ERS Position on the Future Research Framework Programme
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Introduction

The European Respiratory Society (ERS) is the leading professional organisation in the field of respiratory medicine in Europe representing over 11,000 individual members, covering both basic science and clinical medicine. The ERS seeks to alleviate suffering from respiratory disease and promote lung health through research, sharing of knowledge and through medical and public education.

Medical research offers us an excellent tool for understanding the causes of respiratory diseases, how they progress and what happens inside our bodies. These are the building blocks upon which new treatment strategies and cures are developed. Respiratory medical research has been shown to represent a six-fold return on investment [1].

Research into lung diseases has yielded many life-changing results, such as the development of new effective asthma treatment, the increased success of lung transplantations and better treatments of cystic fibrosis, as well as significant recent developments in new treatment approaches for pulmonary hypertension. Despite the progress, there are a lot of gaps that need to be addressed. One of them is undoubtedly that not enough is being invested in research on respiratory diseases. In 2002 in the UK, respiratory research only claimed 2.8% of the Medical Research Council budget, whereas 13% of mortality was due to respiratory diseases [2].

This paper will outline our recommendations for the next EU Research and Development Framework programme (“FP8”) in order to improve lung health and maximise the quality of life for patients suffering from respiratory diseases, and thereby contributing to a healthier society and a more sustainable and productive Europe.

The ERS experience with FP6 and FP7 has been two-fold: directly as a beneficiary and partner in various research networks, and indirectly, through the involvement of many of its members in various projects and initiatives of FP6 and FP7, either as project partners, as project coordinators, or as evaluators and reviewers. Overall the experience with FP6 and FP7 has been very positive with many valuable results achieved and research networks established. Involvement in these programmes has contributed towards training the future leaders in respiratory science in Europe.
This paper outlines:

- Suggestions for improvements and simplifications to the future FP8.
- The medical research priorities in respiratory medicine.

**Chronic and costly lung diseases**

Chronic respiratory diseases will be the diseases of the future. They are not only very common, but their prevalence is also increasing. A recent estimate by the World Health Organization demonstrated that over half a billion people across the globe suffer from asthma and chronic obstructive pulmonary disease (COPD) alone [3], and a major challenge remains to find a curable treatment for both. Furthermore, while cardiac diseases, stroke and cancer have been decreasing as a cause of death in the past three decades, death due to COPD has doubled in the same time period [4]. The data is in contrast with the lack of public awareness about morbidity and mortality due to respiratory diseases.

Given the intractable nature of the established diseases and emerging threats, such as the ageing population, the economic downturn, changes in lifestyles, the rise in allergies and climate change, the importance of a sustained investment in medical research including respiratory medicine has never been greater.
ERS general recommendations – create and maintain strong research platforms

The ERS agrees with the general outcomes and recommendations following the European Commission Consultation on the simplification of the implementation of the EU Research Framework Programmes [5]. In addition the ERS stresses the following:

The ERS supports a move towards a more trust-based and risk-tolerant approach when it comes to scientific research, in particular within the Cooperation Programme. Researchers can rarely predict results of research in advance. In fact, more often than not, the direction of a given research project would most likely change during the course of the research. In this context, the ERS would like to underline the need for more open calls in the Cooperation Programme, which deploys currently a very top-down approach. A ‘bottom-up’ approach, as adopted by the European Research Council (ERC), would increase competition among different disciplines and enhance the quality and excellence of the projects. The Cooperation Programme would do well to allow more investigator-driven research and open themes.

A major issue that has been emphasised by the biomedical research community is the need to improve the attractiveness and flexibility of the financing instruments, in particular to allow for grant extensions for collaborative projects and networks that are successful and promise to bring new innovations in translational research.

Research networks should avoid the duplication of research at national level. Furthermore, connecting too many centres across Europe with each other is counterproductive and should be avoided. Experience shows that the process is unwieldy, represents an inefficient use of resources and the management of these networks is complex and inflexible.

With the ageing population, healthcare will need to incorporate more chronic and long-term care, and the care of many respiratory patients is becoming increasingly complex; this is also due to the increasingly common circumstance of citizens suffering not only from one, but from several, chronic conditions, e.g. those of the cardiovascular, respiratory and metabolic systems. This is what will necessitate new modes of approach. A major innovation within the next decade will be to focus on the importance of multidisciplinary care teams. Future research needs to emulate this trend and move towards multidisciplinary and interdisciplinary medical and clinical research.

The future key strategic research areas in respiratory medicine

The application of findings derived in basic science to the development of new understanding of disease mechanisms, diagnoses, and therapeutics in humans is known as “translational research” [6]. In other words, it is the movement of ideas from the basic science laboratory to the clinical arena. Although the number of investigators performing patient-oriented translational research is small, these individuals are vital to the future of medicine.
**Translational and clinical research – avoid duplication and fragmentation**

The ERS would urge the next framework programme to divert greater resources towards research infrastructures to support translational research. Epidemiological studies are a core element in translational research as they can identify clinically important associations in a population, fuelling basic science investigation and further clinical translational research. Epidemiological data is needed for all respiratory diseases; an important example is to collect data on the link between COPD morbidity and smoking. A crucial aspect of future translational research will be to validate preclinical and clinical biomarkers in order, among other purposes, to refine the characterisation of phenotypes in heterogeneous disease and to tailor the treatment to individual patients (personalised therapy).

However, from a structural and organisational perspective, it appears that in Europe there are very few interdisciplinary centres of excellence in respiratory translational research. Furthermore, the working mode in academia is dominated by individual career planning rather than by project-oriented work. Funding support is generally short-term, and international collaboration is not easy to implement.

**Specific recommendations of the ERS for the future research framework programme**

**Greater funding allocation to biomedical and respiratory research in FP8**

Overall, the share of funding going to biomedical research in general, and to lung research in particular, needs to be drastically increased and strongly prioritised in FP8. **Biomedical research in Europe is facing unprecedented challenges and funding and support for research is far below what is needed for sustained European competitiveness.** New insights and therapeutic strategies are desperately needed to cope with specific healthcare problems of the ageing population. To address these challenges, ERS is a founding member of a new Alliance for Biomedical Research in Europe, which aims to strongly engage in the policy debate, and promote the views that concern the European biomedical academic research across all medical disciplines. Its main objectives are to improve the quality of European biomedical research funding by boosting support for medical research at EU level, by supporting better and more sustainable research infrastructures in this area, and to create better framework for training and mobility of researchers. It is imperative to reinforce Europe as a global, scientifically competitive leader in biomedical research.

For example, the ERS recently made an analysis of the Seventh Framework Programme for Research and Technological Development (FP7, 2006–2013) and demonstrated that, although respiratory research claimed a fairly generous 4.3% slice of the FP7 health budget, totalling some EUR 260 million, only about 0.5% was devoted to research in COPD and asthma, *i.e.* EUR 30 million (fig. 1). COPD and asthma are the diseases that, without question, pose the greatest challenge in terms of morbidity and the direct and indirect costs to society. **The ERS strongly urges the European Commission to make a more strategic investment for a more dedicated and specific research strategy for respiratory diseases at EU level.**
Fig. 1. Fraction of the Seventh Framework Programme for Research and Development budget devoted to respiratory disease in general, and asthma and chronic obstructive disease (COPD) in particular.

**Priorities in exploratory and mechanistic research**

More investment into research is all the more important given that we are close to formidable breakthroughs in many areas of respiratory diseases, such as molecular bacteriology and virology, development of vaccines and anti-viral agents, boosting host defence and innate immunity, molecular pathology and personalised care for lung cancer. Moreover, breakthroughs are expected, including new approaches in genetic disease, development of mechanism-based approaches for preventing lung diseases and innovative approaches for treating lung diseases and restoring pulmonary function [7]. The translation of new research findings into progress in medical practice remains a problem [8].

Advances in molecular medicine are expanding. This will have a significant impact in creating new, advanced skills to improve human health. Research aiming at understanding mechanisms and key pathways of disease will, in future, improve the early detection, diagnosis and treatment of respiratory diseases. Technological advances (such as PCR) and the availability of high-throughput tools for investigating the genome, the transcriptome and the microbiome have provided opportunities to make substantial progress in mechanistic research.

**Strengthening Europe’s science base – ensure sustainable investments in excellence**

We would urge for a continuation of the collaborative research tool, as established in the “Cooperation” programme, which employs a broad thematic approach that focuses on the grand challenges faced by Europe. Excellence must be the most important and overriding criterion and
the driving force for selection and awarding research projects. Competitiveness among researchers should be supported by broadening the scope of the call topics to include a wider range of topics, or instead have open calls with cut-off dates.

The introduction of the ERC has been a major achievement at EU level. Indeed, basic and curiosity driven research science forms the basis for understanding mechanisms of health and disease. Fundamental, exploratory biological research requires centres with excellent, world-class researchers, and also an organisation with extensive worldwide networks. The “Networks of Excellence” funding instrument established in FP6 was a first initiative at structuring research networks at the European level. The ERS believes this research instrument had a valuable structuring effect at the European level, and should be reinstated in a more inclusive way and in a scale that allows smaller consortia in specialised fields in respiratory science to build up and maintain such crucial collaborations.

For European research to become more competitive there is a need at EU level to strengthen support towards sustainable and long-term research platforms.
**Tackling societal challenges – build on unique European competence**

The demographic challenges posed by an ageing population increasingly suffering from several medical conditions mean that future respiratory research must address current knowledge gaps. There is a need for a better understanding of mechanistic-based approaches to prevent lung disease. Many current therapies for respiratory disease are symptom based and not built on the pathways or knowledge about the epidemiology and pathobiology of the disease (J.P. Kiley, National Heart, Lung, and Blood Institute, Bethesda, MD, USA; oral presentation at the ERS Leuven Summit, 2011). Also, in view of the other visible development in the population, *i.e.* the rise of the “oldest old” (those aged 80 years and above), it is important to emphasise that treatments and medicines for 60 year olds are not going to be the same as those for 90 year olds.

Another major challenge, apart from the lack of cures for COPD and asthma, is that currently there are no interventions to halt lung damage once it has begun. More emphasis in future needs to be directed towards developing ways to restore pulmonary function.

**Strengthening competitiveness – involve all stakeholders**

In the respiratory field, the evidence shows that, in the past 40 years, only nine new therapies have been produced, the main reason for this being that most targets the industry chose to pursue in the respiratory therapeutic area failed, and resulted in no new treatments. The development of new treatments for disease has always been a shared exercise between industry, academia and clinical medical practitioners. This underlines that Europe needs to empower and regain creative talent in the discovery phase of research and development.

A key to improving translational research is to continue to invest in the creation of joint industry and academic infrastructure and skills, which would link clinicians to fundamental biological researchers and link the industrial counterparts to both. Pharmaceutical companies are increasingly looking to partner with smaller specialist firms and academia, thus spreading risks and lowering up-front costs. The success of externalising certain parts of the research to specialist firms shows how important it is becoming for companies to invest in working more closely with clinical experts. It is the clinical experts who possess the expertise about the mechanisms that cause the disease, whereas the industry’s strength lies in developing the molecules (and cells) that influence disease to relieve patients suffering.

The ERS is strongly in favour of new initiatives such as the Innovative Medicines Initiative, which represents a paradigm shift for academia-industry research and development partnerships, and the potential of such initiatives should be continued and maximised.

**Marie Curie Actions – create a new generation of researchers**

The ERS believes that the Marie Curie Actions represent one of the most prestigious European-based programmes that strengthens research-based training and allows researchers to access knowledge and get training at centres of excellence. The ERS experience from coordinating its “RESPIRE” Programme under the COFUND scheme of the PEOPLE Programme has been a very valuable one, not only in that it has boosted the careers of fellowship recipients by fostering advanced and
innovative research, but moreover, has been instrumental in creating the platform needed to enhance and maintain scientific networks, and to retain promising researchers in Europe.

In this context, COFUND has been invaluable in that it supports professional organisations to in the selection of outstanding postdoctoral candidates. The next research framework programme should promote the Marie Curie Actions and, especially, the COFUND scheme, as it has allowed professional organisations like the ERS, who already manage existing fellowship programmes, to further promote careers in science among pulmonologists and provide greater mobility for experienced researchers, and allow for a more coherent implementation of national and European research activities through closer relations between various organisations.

To deliver innovations, there will be a continuous need to train more respiratory scientists, both clinical and non-clinical. The scope of the COFUND Programme could be expanded to include not only postdoctoral workers but also the postgraduate education of MD and PhD fellows at European centres of excellence. Such “MD-PhD programmes” are intended to provide training in both medicine and research for a period of 3–4 years. Such a scheme would generate the best possible training in respiratory research and thus will be part of the next generation of leaders in respiratory medicine and research, and would aid in the formation of structured training programmes throughout Europe, which will better serve future respiratory physicians and researchers [9].

**Establishing a peer-review system based on excellence**

Many of the ERS members are leading scientific experts in their field and evaluate grant applications of other organisations or are involved as editors of peer-reviewed journals. The ERS would like to suggest some points for strengthening the peer-review process for collaborative research, and the process of selection of reviewers/evaluators:

- Excellence and originality should be the two leading criteria in evaluating grant applications.
- The European Commission should consult electronically reviewers from other countries, particularly North America or Australia. This could be easily done with a slightly more organised format that one could adapt from existing electronic platforms, such as ScholarOne (see http://scholarone.com/), as adopted by several scientific journals, and allowing one to work in a totally virtual and very efficient way.
- The selection of both external reviewers and the reviewers invited to participate in the evaluation session should be based on excellence and competence, and the different aspects of the application should obviously be considered, *i.e.* science, management, ethics and funding, but with emphasis on science.
- Evaluation of the stature and competence of the applicants and reviewers should be done based on their records, *e.g.* by first searching in PubMed. Two common criteria are impact factor of the journal, citation of the papers, or a combination of the two, *i.e.* Hirsch index.
The selection of the experts asked to participate in the face-to-face evaluation sessions should be done well in advance based on the criteria as described above, and they should act as sort of “editors”, *i.e.* to assign the projects to external reviewers of their choice and to take responsibility of making a final evaluation on the application based on the reviewers’ comments. This is the standard process in scientific journals.

In general, there is a need to foster and increase the participation from the respiratory community in the evaluation of projects in the pulmonary/respiratory and chronic disease domain.

**Concluding remarks for future European medical respiratory research**

In summary, the ERS recommends that the FP8 should:

- Allocate a greater proportion of the overall EU research budget to biomedical research in general and translational research in particular.

- Develop a dedicated research strategy and research programme for respiratory diseases.

- Increase interdisciplinary and multidisciplinary collaborative research.

- Avoid fragmentation including in the field of medical education and medical research.
• Ensure sustainable and long-term investments in excellent research platforms and infrastructures for enhanced competitiveness.

• Continue to involve all stakeholders; professional medical societies, clinicians, researchers, industry and patients.

• Create a new generation of medical researchers by promoting Marie Curie Actions and expanding the COFUND scheme.

References


7. Macklem PT. Con: Greater funding of cell and molecular biology has not delivered what was promised to respiratory medicine. Am J Respir Crit Care Med 2004; 169: 438–439.
