

## Healthcare industry BW

# Elisa Izaurralde, a prominent RNA scientist, receives Leibniz Prize

**The directors of the Tübingen Max Planck Institute (MPI) for Developmental Biology are pleased to have a Leibniz prizewinner in their ranks for the second year running. Dr. Elisa Izaurralde and her colleague Dr. Elena Conti have both been awarded the 2008 prize for their outstanding work in the field of RNA research.**

Elisa Izaurralde had just graduated from school and was only 17 when she decided to leave home in Montevideo. She was driven by a trait of her personality, her great ambition and cannot remember wanting to be anything else other than a scientist. "Nowadays, we even have an Institut Pasteur in Uruguay.

However, in my times there wasn't much scope for good research in biology and biochemistry," Dr. Izaurralde remembers. The prevailing political situation with a military government, ruling the country since the middle of the 1970s helped Elisa Izaurralde to take the big step and leave her native land.

Switzerland became home for the next ten years. Elisa Izaurralde studied biochemistry at Geneva University and earned a doctorate in molecular biology in 1990 in Prof. Dr. Ulrich Laemmli's group. Laemmli revolutionised biochemistry at the beginning of the 1970s with a new method for separating proteins called SDS-polyacrylamide gel electrophoresis. Izaurralde was in her element in her famous Ph.D. supervisor's lab and spent her first postdoc phase there which lasted one year carrying out further work on the organisation and structure of chromatin, already the topic of her dissertation.



Dr. Elisa Izaurralde (Photo: Max-Planck-Institut für Entwicklungsbiologie)

## Excellence creates excellence

Izaurralde spent a second, six-year postdoc phase with EMBL in Heidelberg, specialising in research on RNA, in particular the transport of RNA from the cell nucleus to the cytoplasm. „I started at the EMBL my work on RNA,“ remarks the present director of the Max Planck Institute with a smile remembering her first big success. „We were able to identify a protein complex, and we were able to prove its function in the export of special RNA molecules that have a function in splicing i.e. the cutting and reconnecting of RNA molecules.“

Heidelberg proved to be crucial for Dr. Izaurralde's career in more ways than one as e.g. it was here that she met Dr. Elena Conti. While Izaurralde concentrated on functional aspects of RNA transport, Conti studied the same topic using X-ray structure analysis. The two scientists' joint work paved the way for future success and has gained the recognition it deserves with the award of the Leibniz Prize to both researchers.



Group picture of Leibniz prizewinners 2008 (Photo: DFG)

## Two researchers complement one another – a stroke of luck

However, such developments could not be foreseen in the middle of the 1990s when Izaurralde strived to lead her own work group. This was made possible by Geneva University which appointed her as a junior research group leader at the Department of Molecular Biology from 1996 to 1999. After proving her managerial skills in Switzerland, Izaurralde returned to EMBL where she spent the next years as group leader and then senior scientist. It was during these very productive years that the cooperation with Dr. Conti bore significant fruits.

The two scientists investigated the function of the mRNA export factor TAP-p15, which Izaurralde had already studied and eventually characterised in Geneva. „The mRNA export factor is a complex with two proteins which interact with the nuclear pore complex in the membrane of the cell nucleus thus enabling the transport of mRNA to the cytoplasm. This work was a very important step in our scientific careers,” explains Izaurralde. The second important milestone was research on the mechanisms of nonsense mediated mRNA Decay, a pathway that regulates gene expression.

## „RNA is necessary for all forms of life“

In 2005, Dr. Izaurralde became Director of the Biochemistry Department at the MPI for Developmental Biology in Tübingen. Since then, she has extended her research interests to the mechanisms of RNA-mediated gene silencing. Dr. Izaurralde explains her long-standing and never-ending fascination for RNA with the following words: „RNA was probably the starting point for life on earth and not DNA as was long suspected. RNA is also chemically much more active than DNA, showing catalytic activities just like proteins. It's the versatility and fundamental importance of RNA which makes its research so fascinating.” And it is the abundance of new findings by Izaurralde and Conti which has now led to their being awarded the prodigious Leibniz Prize for 2008.

It is no big surprise that Izaurralde is planning on investing the prize money in further RNA research. “I'd like to clarify the fundamental molecular mechanisms in connection with RNA. We will establish in our institute a novel technology that allows the investigation of the function



Elisa Izaurralde has been carrying out research in Max Planck Institute for Developmental Biology as Director of the Biochemistry Department (Photo: Stefan Müller-Naumann, Fritsch + Tschaidse Architekten)

of individual genes. There are about 25,000 genes in the human genome, but we know the function of less than 50 percent of these genes. With this novel technology, termed “genome-wide RNA interference screens”, we can inhibit the function of individual genes one by one and look at the effects that this inhibition has on cultured cells. In other words we can have insights onto the function of each gene.”

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**For further information**

Max Planck Institute for Developmental Biology

Biochemistry Department

Dr. Eliza Izaurralde

Spemannstraße 37-39

72076 Tübingen

Telephone: +49 7071 601-1350

Fax: + 49 7071 601-1353

E-Mail: [elisa.isaurralde@tuebingen.mpg.de](mailto:elisa.isaurralde@tuebingen.mpg.de)



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## Article

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