
6. *It should have considerable freedom of action*
7. *It should involve the scientific community at all levels of its actions*

A distillate of the various discussions that have taken place point to an ERC being a new mechanism with the following characteristics:

1. It should support investigator-driven research

The gap generally perceived in European funding is for high-quality research that is identified by the investigators rather than programme designers. A bottom-up approach of this type should ensure that all areas of research are open for support within an ERC. Clearly this approach opens the way for support of fundamental or basic research and is a very strong justification for the establishment of an ERC that will sustain and promote a robust European Research Area. The logic of a bottom-up approach, however, is that there should be no explicit or implicit restriction to basic research, or an exclusion of applied or developmental research.

2. It should select the actions to be supported solely on the basis of quality

The need to improve the quality of research in Europe has been identified by analysis that looks, for instance, beyond the simple quantitative data on the number of papers published and focuses instead on the ability of European scientists to publish high-impact papers. The

actions supported by the ERC should, therefore, be characterized by being of the highest scientific quality. It follows that the sole selection criterion should be the scientific quality of the proposal. While focusing on quality, the discussions that have taken place have also pointed to the probability that much of the research would be of long-term nature, both in execution and in the time required to achieve the ambitious goals. The discussions also point to the need not only for quality but also novelty and, indeed, research that could be considered to have a risk element, which is always associated with the most competitive and imaginative projects. A consequence of these considerations is that the selection process should also involve scientists of the highest level, such that they are genuine and accepted peers of the applicants.

» But it is absolutely necessary that basic research is of high quality. Otherwise, it is as useless as bad theatre.«



Professor Christiane Nüsslein-Volhard, Nobel Prize Laureate, Max-Planck-Institute, Tübingen, Germany

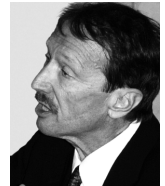
3. It should have no secondary criteria (e.g. "juste retour") as a component of the selection process

The aim of the ERC is to support research of the highest quality, the justification for expenditure being the expectation that novel research of this type will provide opportunities for exploitation and innovation. Therefore, it would be inappropriate to use the ERC funds to achieve other socially driven aims. It is recognised that there are imbalances in the opportunities and the support available to scientists across Europe, and that these need to be rectified. It is the view of the Life Sciences, however, that this support should come from other sources and programmes, and that any mixing of objectives would give rise to a lower probability of achieving the primary goal of the ERC. Of specific interest in many discussions on this topic has been the question of "*juste retour*". It follows that there can be no "*juste retour*" mechanism or indeed subtle variations at the stage of project selection that would take into account the natural expectations of the investing countries to receive a good return on their investment. Competition between groups throughout Europe must be central to the ERC and it is hoped that participation in this competition will increase the quality of research in all countries, even in those where the success rate of applicants is low in relation to their gross domestic product. Ultimately, therefore, the exclusion of a "*juste retour*" mentality from the process is essential for its long-term benefit and feedback to the member states. The possibility of having some specific programmes within the ERC to promote development, e.g. in accession countries, could, however, be a useful stimulus to science in those countries. In such a context, ranking could be made on strict scientific terms on projects from eligible countries.

4. It should have programmes and motivation that are genuinely European

The programmes of the ERC should be based on a truly European concept. This implies that the simple mutual opening of national programmes does not

» One of the most important goals of the ERC is to invest EU taxpayers' money wisely and for the future.«



*Professor Rolf Zinkernagel, Nobel Prize Laureate,
Institute of Experimental Immunology, Zurich,
Switzerland*

meet the aspirations of those in favour of an ERC. This mutual action is indeed an important development, very beneficial to those involved in the bilateral arrangements, but ultimately the number of such bilateral agreements that would be required to cover all possible interactions between the potential 25 members of the EU would be several hundreds! Based on some of the examples to date, there may also be a tendency to restrict the opening of programmes to specific topics. What happens in bilateral, or even multilateral arrangements is, therefore, much more likely to be of practical importance to the two countries involved and not be a genuine European action. Furthermore, they may serve the purpose of discrete scientific areas and not science at large. The fact that it is a Research Council on a European level also has implications in terms of funding. The funding should be central (i.e. not retained and spent nationally) if it is going to have the total openness required for a selection process. Finally, the strongest political justification for an ERC relates to the achievement of a European Research Area. Again this can only be achieved by having a European perspective on the actions rather than taking a fragmented multinational approach.

5. It should be characterized by a "light" and "lean" administrative process

The administrative process has been a recurrent theme in the discussions and this is presumably a reaction to the heavy bureaucratic approaches that have characterized the EC Framework Programmes. Fundamental research, which is, almost by definition, long-term, evolving and challenging in nature, can hardly be

assessed using contractual terms such as milestones and deliverables. In fact, the scientific programme would be insufficiently innovative if one could predict the exact research that would be carried out by the applicant as the project matures. There is a need for the right balance between the documentation prepared for an application and the support level obtained. The applications should focus on providing information for selection, including the specific lines on how finances should be spent; they should also have a considerable degree of flexibility, as would be fitting for a high-trust system, without exonerating grant recipients from good managerial practice.

6. It should have considerable freedom of action

The ERC activities should, as indicated earlier on, be driven by the proposal of the scientists and judged by scientists on the basis of quality considerations. Interference with this process would be counterproductive and, hence, give rise to the need for a high degree of autonomy on the delivery of the ERC programme. Such autonomy will place greater responsibility on those charged with the delivery of the ERC to adopt correct procedures and does not preclude the need for significant reporting mechanisms. Indeed, the greater the freedom given to the scientists in the development of the delivery of the programme, the greater the need for transparency in the actions of all concerned. Possible models for this already exist, e.g. the EMBO programmes in Europe or the programmes of the National Science Foundation in the US.

7. It should involve the scientific community at all levels of its actions

The scientific community has expressed a clear interest in the opening-up of new possibilities that would come with the ERC. The characteristics of the programmes that have been discussed match the constantly expressed wishes of scientists throughout Europe. It follows that the ERC should have a high degree of involvement by the scientific community at every level. It will be important that high-quality

research proposals are made to the ERC such that ambitious aims for the generation of new knowledge with high impact can be met. The engagement of the scientific community in the peer review process will be equally essential. Finally, the willingness of scientists to get involved, perhaps on a transient basis, in the management and delivery of the ERC will also be important. Precedents for all of these activities exist both nationally and internationally, and there is compelling evidence that the scientific community will fully and generously participate in actions that it feels could be a component of the life of their community. The long-standing tradition of scientists giving their time and expertise to the refereeing of scientific publications is just one small example of this.

What should the ERC do?

Within the framework of the characteristics of an ERC, consideration has been given to the actions and instruments that it should use to achieve its overall goals.

1. Research grants

The cornerstone of the ERC would be the provision of research grants to support innovative and high-quality research. Given that its rationale should be to encourage and support any research of novelty, restrictions or requirements, such as a requirement for transnational teams, are not appropriate for this ERC activity. Consultation with life scientists pointed very firmly to an avoidance of large networks and complicated multi-partnership research projects. In the context of fundamental and investigator-driven research, the reality is that scientists will genuinely work together when they have shared and complementary needs, which will not automatically be the case for every research project. Ultimately, in the Life Sciences most research is individually driven and carried out by small groups; this has to be recognised and respected.



» *Competition is the basis for success.* «

Professor Jean-Patrick Connerade,
President of EUROSCIENCE, Imperial College London,
United Kingdom

The level of the funding has been a matter of greater debate, with the exact figure to be awarded per grant being set at a minimum of Euro 100,000 per annum, but with some arguments for higher levels of support. This and the number of awards that would be appropriate are of course very closely linked to the amount of funding that will be available.

2. Infrastructure: shared resources and Institutions of Excellence

In the Life Sciences, infrastructure, which may be better defined as shared resources, may have a different meaning and cost implication to that of other areas of

research. Life science absolutely requires centralized databases, e.g. for DNA sequences and protein structures, and centralized repositories for biological material, such as mutagenized mice or other species. Secure support for these shared resources is, therefore, seen as an important potential achievement of an ERC in the Life Sciences. The traditional concern that support for shared resources leads inevitably to a permanent – “institutionalised” – commitment, does not seem to be relevant. The funding would be allocated on a competitive basis and, if appropriate, transferred to applicants who can provide a convincing indication that they have a better alternative. Examples of this nature can be drawn from some of the repositories in the United States. It follows that the commitment for shared resources is lighter for the Life Sciences and more universally required. A consolidated infrastructure would also ensure that the benefits of an ERC would not be restricted to those who receive grants but would be available to the whole community.

An extension of the discussion on infrastructure focused on the support of Institutions of Excellence. In this context, the example of the European Molecular Biology Laboratory was frequently cited, where a truly international laboratory has achieved world pre-eminence through an imaginative and flexible structure. Indeed, EMBL is one of the few European laboratories that effectively compete with US universities. Two options were considered in this context: (a) the establishment of new “EMBL-like” institutes or (b) consolidating existing high-quality research centres. Both of these options had their supporters; however, they might require different approaches. EMBL was established on the premises of high-quality research and strong training and community service components, which notably implies an international recruitment and a high staff-turnover policy. Such international institutes, where a critical mass of basic research is conducted that individual states cannot produce, are required in other Life Sciences disciplines, for instance, in Neuroscience and Immunology. Furthermore, if established in countries where the science system is



» No single European nation is able to answer this big federal American challenge. Europe needs the concept of federal focus in its science [...] to develop structures that compete effectively with the US.«

*Professor John Sulston, Nobel Prize Laureate,
Sanger Center, Cambridge, United Kingdom*

currently under-developed, e.g. in the new EU member states, these Institutions of Excellence could also have an impact on the scientific and technological base of these countries and, hence, on European cohesion. On the other hand, the consolidation of existing high-quality research centres through permanent European funding could be envisaged provided that EMBL-like premises are enforced, thereby giving a truly European added value to the institute. In the absence of such considerations, primary funding of the research centres should remain national, while additional funding could be obtained through regular ERC competition schemes.

Support for Institutions of Excellence would have stark budgetary consequences in the form of consistent, permanent funding lines. This may not be possible within the framework of an ERC, at least in the initial phase. The problem, however, requires political attention and cannot be dismissed, as there is a real need for Institutions of Excellence in Europe, both in scientific terms and as focus of interest for industry.

3. Policy and advisory role

Although the starting point for all of the discussions on the ERC has been the mechanisms of providing adequate European-wide support for high-quality

research, the question has arisen as to whether this body, the ERC, should also have a policy role. Indeed, some have suggested that its major role should be in policy, with funding provided by other existing mechanisms. In the view of the Life Sciences community, this latter proposition would represent a missed opportunity and would not address the needs that have been identified by many when initiating discussions on the ERC. The primary role of the ERC should, therefore, be to fund activities. Inevitably, however, the ERC represents a new possibility for analysis of trends in sciences. Optimistically, the collective wisdom of the scientific community as represented in their grant proposals would point to new directions and trends and, indeed, identify future manpower, training and instrumentation requirements. The opportunity to use such information should be seized and, therefore, the policy and advisory role of the ERC could be an important but secondary benefit of its establishment. In addition, the ERC databases of peers would also be invaluable to meet requests for advisory boards, expert groups, etc.

» There is a consensus in the US about organising science and excellence. At the moment, the system is too heterogeneous in Europe. The ERC should bring a clear concept on how research should be done.«

*Professor Walter Neupert, Adolf-Butenandt-Institute
for Physiological Chemistry, Munich, Germany*

4. Additional role of the ERC: training, mobility and careers

The implementation of an individual fellowship scheme within the ERC was not deemed necessary for the Life Sciences, given the multiplicity of successful programmes such as the EC Marie Curie Actions and the EMBO and Human Frontier Science Program (HFSP). Furthermore, the fund-spending flexibility allocated to ERC grant recipients would allow for the recruitment of PhD students and postdoctoral fellows. International mobility and training, however, will be critical aspects of a truly European endeavour such as the ERC in order to bypass local difficulties of recruitment resulting from a lack of trained manpower. Ultimately, it will also help ensure that all countries involved benefit from the ERC, notably through education of their nationals and transfer of knowledge, and allow the creation of a really competitive science community across Europe. Finally, the availability of new, additional financial means to the academic sector and the excellence criteria that will be enforced within the ERC will contribute to raising the standards, the promotion of basic science careers and the realization of careers perspectives beyond the student or postdoctoral level.

Founding and funders of the ERC

The Life Sciences community has not engaged in extensive discussions on the topic of the founders and funders of the ERC. The belief is that the scientific community, through a document such as the present one, should send a message to the administrators and politicians who are experts in constructing the legal and funding framework in which an ERC can be built. It is recognized that different structural models can be derived that would achieve the same overall goal of the delivery of an ERC, as defined earlier in this document. The difficult aspects identified are the sources of funding, particularly in view of the fact that national systems tend to be under-funded and that, at a European level, research benefits from a relatively small percentage of the total EU funds that are available. A shift in the EC funds to increase investment in research would appear to be timely in view of the Barcelona target and the commitment of the EU towards developing into a leading knowledge-based economy, and the opportunity to do so is perhaps one that should not be missed. In this way, new money would be brought into the system with additional benefits to the economy and society without the negative aspects of money being transferred away from existing programmes.

monitoring of the manner in which the ERC's funds are expended will have to be a high priority. However, autonomy in terms of the topics selected and the manner in which they are selected is a *sine qua non* for the success of an ERC, and this will also have to be respected.

The legal construction of an ERC is again a matter for consideration by different groups of experts. The example of the European Molecular Biology Conference (EMBC) and EMBO (see Appendix) working in harmony is a model that gives us confidence that a solution can be found in which the needs of both governments and scientists are provided for.



» *The Treaty [of Amsterdam on the European Union] practically excludes basic research. We need [to lobby the European Convention] to include basic research in the Constitution of Europe.*«

Professor Helga Nowotny, Chair of the European Research Advisory Board (EURAB), The Branco Weiss Fellowship, Zurich, Switzerland

Whatever the source of the funding might be, it would have to respect the special scientific-driven ethos that will be an essential characteristic of an ERC. Tight

Conclusion

In this document, a distillate of the views of the Life Sciences community is presented. There appears to be a very solid basis for the core arguments that are presented, although of course some individuals would place the emphasis on different aspects. The ERC that we envisage has been presented from the perspective of the Life Sciences; however, it is not intended to be exclusive. In our discussions, we became aware of some aspects that were not uniformly applicable to all scientific disciplines. The topic of infrastructure was one where the Life Sciences community may have different general and financial requirements to those of the other sectors. Nonetheless, we have consistently worked on the presumption that the ERC will not merely be appropriate for the Life Sciences, but will cover all disciplines. In this case we, like others, recognize that it should extend to the social sciences and humanities. The common features outlined above in the definition of an ERC can certainly apply to all different sectors. There is also an increasing need for interdisciplinarity and cross-fertilization from different fields, which would make it inappropriate if only a subset of the disciplines benefited from an initiative to fund high-quality basic research. We are confident that an ERC can be established, provided that there is political will that translates into funding at the correct level. We are also confident that the outcome will be truly beneficial for the European economy and its citizens. Indeed, we feel that a failure to establish an ERC would be a serious strategic error at this time, as the window of opportunity is very narrow. Our hope, therefore, is that this document will add positively towards the momentum to create an ERC, and the commitment of the Life Sciences community to engage in this at every level remains strong.

Appendix

The Life Sciences Community

The Life Sciences have progressed over the past number of decades from being descriptive studies of plants (botany), animals (zoology) and microorganisms to becoming one of the most dynamic sectors of scientific activity today. At the heart of these changes lie the major contributions from biochemical and genetic approaches, increased understanding of how cells work and the analysis of the mechanisms involved in differentiation and development in animals and plants. This information has given rise to a totally new industry sector, the biotechnology industry, which grew from the initial studies on the isolation of genes (recombinant DNA technology) in the late 1970s. It has also reinvigorated established biotechnology and agro-industry areas and has generally moved the Life Sciences to centre stage regarding the issues of health, economy, environment and society.

In Europe the Life Sciences have always been a strong component of the university sector and this, in turn, has been reflected in the establishment of national biochemistry, microbiology, genetic and other sub-disciplinary societies. Today these professionals act together on a European-wide basis under the aegis of organizations such as the Federation of European Biochemical Societies (FEBS) with 40,000 members, the Federation of European Microbiological Societies (FEMS) with 30,000 members, the Federation of European Neurobiological Society (FENS), the European Federation of Immunological Societies (EFIS) etc. Other societies involving professionals from more specific research areas, such as the European Plant Science Organization (EPSO) with 50 member institutes, the European Society of Gene Therapy (ESGT) with some 700 members, or the European Cystic Fibrosis Society (ECFS) with 540 members, were formed directly at the European level. A more recent addition to the ranks is the European Life Scientist Organization (ELSO), which again brings together large numbers of researchers with the aim to transcend the different areas of the Life Sciences.

Back in 1964, the leading scientists of the time joined together to establish a special grouping with a restricted membership, akin to an academy, focusing on the area of the Life Sciences: the European Molecular Biology Organization (EMBO). EMBO is supported by an intergovernmental body comprising 24 member states, the European Molecular Biology Conference (EMBC), to deliver a programme of postdoctoral fellowships, short-term visiting fellowships, practical courses, workshops, a Young Investigator programme, an electronic information programme, initiatives related to communication with society, a project working towards the greater inclusion of women in the Life Sciences etc. Currently, the EMBC is discussing the addition of research grant support to its programme. The delivery process is such that EMBO takes full responsibility for the scientific and managerial aspects of the programmes, with the EMBC acting as the monitor and controller of expenditure and adherence to the general principles of the agreed programme. This unique combination of scientific and intergovernmental organizations working together to deliver programmes on a European-wide basis in turn gave rise, in 1974, to the European Molecular Biology Laboratory (EMBL). This intergovernmental institution provides a world-class laboratory location that acts as a focus for many research and training activities in Europe.

All these disparate organizations, while following their own special missions, joined together in 2000 to establish the European Life Sciences Forum (ELSF). The aim of the founders of ELSF (ELSO, EMBL, EMBO and FEBS) was to provide a coherent voice for the many different European societies representing subsections of the Biosciences. This coalition ensures that the positions of life scientists are clearly enunciated and ultimately has been responsible for this current document and the activities that have led to its formulation.

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The European Life Sciences Forum (ELSF) is a coalition of independent organizations representative or supportive of the Life Sciences, biotechnology and biomedical research communities in Europe. Its mission is to increase their visibility and impact in the public and policy-making arenas, to advance research and to promote the contribution of scientists to European society.

ELSF MEMBERSHIP

European Arteriosclerosis Society (EAS)

European Cystic Fibrosis Society (ECFS)

European Federation of Biotechnology (EFB)

European Federation of Immunological Societies (EFIS)

European Life Scientist Organization (ELSO)

European Molecular Biology Laboratory (EMBL)

European Molecular Biology Organization (EMBO)

European Network of Immunology Institutes (ENII)

European Plant Science Organization (EPSO)

European Society of Gene Therapy (ESGT)

Federation of European Biochemical Societies (FEBS)

Federation of European Microbiological Societies (FEMS)

Federation of European Neuroscience Societies (FENS)