



FEBS NEWS

Issue 6/November, 2006

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For Your Information

by Camilla Krogh Lauritzen,
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Dear Colleagues,

This issue of FEBS News will be the last in 2006, and in we will open the door to 2007: Read e.g. about the FEBS Young Scientists' Forum 2007 Congress (p. 4), and about the many open PhD positions (pp. 11-14).

The authors behind the "FEBS Debate" are three young scientists with something at heart. Read more at pp. 6– 11.

You will find news from FEBS Journal and FEBS Letters on page 4-5. In this respect, FEBS and FEBS Letters wish to congratulate Roger Kornberg with winning the 2006 Nobel Prize in Chemistry! Read Roger D. Kornberg's recent minireview published in FEBS Letters Volume 579, Issue 4 , 7 February 2005, Pages 899-903 — free access article here: <http://linkinghub.elsevier.com/retrieve/pii/S0014579304014061>

We also need a few more volunteers to test our new website, which will soon be up and running— read more on page 3. Please send me an e-mail asap, if this has your interest!

Finally, I would like to wish you all a happy new year!

Kind regards,

Camilla

About FEBS News:

- FEBS News is published every second Monday every second month (starting January).
- E-mail alerts containing a link to FEBS News, are sent to approx. 16,000 subscribers in more than 50 countries, whenever a new issue is out.
- To subscribe, unsubscribe or change your contact details simply send an e-mail to newsletter@febs.org, stating "subscribe", "unsubscribe" or "change" in the subject line. You can also subscribe on-line at http://www.febs.org/e-mail_registration.asp Do notice that we will not distribute, in any way, your data to third parties without your consent.
- As a service to our more than 40,000 members, FEBS offers **FREE** advertising of academic positions (PhD students, Post Doc's and Senior Post Doc's) in this newsletter and on our website.
- This issue as well as all former issues of FEBS News are available online at www.FEBS.org
- Questions and enquiries about FEBS News should be addressed to Camilla Krogh Lauritzen (camilla@febs.org).
- Next issue will be out on **January 13, 2007**. Deadline for entries (all types) is **January 8, 2007**.



the Message Board

NEW WEBSITE IN PROGRESS — we need a few more test pilots

As mentioned in the last issue of FEBS News, we are in the process of designing a brand new website, in order to improve and facilitate knowledge and dialogue within the "FEBS Community".

In this respect we are looking for 20 test persons, who would be willing to try it out and give us their feedback on the trial version. We are still a few persons short, so if you are interested in helping, do let us know.

We will send you a link to the trial version, and a questionnaire that takes about 15 minutes to fill in.

We greatly appreciate your participation in testing our new website, and your feedback is indeed valuable for us. Thus,

we would like to offer each of the 20 test persons a FEBS USB stick.



Also, we will make a draw for one free registration for the 2007 FEBS Congress in Vienna (<http://www.febs2007.org>)

Interested? Then send a mail including your name to news-letter@febs.org before December 1.

The test will take place on December 13.

The new website will be launched on the usual address (www.febs.org) around January 1, 2007.

Network of Youth Excellence (NYEX)

All over the world an increasing number of initiatives ensure research possibilities for motivated secondary school students. These initiatives, however, work in isolation and in many places they work almost completely out of public knowledge. This is why UNESCO and other sponsors deemed it important to ensure a possibility for exchange of experiences among the best initiatives worldwide within the framework of the Network of Youth Excellence (NYEX). The Network is completely independent, politically neutral, and has no intention whatsoever to be involved in any political affairs locally or internationally. More than 25 organizations all over the world have already joined this network as full members or partners.

Read more about NYEX here: <http://www.nyex.info/>

Dear FEBS members,

I am Murukesan. P, a research student in the field of chemistry from Department of Applied Chemistry, Cochin University of Science and Technology, Cochin-22, Kerala, India.

I wish to pursue Ph.D in the field of chemistry. I would like to know whether any suitable doctoral position is available in your group/institution. I would be most grateful if I could get a position in your group. Please contact me for CV. Thanking you.

Sincerely,
Murukeshan. P

M. Phil Student
Department of Applied Chemistry,
Cochin University of Science and Technology,
Cochin-22, Kerala, India.

FEBS YOUNG SCIENTISTS' FORUM 2007

On behalf of the YSF2007 Organizing Committee (see picture), it is our great pleasure to announce the 6th FEBS Young Scientists' Forum to be held from July 5-7, 2007 in Vienna, Austria. The YSF2007 organizers are looking forward to welcoming you in Vienna!

Ingrid Frohner, Chair (Austria)
Denes Hnisz, Co-Chair (Hungary)
Andrijana Jevremovic (Serbia)
Walter Glaser (Austria)
Regina Klaus (Austria)
Max F. Perutz Laboratories, Vienna

Stefanie Löser (Germany)
Institute of Molecular Biotechnology, Vienna

Juan Guinea Viniestra (Spain)
Institute of Molecular Pathology, Vienna



Read more at <http://www.univie.ac.at/febs2007/ysf/>



News from the FEBS Journal



Dear Fellow Scientists,

In the previous issue of *FEBS News* we highlighted review and minireview articles published in *FEBS Journal*. Here, we focus on the breadth of scope of the research published in the journal by showing the top 10 downloaded research articles published thus far in 2006. The broad aims and scope of *FEBS Journal* include the growing points of bioinformatics, genomics and proteomics, molecular cell biology and the molecular biology of disease, systems biology and nanoscience. Detailed aims and scope can be found on <http://www.febsjournal.org>

FEBS Journal top 10, 2006:

1. *Yeast oxidative stress response. Influences of cytosolic thioredoxin peroxidase I and of the mitochondrial functional state*, A.P.D. Demasi et al. (Vol.273/4)
2. *Effects of sequestration on signal transduction cascades*, N. Bluthgen et al. (Vol.273/5)
3. *VEGF gene expression is regulated post-transcriptionally in macrophages*, M. Du et al. (Vol.273/4)
4. *Structure of amyloid beta fragments in aqueous environments*, K.Takano et al. (Vol.273/1)
5. *The role of glucose 6-phosphate in mediating the effects of glucokinase overexpression on hepatic glucose metabolism*, L. Harndahl et al. (Vol.273/2)
6. *A tyrosinase with an abnormally high tyrosine hydroxylase/dopa oxidase ratio. Role of the seventh histidine and accessibility to the active site*, D. Hernandez-Romero et al. (Vol.273/2)
7. *Cloning and characterization of CBL-CIPK signalling components from a legume (*Pisum sativum*)*, S. Mahajan et al. (Vol.273/5)
8. *Generic normalization method for real-time PCR. Application for the analysis of the mannanase gene expressed in germinating tomato seed*, D. Argyropoulos et al. (Vol.273/4)
9. *Oligomerization states of the association domain and the holoenzyme of Ca²⁺/CaM kinase II*, O.S. Rosenberg et al. (Vol.273/4)
10. *Silencing the constitutive active transcription factor CREB by the LKB1-SIK signaling cascade*, Y. Kato et al. (Vol.273/12)

FEBS Journal Prize 2007

FEBS Journal will be continuing its prize in 2007. The prize of €10 000 will be awarded to the graduate student or young post-doctoral research worker (no more than 3 years from the time of award of the PhD degree when the paper is sub-

mitted) who is the first author of a paper that is judged to be the best in *FEBS Journal* during 2007. Details of previous prizewinners can be found at:

http://www.blackwellpublishing.com/febs_enhanced/prizewinners.asp

Reviews

You can read reviews and minireviews online and download them free of charge from the time of publication. All reviews published in *FEBS Journal*, and in EJB before 2005, can be accessed free of charge on the *FEBS Journal* online websites: the Blackwell Publishing service Synergy (<http://www.blackwell-synergy.com/>) and the Highwire platform, <http://content.febsjournal.org> and <http://highwire.stanford.edu/>.

These sites are easily reached by hotlinks from the *FEBS Journal* website.

Reviews recently published in *FEBS Journal*:

Protein disulfides and protein disulfide oxidoreductases in hyperthermophiles, R. Ladenstein and B. Ren (Vol. 273/18)

A family of killer toxins: exploring the mechanism of ADP-ribosylating toxins, K.P. Holbourn, C.C. Shone and K.R. Acharya (Vol. 273/20)

The EMBO Lecture 2005: *Diversity of human U2AF splicing factors*, I. Mollet, N.L. Barbosa-Morais, J. Andrade and M. Carmo-Fonseca

Minireview series:

Cell-free protein synthesis
Coordinator: Nicholas E Dixon (Vol. 273/18)

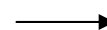
Leukocyte-endothelial interactions
Coordinators: M. Gabriele Bixel and Martin K. Wild (Vol. 273/19)

Forthcoming Reviews

Gas6 and protein S. Vitamin K-dependent ligands for the Axl receptor tyrosine kinase subfamily, S. Hafizi and B. Dahlbäck

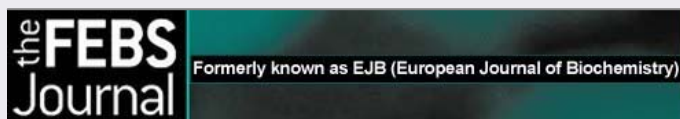
Mathematical Modelling Papers

Mathematical models from papers published in EJB and *FEBS Journal* are available on the mathematical modelling website linked to *FEBS Journal*. You can access and try them out free of charge online (<http://jjj.biochem.sun.ac.za/database/index.html>). Full details of how to submit models for inclusion on the mathematical model database can be found in our Author Guidelines (at <http://www.febsjournal.org>) and at the relevant website — <http://jjj.biochem.sun.ac.za/febsj>





News from the FEBS Journal



continued....

Paper with mathematical models recently published in *FEBS Journal* 273/21:

Reduction of a biochemical model with preservation of its basic dynamic properties, S. Danø, M. F. Madsen, H. Schmidt, G. Cedersund

With best regards

Richard Perham, Editor-in-Chief
Vanessa Wilkinson, Editorial Manager
Anne-Marie Bruyns, Deputy Editorial Manager
Jane Bartolozzi, Editorial Secretary
Juanita Goossens, Editorial Secretary
Ilana Wooster, Editorial Secretary

News from FEBS Letters



Dear Fellow Scientists,

The final FEBS Letters Special Issue of 2006 has just been released. The issue focuses on the role of lipids in cellular processes and their importance in disorders ranging from defects in lipid metabolism and transport, to infectious diseases in which lipids act as antigens. The issue was edited by Bernd Helms and Gerrit van Meer and was produced in conjunction with the FEBS Advanced course on 'New concepts in lipidology: from lipids to disease' which was held in Noordwijkerhout, The Netherlands, from 21st-26th October 2006.

We have some exciting new Special Issues planned for 2007, the first of which will be on the topic of inter-compartmental membrane traffic and membrane exchange and will be edited by Thomas Soellner (University of Heidelberg, Germany).

FEBS Letters would like to congratulate Roger Kornberg on winning the 2006 Nobel prize in Chemistry. Dr. Kornberg was awarded for his efforts in elucidating the molecular basis of eukaryotic transcription, using detailed crystallographic structures to identify the mechanism of RNA polymerase II in a series of papers starting in the year 2000. Interestingly, Roger Kornberg is not the first member of his family to win this award. His father, Arthur Kornberg, won the Nobel Prize in Physiology or Medicine in 1959 for describing how genetic information is transferred from a mother cell to its daughters. Roger Kornberg has now extended this process by explaining at the atomic level how the genetic information is copied from DNA into

mRNA. For more information, we encourage you to read Roger Kornberg's minireview published in FEBS Letters: FEBS Letters (2005) 579(4) 899-903. This review was part of a special issue on the 130th Nobel Symposium, entitled "Molecular Mechanisms of Biological Systems". All our published reviews are freely available via our website: www.febsletters.org.

Look out for our most recent "Spotlight on.." article which highlights the research of Professor Jesus Avila, (FEBS Letters (2006), 580 [\(24\)](#), p. 5611). Dr. Avila is a professor at Universidad Autonoma de Madrid, Spain. He studies the development, degeneration and regeneration of neurons. As a FEBS Letters editor, he handles papers that deal with aspects of neuron morphology, the cytoskeleton and the molecular mechanisms involved in neuropathies.

We have recently updated our online submission system to a more user-friendly version. We hope that this makes the submission procedure even faster.

As 2006 is drawing to a close, please don't forget to submit your manuscript to be eligible for the FEBS Letters Young Scientist Award. This €10,000 personal prize will be awarded to the young scientist (40 years old or less) who is the corresponding author of the most outstanding research letter published in 2006.

Best wishes,

The FEBS Letters Editorial Office
Felix Wieland, Managing Editor
Patricia McCabe, Editorial Manager
Tine Walma, Assistant Editor
Anne Mueller, Editorial Assistant



FEBS Debate



"Science Academie": Raising Scientific Passions and Fostering a New Social Link

By François TADDEI^b, Alice RICHARD^a and Livio RIBOLI-SASCO^a

^a Ecole Normale Supérieure, Paris, France, ^b INSERM, Institut Necker, Paris, France

Abstract. *Science education in French schools today is suffering from two major problems. Less and less students are enrolling on science courses while obstacles caused by unequal opportunity make it increasingly difficult for less privileged learners to obtain high standard university places and to embark on scientific careers. The way science is taught in schools in France (heavily weighed down by theory and desperately lacking in practical content) urgently needs changing if it is to be made more appealing. It is now time for researchers to collaborate with schools to show that science can be pleasantly challenging and fascinating. Above all, a fundamental reason why science education must be improved is because citizen respect and interaction are fostered through the study of science. Everyone today is directly concerned by scientific issues. In a society where science encompasses more and more ethical questions, a common basis of scientific knowledge must be shared amongst each and every one of us. We would like to prompt researchers into showing that science can be made enjoyable, thereby inspiring students who suffer from a social disadvantage and then to offer our support to the keenest students in order to help them become talented scientists. Helping them to belong to a broad network and training them in scientific vulgarization will help us inoculate a "Science virus" in schools and on a broader basis in society. By intervening locally, with a global approach, changes can be made on a broad scale, i.e. National or European, provoking a cascade of changes in the educational system leading to what could be called a new "equilibrium" of education.*

Introduction

In November 2005, riots broke out and spread rapidly throughout French suburbs, reaching unprecedented levels of violence. How can we account for this irruption of violence? Obviously there is no clear answer. There was no distinct political message, only a total rejection of a society that wasn't able to integrate immigrant children. These children were living in dilapidated buildings, they were finding it increasingly difficult to study or find employment and had nothing to hope for in the future. One incident holding high symbolic potential was enough to spark off an epidemic of violence.

It is in this social context that researchers and university students decided to set up a program that would open the doors of science and research to the disadvantaged youth. This simple course of action might seem inappropriate in face of such serious and widespread social problems. Yet we believe that initiatives inspired by the Hungarian Kut Diak movement can be at the source of large-scale changes covering an area way beyond sciences.

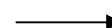
1. Science Education in France in 2006

1.1. An increasing lack of interest for scientific university studies.

According to the report « What should be done for schools in French suburbs » published by the « Institut Montaigne », 40% of the students living in so called "Sensitive areas" leave school without any qualifications. In addition to this, the number of students entering university to study Science fell by 32% between 1995/1996 and 1999/2000. Sciences have become increasingly unpopular amongst students at school, and in particular towards the most disadvantaged. This situation is alarming. Researchers must get involved quickly in order to spread a new attractive image of Science and to battle against the inequities of our educational system. Enthusiasm and passion are essential characteristics of good scientists which can be easily transmitted to encourage students in choosing scientific studies. Political and educational institutions do not realise just how grave the situation is. This is another reason why researchers should get involved.

1.2. Unequal opportunity to study science at university and higher educational establishments.

Some talented and creative teenagers do not even apply for the university best courses as they believe they will not be able to afford the cost of long studies and that these studies are reserved for social elite. These difficulties are emphasized by the dual French system, divided between universities and "grandes écoles". Any high school student can apply for a place at university in France, without having to go through a process of selection, whereas "grandes écoles" recruit through highly selective competition, after two years of preparation. In order to be given an opportunity to prepare for competitive exams, students must present an excellent school track record.





FEBS Debate

(continued..)

Universities are allocated a third of the budget provided to “grandes écoles”. The reputation, combined with appalling results and student self censorship keep a great number of students at bay from the classes which prepare for the competitive exams leading to “grandes écoles”. Thus, a social division takes place at the end of high school. The “grandes écoles” usually train their students up to Masters degrees. Afterwards some of these very bright students move to universities and start a PhD, preventing most university students to access PhD programs. French higher education system is completely partitioned. Every year, the amount of students that come from working class and immigrant backgrounds decreases.

However, scientific research comes to be more creative and productive with people’s diversity. The contribution of international or interdisciplinary collaboration towards innovation in research can be easily understood. We would like to encourage greater diversity emerging from a variety of social and cultural backgrounds. All the different social communities have to be represented. In that way, it will be easier to pay attention to all the questions emerging in our society and that have to be translated by scientists into research programs.

In addition to this, scientific professions are a symbol of social success. To those recently immigrated to France, those who suffer from discrimination or from living in disadvantaged areas, science and research can offer a chance to climb the social ladder and a bright future. Allowing a real equality of opportunity in accessing academic professions is a way to eradicate many prejudices. Intelligence is not confined to any social or ethnic group but is shared amongst all. Enabling social ascension through science contributes to social cohesion. People from different origins form an important community committed to a public mission for scientific progress.

1.3. *Science is not a research experience...*

For many children, from primary to high school, scientific education will remain an isolated experience. Very few of them will remember and consider this education as useful in their adult life. Scientific education is often reduced to a corpus of theoretical knowledge. Practical experiments are rarely carried out and in any case limited to a mere demonstration of what has been already taught. It is thus impossible for the students to discover and build any scientific reasoning and argumentation. If learners at school cannot discover for themselves, working on a step by step basis, it is difficult to make science and scientific careers sufficiently attractive to incite students to find the energy and motivation needed to succeed in long and demanding studies. In the same way, musical studies are long and difficult. It is obvious that it is nearly impossible to succeed without being passionate about music. It’s the same with sciences [1]. This way of teaching science can be explained through an analysis of the purpose of French education at its origins. Schools have been developed and widespread all over the territory at the end of the 19th century in order to build a nation, a community of language, values and knowledge. School has not been intended to develop creativity. Our social values have changed, and we now need emotion, passion and self-development to lead some students to scientific studies.

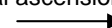
Obviously, not all students have to be encouraged to choose scientific careers. Yet, scientific education in high school will influence many generations of future citizens who will have to tackle technological, scientific and ethical questions. Gloomy chemistry courses combined with an increasing awareness of pollution problems (some of them due to chemical industry) may induce a global rejection of chemistry as a science subject as well. Improving scientific education and privileging education using research methods is essential to train mature citizens, well informed on the scientific world and its importance for society.

1.4. *Lack of teachers training to sciences and pedagogy*

Teachers from primary to high school cannot carry out research as well as teach in schools, although some of them have experienced research in their early years when they were students at university. This deep division between teaching and research contributes to convey a biased image of science and research in schools. The scientific knowledge transmitted to students is never shown as an evolving knowledge, rich of a lively history, full of controversial theories that are soon falsified. It is urgent to reconnect the two worlds of research and education. Indeed, the student, as the researcher, tries to learn by himself, observing and then setting up theories and experimenting new ideas and explanations. Students and researchers may have more in common than students and teachers. We could advocate the “ignorance” of the teacher, as suggested by philosopher Jacques Rancière. “Ignorant”, the teacher is placed in the same learning process as the student. His knowledge is related to the method that has to be followed in order to discover and learn. Indeed Jacques Rancière gives evidence of such a process, showing us a group of student, helped by their ignorant teacher, all of them learning together a new language: Flemish.

2. Why teach Science?

All the above mentioned difficulties only emphasize the potential of first-rate scientific studies. Sciences strengthen the sense of citizenship; they prepare young people to face future challenges; and for some students they can offer a solid social ascension





FEBS Debate

(continued..)

and integration. This potential of scientific education is completely underestimated. In order to make the most of it, we would have to rethink globally the way we deal with sciences at school. In order to make the most of it, we would have to rethink globally the way we deal with sciences at school.

2.1. Science conveys values: questioning the world, going always deeper in reasoning, respecting other people's words and thoughts

As for all subjects taught at school, science conveys values. It insists on observation, reasoning, experimentation, deduction. It allows for dialogue and tolerance. Indeed, science is a constant dialogue between researchers, between disciplines, between different opinions, all of them supported by accurate arguments. Science appears to be an ideal training to citizenship, at a time when school content itself with little information on the history and functioning of our institutions. Practicing a scientific approach at school enables young people to make sound choices later on and to avoid being caught by blinding ideologies.

2.2. Innovation, resilience

Young generations, currently in our schools, will have to face major challenges (climate change, ethical choices, international conflicts, etc.). We must take into account the fact that these young people are living in a world overloaded with information transmitted by various media. In that context it is essential to sharpen their critical mind. We have to train them to distinguish the true and the false in an easily available mass of information. Scientific process goes from observation to theorization; all along information recovered from experimentation or observation is transformed into useful knowledge. Going further, this knowledge can be a source for innovation and action. We also formulate the hypothesis that a widely shared knowledge is a source of resilience for our social system. In other words, these systems would be better prepared to political, economical or ecological disruptions.

3. Scientific solidarity?

3.1. Paris Montagne : a Science Festival

Paris Montagne Association was created in January 2006, one month after violent riots broke out in French suburbs. Students and researchers at the Ecole Normale Supérieure wished to share their passion for science and let others discover the world of research. This association set itself the task to contribute in bringing young students from underprivileged backgrounds to scientific studies by fighting auto-censorship towards long studies at university or in "grandes écoles". It offers individual mentoring and financial support (grants). In addition to individual support, Paris Montagne offers collective support through local intervention in underprivileged high-schools. We try to trigger positive dynamics through "science clubs" which are directly set up by young students that have been previously trained. Paris Montagne supports reflection and research on educational topics, pedagogy and didactic.

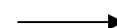
Paris Montagne organizes annually a summer science festival on the Montagne Sainte-Geneviève (Paris) and entertains a wide audience, coming from disadvantaged suburbs near Paris. This festival takes place in the "scientific campus" of Paris that is to say the Latin quarter. This festival has a social perspective. Showing science through a huge festival, through pleasure, is a way to open it widely. It's a way to reconcile adults with science; theatre, funny experiments are a powerful therapy. For younger ones it's a way to discover a new face of Science (different from the scholar one), and to meet the challenge brought to them by researchers.

3.2. PM & Science Ac' 2006 : at least a starting point

Paris Montagne also works on a long term basis with high school students, and with the students belonging to the "Science Académie" program (inspired by the Hungarian Kut Diak program) in particular. These students are selected at the end of their first or second year of high school. Two main criteria have been used to carry out their selection: their motivation towards sciences and the handicap created by their social background (immigrant families, profession of parents, underprivileged schools, number of brother and sisters).... The application forms were diffused in Parisian suburbs. In 2007, we hope we will be able to get in touch with all French high schools.

It is through these high school students that the association hopes to have the greatest impact possible as far as the goals it has set to itself are concerned. We hope to support them in their studies and to offer them all the chances they need to reach quality training and a scientific career. Moreover, these students will set an example to other pupils, proving that "science is possible".

These students are not selected according to their marks at school, and we bet that at the age they are at, nurtured passion for science can lead them to scientific excellence. To bid on young talents is all the more important as creativity and scientific productivity during the first years of work create an advantage that remains during an entire career.





FEBS Debate

Simonton (1991), followed by Stephan and Levin (1992) showed that most exceptional scientists had a high scientific creativity and productivity, that remains steady and then decreases slowly, whereas for a medium range scientist no increase is ever observed.

Paris Montagne offers to the young high school students a new concept of training and support. During the Festival "Paris Montagne : le Pari des Science" they take part in a week of training, supervised by high level researchers and PhD students. They become familiar with scientific questions and with the daily working life of researchers. They also learn how to write a project. They conceive and realize a whole experimental protocol during the week. They visit many laboratories belonging to the most important scientific institutions (Ecole normale supérieure, Institut Curie, ESPCI, Collège de France, Universities). They make a first step into a network that will link, in the long term, high school students, talented researchers and students. This network is sponsored by the French Academy of Science and reaches out to Hungary and Croatia. It provides a daily support for the studies, but above all offers the possibility of short internship in the best laboratories.

On the occasion of the Paris Montagne Festival, these young students gain self-confidence as they are trained to scientific communication. On this basis they will be able to animate sciences clubs in their high schools, with the coaching of professional associations. They will diffuse their passion for science, and will appear as an example of success in their schools and in their social environment. Eventually they will break down some barriers in our societies.

3.3. *What could be a Tipping Point in Science education? Would it also be a Social Tipping Point?*

Facing the various reports dealing with the state of scientific education and considering the objectives that we set, some might think the next step is to reconsider the education system overall. However, it is not necessary to be a fine political analyst to know that full and radical reforms are difficult to implement. Anyway, as we are not politicians, these reforms are not within our competence. We think however that local action, concerning a small number of individuals as what we propose with Science Academy, can be at the origin of major changes.

An event such as Science Academy comprises several strong points:

- Recruitment of young people with a passion for science and a strong capacity to communicate and convince.
- High quality training during a week in the best French "Grande Ecole"
- Meeting point for people with a strong "connection" potential

These three aspects take root in the concepts developed by Malcolm Gladwell in *The Tipping Point* in the chapter *The Law of the Few*. These young people could be at the origin of an "epidemic" diffusion of a new passion for sciences. This passion and the development of their capacities of communication during their stay at the Ecole Normale Supérieure make them good "Salesmen". Without a doubt some of them will be able to encourage their comrades to gain confidence and lead them towards scientific studies. The Science Clubs which they will set up in their high schools will reinforce this collective positive attitude towards science. They will show that being invested in Sciences offers knowledge and perspicacity and that it make studies more meaningful at a time when sport and music are often much more important than all the topics studied at school... As they start belonging to a network of passionate young people and researchers, they will be able to connect more people and to diffuse an innovating approach of Sciences. Thus, an action currently limited to 21 young people has the extraordinary potential to affect many more of them.

Another dimension of our action is related to the choice of anchoring the Science Academy training week into the Science Festival, that is to say at the heart of a politically visible event taking place in the best French "Grande Ecole". This allows us to act on two aspects: to inoculate a virus of Sciences amongst young people and to open a dialogue with politicians and society at large by means of the media. Indeed, why would we direct these young students towards sciences if at the same time scientific professions lose value? In the last years French research has lost a lot of its public financial support and wages remain low. It is important to reaffirm the economic value of research, its contribution to innovation. Paris Montagne also tries to demonstrate the educational importance of Science. Scientific professions should not be a goal for all students but by studying science at school students can develop intellectual skills required for reasoning and interaction.

In the long run, this Science Academy can encourage teachers to reconsider their practice. Stimulation towards innovating teaching methods can emerge from such an approach. Mutual education can take place between students: through cooperation and collaboration, peers can share their knowledge and build upon each other's. Indeed we incite the students we train to transmit their passions, their knowledge, to share their discovery of a world that few of them know, that is the world of research. The exchange of information between young people, which can be observed as early as in primary school [2], is completely unexploited in the traditional education system.





FEBS Debate

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Overall, this kind of exchange of knowledge is a factor of social cohesion. Everyone has only limited knowledge and competence, even with high level general training. However all along life, each one of us needs a wider range of skills and greater knowledge. Setting up networks which allow to exchange information and ideas making it possible to diffuse knowledge and share skills within a social network. Science Academy is a starting point to create such networks in high schools by connecting people eager to acquire some sort of knowledge and/or carrying other sorts of knowledge.

4. International perspectives.

4.1. Emergence conditions.

Some characteristics of the system developed in France, inspired by the Hungarian program Kut Diak, can be used in other countries. The transposable characteristics are those related to the propagation of a new approach to sciences, to the setting up of a network linking young people amongst themselves and with the world of science and research. However one should not forget that this program was set up in a very particular French social and political context. These conditions of emergence cannot be reproduced and it is important to listen to social requests and to analyze which would be the optimal conditions for such a program, elsewhere in Europe. Politicians must be made aware of the stakes of such a program. To reaffirm the importance of investing money in sciences (research and formation) is a crucial long-term task that scientists must undertake. Should a political or social crisis occur we should dare to demand additional investments, even if these investments may seem superfluous in comparison to more concrete forms of actions. Indeed, our experience shows that side actions can tip up a situation. Politicians seldom measure the complex nature of the dynamic of social systems... scientists and in particular ecologists might help them to understand this complexity.

4.2. Create a basic network on a European scale rather than interconnected national network

Members of Science Academy are currently building a solid network, bridging high schools and universities. This is also true in Hungary, which is already ahead, this type of program having been initiated ten years ago. Extending this program to other European countries can be done by following two paths: connecting networks or designing a global network directly on a European scale. It would be useless to point out here the importance of students' mobility or to stress the success of exchange programs such as Erasmus. We should evaluate the potential of a program similar to Erasmus but focused on 15-18 year old students. A program which would go beyond mobility since it would put in contact young people eager to share a common passion, maintaining a nourished contact between various generations, in various countries. Bearing in mind the social dimension of scientific education, we can perceive the potential of such a European network.

The example of an "international high school campus" such as the one set up in Lyon since 1991, that gathers in the same building (symbolically placed where two rivers join) children from 6 to 18 years coming from over forty countries, reinforces these assumptions. Cohabitation of several languages, different geographic and social origins, in a context combining intellectual emulation with the will to encourage students to become more responsible for their actions (the management of the establishment is shared between students, teachers and administration) leads to top ranking scholar results. The children are motivated, share their knowledge, their cultures, learn how to respect each other, whatever their social or ethnic origin. Science is by definition international. Today it opens itself to young people; it must seize the opportunity to open internationally towards European youth.

Conclusion

The situation of French scientific education from primary school to high-school is neither brilliant nor catastrophic. Many difficulties remain on the pedagogic level. We suffer from too many students dropping out of the sciences and strong social inequalities in gaining access to high level studies. Major reforms should be undertaken. Facing this huge and difficult task, we choose targeted, inexpensive actions with a strong diffusion potential.

Amongst young people, fashions propagate quicker and quicker, with evolving communication technologies. We bet that Sciences could become a new craze which would diffuse suddenly among young people. We try this through Science Academy, with its provocative name, picked from a television program, the "Star Academy" transforming young people into stars through music and television. Our bet isn't very academic, but our world isn't either...

We wish this project to be followed up in the long run, and that possible social changes will be seriously studied. We must launch research programs studying how education can structure social relations between young people of the same age and social relations in our society at large. Young students, who know how to interact about scientific topics, may establish in the future specific social interactions... surely different from the interaction induced by a typical teacher/pupil relationship. →



FEBS Debate

(Continued..)

Reconsidering our educational programmes to favour interaction between young students and Science at a European scale could add a new profitable dimension of exchange and sharing between nations, of mutual enrichment for Europe. Perhaps we won't manage to fulfil all these objectives. The few young people already motivated in Hungary and now in France are fully determined to take over from us and to reach this objective.

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Opportunities

TWO PHD POSITIONS OFFERED INSTITUTO GULBENKIAN DE CIÊNCIA, PORTUGAL

A Marie Curie Excellence Team funded by the European Commission has been established at the Instituto Gulbenkian the Ciência to develop mathematical models for infectious diseases. The group, currently consisting of 12 researchers, intends to reinforce its modelling capacities through the recruitment of 2 postdoctoral researchers.

The positions are for two years.

Successful candidates should hold a PhD, demonstrate experience in mathematical, computational, statistical modelling or data analysis in population biology, and potential to develop one of the following lines of research:

- 1) Integration of within-host mechanisms (such as host immunity, parasite diversification and selection) into epidemiological models
- 2) Integration of demographic and geographic information into epidemiological models.

Overall, the team combines the analysis of biological and epidemiological data with mathematical modelling to achieve a better understanding of reinfection processes, with the ultimate goal of informing vaccine development and public health.

For further details visit www.igc.gulbenkian.pt/sites/ggomes

Deadline for applications: December 20, 2006, or until positions are filled.

The preferred starting date is April 1, 2007.

Applications, including research interests, CV, and two letters of reference should be sent to the contact below. Informal enquiries should be addressed to Gabriela Gomes (ggomes@igc.gulbenkian.pt).

Contact: Paula Macedo, Instituto Gulbenkian de Ciência, Apartado 14, 2781-901 Oeiras, Portugal, Email: paulamacedo@igc.gulbenkian.pt, Tel: 351-214-464-601.



Opportunities

13 OPEN PHD POSITIONS OFFERED

The Marie-Curie-Training Network BIOCONTROL announces BIOCONTROL is a highly interdisciplinary European network ((bio)physicists, biologists, (bio)chemists, surface chemists and computational biologists) aiming at controlling biological functions at, respectively on, bio-interfaces. The two major scientific objectives of BIOCONTROL are to:

- 1) Provide fundamental knowledge of the forces and molecular mechanisms that regulate the interactions and biological processes taking place in and around biological membranes.
- 2) Construct bio-mimetic surfaces and self-assembled structures that permit external control of biological and biotechnological processes, such as, cell adhesion and cell cycle regulation.

BIOCONTROL offers first class scientific and complementary training to coach 'life science' experts who learn to work across disciplines. BIOCONTROL expects high motivation to work on an interdisciplinary field, extraordinary communication skills and the readiness to work at different host institutions.

Please send you application (*by naming the position you are interested in*) by **November 15** to the network coordinator R. Willumeit: regine.willumeit@gkss.de (only email applications will be considered).

Starting date of the positions between 01.01.2007 and 01.04.2007 (duration initially limited to 3 years).

Note: Due to the strict regulations of the Marie-Curie-Training Networks – which aims at the mobility of people - only persons who do not have the citizenship of the supervising institutions can apply for the positions. For details **please contact regine.willumeit@gkss.de**

The open positions are in detail:

Topic1: Hydration and charge effects on membrane structure and interaction

Position WP1_1:

Place of work: Royal Institute of Technology (KTH), Department of Chemistry, Surface Chemistry in Stockholm, Sweden; frequent visits at SDU, Denmark. **Contact person:** Prof. Per Claesson (per.claesson@surfchem.kth.se)

Project description: The PhD-project will include direct measurements of interactions between lipid layers of relevance for biological membranes and aims at finding correlations between short-range interactions, hydration state of lipid layers and adsorption properties of peptides to lipid layers. A range of modern techniques will be employed.

Requirements: Completed undergraduate studies in the area of chemistry, biochemistry or physics. Good knowledge in physical chemistry and interest in experimental cross-disciplinary work.

Position WP1_2:

Place of work: University of Southern Denmark (SDU), Department of Physics and Chemistry, Odense, Denmark; frequent visits at KTH, Sweden. **Contact person:** Prof. Beate Kloesgen (kloesgen@memphys.sdu.dk)

Project description: The project will involve the application of a spectrum of diverse modern techniques for the study of hydration and charge effects as precondition/control tool for the interaction among model membranes or for the association of (macro)molecules to biointerfaces.

Requirements: Master degree in physics or physical chemistry; interest for basic biophysical studies is needed.

Topic2: Peptide interactions with bio-mimetic membranes

Position WP2_1:

Place of work: Ben Gurion University, Beer Sheva, Israel for 18 month and the University of Aarhus, Denmark, for 18 month. **Contact persons:** Prof. Raz Jelinek (razj@bgumail.bgu.ac.il) or Prof. Niels Chr. Nielsen (ncn@inano.dk)

Project description: The student will be working on biomimetic membranes. Research will be both fundamental as well as applied, and involve preparation and characterization using advanced spectroscopic and microscopic techniques, such as fluorescence spectroscopy and, in particular, liquid- and solid-state NMR spectroscopy.

Requirements: Master in either chemistry/biochemistry/biotechnology.



Opportunities

13 OPEN PHD POSITIONS OFFERED - CONTINUED...

Topic4: In silico investigation of peptide-membrane interactions

Position WP4_1:

Place of work: Tel-Aviv University, Israel **Contact person:** Prof. Nir Ben-Tal (bental@ashtoret.tau.ac.il)

Project description: This interdisciplinary research project involves the development of computational methodology for the study of peptide-membrane interaction, and the use of the new methodology in combination with existing methods to investigate selected antimicrobial, fusion and amyloidic peptides. The project will be conducted in close collaboration with some of the experimental members in the consortium, and includes visits in their labs.

Requirements: A university degree in biology, chemistry, physics or similar field, and the curiosity to understand the fundamentals of peptide-membrane energetics as well as the relevant biology.

Position WP4_2:

Place of work: GKSS Research Center Geesthacht, Geesthacht (near Hamburg), Germany, Frequent visits at the partner laboratory at Tel Aviv University, Israel. **Contact person:** PD Dr. Regine Willumeit (regine.willumeit@gkss.de)

Project description: In close collaboration with the Tel Aviv University the student will synthesize, characterize and study the interaction of computational predicted synthetic peptides with model membranes. Beside measuring the bacterial, cytotoxic and haemolytic activity the student will apply several scattering and spectroscopic techniques.

Requirements: University degree in biochemistry or biology with the capability to work at large scale research instrumentation.

Topic5: Fusion and domain formation in biomembranes

Position WP5_1:

Place of work: Paul Scherrer Institute, Villingen, Switzerland, for 18 month, afterwards at Niels Bohr Institute, Copenhagen, Denmark for 18 month. **Contact person:** Dr. Thomas Gutberlet (thomas.gutberlet@psi.ch) or Prof. Thomas Heimburg (theimbu@nbi.dk)

Project description: The project deals with the study of domain formation and fusion processes in biological model membrane systems. Main techniques to be used in this project involve x-ray and neutron scattering, fluorescence microscopy, AFM and calorimetry.

Requirements: University degree in physics, biophysics, biochemistry or chemistry with strong interest in physics of biomembranes.

Topic6: Interaction of cytotoxic peptide aggregates with the lipid membrane

Position WP6_1:

Place of work: Université Libre de Bruxelles, Brussels, Belgium for 18 month and University Louis Pasteur, Strasbourg, France for 18 month. **Contact person:** Prof. Jean-Marie Ruysschaert (jmruyss@ulb.ac.be) or Prof. Burkhard Bechinger (bechinger@chimie.u-strasbg.fr)

Project description: Structural investigation of the membrane interactions of cytotoxic peptide aggregates like Alzheimer peptides.

Requirements: University degree in chemistry, physics or biochemistry; interest in biophysical approaches (in particular NMR spectroscopy).

Topic7: Structure and translocation of peptide-DNA transfection complexes

Position WP7_1:

Place of work: University Louis Pasteur, Strasbourg, France for 24 month and Department of Crystallography, Birkbeck College, University of London, and Daresbury Laboratory, UK for 12 month. **Contact person:** Prof. Burkhard Bechinger (bechinger@chimie.u-strasbg.fr) or Prof. Bonnie Wallace (b.wallace@mail.cryst.bbk.ac.uk)

Project description: Investigation of the structural basis of the mechanism of transfection of DNA and siRNA for therapeutic approaches by using and developing new methodologies in synchrotron radiation circular dichroism (SRCD) or other novel spectroscopic techniques.

Requirements: Chemist, physicist or biochemist with interest in biophysical approaches in particular synchrotron CD and NMR spectroscopy.



Opportunities

13 OPEN PHD POSITIONS OFFERED - CONTINUED...

Topic8: Membrane active peptides as anticancer therapeutics

Position WP8_1:

Place of work: Institute of Biophysics and Nanosystems Research, Graz, Austria for 24 month and GKSS Research Center Geesthacht, Geesthacht (near Hamburg), Germany for 12 month. **Contact person:** Univ. Doz. Karl Lohner (karl.lohner@oeaw.ac.at) or PD Dr. Regine Willumeit (regine.willumeit@gkss.de)

Project description: The aim is to deliver essential information for the development of potent anticancer peptides. The candidate will elucidate the membrane composition of cancer cells, determine the phase behaviour of respective model membranes and their interaction with membrane-active peptides. This will be complemented by biological activity testing.

Requirements: University degree in biochemistry, biology or physics with a strong biophysical interest.

Topic9: Property-controlling enzymes at membrane interfaces

Position WP9_1:

Place of work: Stockholm University, Stockholm, Sweden for 24 month and Université Libre de Bruxelles, Brussels, Belgium for 12 month **Contact person:** Prof. Åke Wieslander (ake@dbb.su.se) or Prof. Jean-Marie Ruyschaert (jmruys@ulb.ac.be)

Project description: Control and regulation of membrane bilayer packing properties. We want to unravel how membrane interface enzymes sense bilayer properties and synthesize the proper membrane lipid constituents. These bilayer properties are essential for the function of many membrane proteins. The enzymes, at the peptide segment and fullsize protein levels, will be analyzed by a variety of biochemical (including mol. genetic), bioinformatic, and spectroscopic techniques.

Requirements:

The candidate should have a good background in chemistry, with focus on biochemistry. Experience in molecular biology is of high advantage.

Topic10: Self-assembly structures to control biomolecular function

Position WP10_1:

Place of work: Lund University, Sweden for 18 month and University of Southern Denmark, Odense, Denmark for 18 month. **Contact person:** Prof. Tommy Nylander (Tommy.Nylander@fkem1.lu.se) or Prof. Beate Kloesgen (kloesgen@memphys.sdu.dk) **Project description:** Modern structure analysis methods centred around transmission electron microscopy and X-ray and neutron diffraction will be applied to study new lipid based materials for controlled drug administration. Accomplishing methods: DSC, AFM, fluorescence microscopy.

Requirements: Master degree in physics or chemistry (with focus on physical chemistry) or biochemistry (focus on biophysical chemistry).

Topic11: Cell-to-bio-mimetic interface interactions

Position WP11_1:

Place of work: Malmö University (PhD in biomedical technology), Sweden (24 month) and GKSS Research Center Geesthacht, Germany (12 month) **Contact person:** Prof. Thomas Arnebrant (Thomas.Arnebrant@hs.mah.se) or PD Dr. Regine Willumeit (regine.willumeit@gkss.de) **Project description:** The aim of this PhD project is to monitor and control the cellular interaction with bio-mimetic interfaces (i) by characterising focal adhesion complexes of adherent eukaryotic cells by electrical impedance, ellipsometric, AFM and QCM measurements, (ii) by changing bio-mimetic bio-interfaces to control characteristics of focal adhesion complexes and (iii) by correlating characteristics of focal adhesions with metastatic potential of cancer cells and tissue-implant interactions.

Requirements: The candidate should have excellent basic education in chemistry or biochemistry. Knowledge in cell biology is of high advantage.

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WWW of upcoming events

What: 6th Louis Pasteur Conference on infectious diseases:
Shaping and subversion of the immune system by
microbes

When: November 15– 17, 2006

Where: Paris, France

For detailed information please see:

http://www.pasteur.fr/infosci/conf/sb/clp6/doc/affiche_web.pdf

What: "Radiation and Multidrug Resistance Mediated via the
Tumor Microenvironment"

When: February 12th - 13th

Where: Dresden, Germany

For detailed information please see:

<http://www.oncoray.de/>

What: "3rd Glycan Forum Berlin" - Glycobiotechnology: new
developments for medicine, pharmaceuticals and nutrition

When: February 22-23, 2007

Where: Berlin, Germany

For detailed information please see:

<http://www.glykostrukturfabrik.de>

What: 10th annual NSTI Nanotech 2007 and BioNano 2007

When: May 20-24, 2007

Where: California, USA

For detailed information please see:

<http://www.nsti.org/Nanotech2007>



32nd FEBS Congress
MOLECULAR MACHINES
July 7 - 12, 2007 Vienna, Austria

For detailed information please see:

<http://www.febs2007.org>

What: 12th European Conference on the Spectroscopy of
Biological Molecules

When: September 1-6 2007

Where: Bobigny, France.

For detailed information please see:

<http://www.ecsbm.eu>

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