



Monday March 9, 2009
9:00 to 10:30

Lyon Convention Center
France

THE NEW WORLD OF RNAS

From micro RNA research to real world drugs
(Co-organised with the French Academy of Science)

Moderator

- **Peter Wrobel**, Editorial Director of Science Business Publishing, UK

Speakers

- **Frédéric Dardel**, Professor, Advisor to the Chairman and the CEO, National Center of Scientific Research (CNRS), France
- **Corey S. Goodman**, President, Biotherapeutics and Bioinnovation Center, Pfizer, USA
- **John Mattick**, Professor, Institute for Molecular Bioscience, University of Queensland, Australia
- **Richard J. Roberts**, Nobel Laureate, Medicine, 1993, USA
- **Eric Westhof**, Director, Institut de Biologie Moléculaire et Cellulaire, CNRS, France

Summary

- 8 years ago human genome sequence was published highlighting the fact that just a very little part of the sequence is coding
- Since then a major paradigm or even vision change has occurred moving away from the mechanistic approach on cell systems with a toolbox of structures with specific functions to dynamic cell systems with RNA in a central role
- In this aspect Eric Westhof stressed that just 30% of DNA is genes with just 1,5% coding regions but >90% is translated into RNA, these RNA transcripts are present in the cell, influencing the system
- John Mattick pointed out, that the number of genes for humans and for *C. elegans* (roundworm) is the same, therefore the information for the complexity of a human being lies anywhere else – in the RNA
- Speaking of the complexity of the dynamic systems regulated to a certain extend by RNA, the panel agreed on the need for a lot of academic basic research to be done on RNA
- Frédéric Dardel also emphasizes the need for bottom-up basic research; and at the same time an upcoming interest by the students, who hear the rumors of RNA research and are willing to work in this field



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- All panel members agreed that such bottom-up approach is essential for implementing RNA research in academic organizations
- Richard J. Roberts in this aspect stressed the importance to continue to study bacteria
- At the same time researchers should concentrate on basic research and not look too often on how the next clinical candidate can be developed
- In this aspect Corey Goodman highlighted the importance of the breakdown of the silo thinking between academia, biotech and pharma
- Coming to the chances of RNAs as therapeutic candidates Corey Goodman pointed out that there is an enormous potential, the question is, when it will lead to new therapeutics
- The major challenges are:
 - You have to get the sequence right, which will easily be handled by the scientist
 - You have to cope with the delivery of the new substance class, which is a totally unresolved topic
- Corey Goodman also stressed, that there is actually no chance to estimate which class of RNA therapeutics will prevail, as the door is still wide open and everything might work, be it RNA-RNA interaction or RNA-small molecule interaction
- John Mattick agreed on future perspectives and emphasized that medicine is about to be transformed in all aspects, especially regarding the amount of information about personal genomic sequences available in future leading to personalized medicine

Quotes

"It will take some time until academic scientists will have done enough research on the systems."
Frédéric Dardel

"Just 30% of DNA is genes, and just 1,5% is coding regions, but >90% is transcribed into RNA – how can we explain this?"
Eric Westhof

"We have fundamentally misunderstood genetics for the last 50 years "
John Mattick

"Molecular machines are working as would a printer reacting to its environment with printing interesting text quick and slowing down while printing boring sections."
Eric Westhof

"For any of you young scientist interested in bioscience, this topic is a goldmine with at least one or two Nobel prizes in it."
Richard J. Roberts

" So please young guys, do not let your administrators tell you, you have to work on topics which go directly into the clinic."
Richard J. Roberts



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"Great science is leading to good therapeutics, the question is when. Think of the first monoclonal antibody being described 1976 and the first MAB therapeutic came to the market in the late nineties."

Corey Godmann

"This shows, how much can be found out in a short time - science can move very quickly sometimes"

Peter Wrobel



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