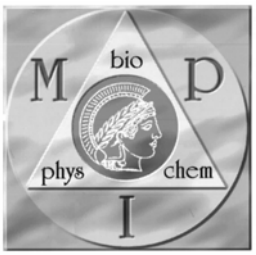


Max Planck Institute for Biophysical Chemistry
Göttingen, Germany

Press Release

February 15, 2006

10 Million Euros for RNA Research

An international consortium of scientists, under the co-ordination of Prof. Reinhard Lührmann of the Max Planck Institute for Biophysical Chemistry, has been awarded a grant by the EU for the establishment of a "Network of Excellence". Thirty laboratories from 13 countries will channel their research efforts into discovering more about the so-called "alternative splicing" of RNA.

In the cells of animals and plants (*eukaryotes*), the genes that encode the message for the production of proteins are divided up into various segments of DNA, the so-called *exons*, which are interrupted by stretches of DNA that have no coding function (*introns*). When the DNA is re-written (transcribed) into messenger RNA, the introns must be cut out and the exons joined up; this process is termed *splicing* of mRNA. Only after an mRNA molecule has been spliced can the cell use it as a template for producing the protein in question.

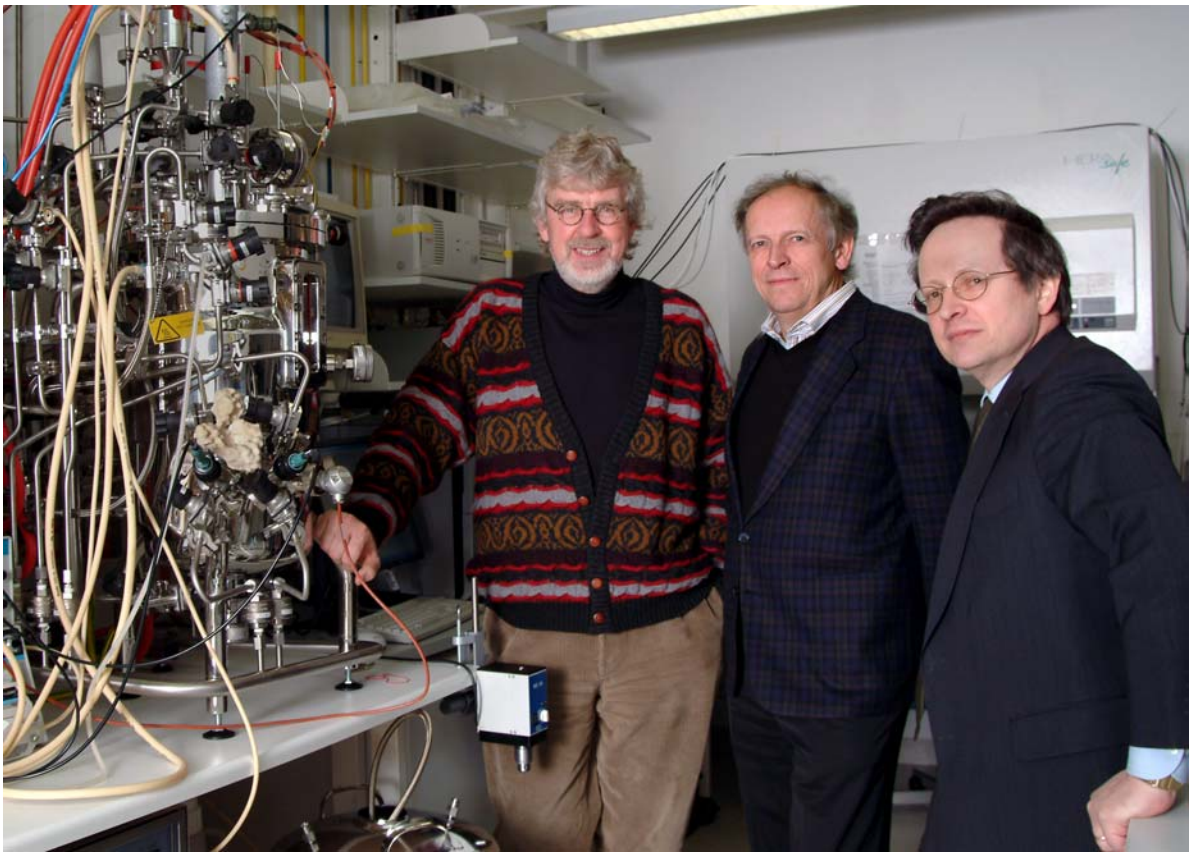
The processes of mRNA-splicing in the cell nucleus are carried out by highly complex molecular machines known as *spliceosomes*. The very great importance of mRNA-splicing has been underlined by the fact that the number of protein-encoding genes in the human genome, at ~25 000, is much smaller than would be expected on the basis of the great diversity of the human proteome (at least 100 000 different proteins). The "missing diversity" in the DNA is made up for by the existence of alternative paths of mRNA-splicing: that is, the exons to be spliced together are chosen according to the protein required. In this way, an unspliced mRNA molecule can be used by the cells to produce any one of a variety of spliced mRNA products, and thus a corresponding variety of proteins.

This "alternative splicing" is an integral part of the overall process of genetic regulation, and it influences every aspect of the biology of the eukaryotes. Defects in the regulation of splicing frequently cause, or exacerbate, pathological conditions, and there is an ever-growing list of diseases attributed to due to erroneous regulation, including certain types of cancer and neurodegenerative disorders. The basic features of the structure and function of the spliceosome are already known. In contrast, our understanding of the regulation of alternative splicing is only in its infancy. This is due, among other things, to the fact that the selection of exons for splicing is determined by a highly complex reciprocal interaction between many other proteins (termed *combinatorial control*). Furthermore, alternative splicing processes

are also influenced by the communication between the spliceosome and the cells' apparatus of transcription.

Under the co-ordination of Prof. Reinhard Lührmann (Department of Cellular Biochemistry) at the Max Planck Institute for Biophysical Chemistry, thirty research groups working on gaining a better understanding of the problem of alternative splicing have joined forces to form an international consortium that is supported with research funds from the EU. The “Network of Excellence” known by the acronym EURASNET (European Alternative Splicing Network) has set itself four major goals:

- Implementation of a collective research programme for the elucidation of the mechanisms of alternative splicing and of the relationship between the spliceosome and the other regulatory processes of gene expression. This will embrace a wide spectrum of methodological approaches, including biochemical, molecular-genetic and system-biological methods and will also incorporate clinical approaches.
- The establishment of a communication platform for the exchange of information, methods and material among the network partners.
- Support for ten “Young Investigators” who are establishing new research groups. This initiative is intended to support research careers in Europe.
- Dissemination of results through conferences, workshops, lectures and the strengthening of contact with other RNA networks, with hospitals and with research-oriented industrial companies.



The EURASNET organisation team (from left): Prof. Reinhard Lührmann, Dr. Joachim Bormann (EU co-ordinator) and Dr. Reinhard Rauhut (project manager). *(Photo: Goldmann / MPIbpc)*

The EURASNET programme was incepted on January 1st, 2006. The consortium includes 30 research laboratories from 11 European countries and also from Israel and Argentina. Within Germany, two Max Planck Institutes (in Göttingen and Dresden) are taking part, along with the Universities of Erlangen and Giessen and also the European Molecular Biology Laboratory (EMBL) in Heidelberg. The financial support from the European Union amounts to € 10 million and will be spread over five years.

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