

ESSEC-sanofi-aventis Chair of Therapeutic Innovation

PROGRAM



Training the future decision makers
of the health industry





Grégoire Korgiatov/Rapho



These sacred domains, called laboratories, are the temples of the future. Here, humanity will learn to read progress and individual harmony in the works of nature, while humanity's own works are all too often those of barbarism, fanaticism and destruction."

Louis Pasteur, 1881.

Content

- [3](#) Foreword
- [4](#) Message from sanofi-aventis
- [5](#) About ESSEC Business School
- [6](#) The ESSEC Institute of Health Management
- [7](#) Chair Faculty
- [8](#) Chair Seminars
- [9](#) Some Guest Lecturers
- [10](#) Student Profiles
- [11](#) Alumni Careers
- [12](#) Areas of Research

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Foreword



Gregory Katz, PhD, PharmD, MBA
ESSEC-sanofi-aventis Chaired Professor
ESSEC Business School

Drug companies are undergoing substantial mutations. The weight of healthcare expenditure, the rapidly expanding generics market and new regulatory requirements are deeply impacting the dynamics of drug innovation. Besides, biomedical progress is paving the way for increasingly targeted treatments, vaccines, new diagnostic technologies and cell therapies for which the economic models remain to be invented. More than ever, therapeutic innovation has become the core challenge for biopharmaceutical companies: how can it be stimulated, marketed and its benefits distributed equitably and extensively throughout society?

The ESSEC-sanofi-aventis Chair of Therapeutic Innovation aims to meet two objectives: 1/ train the future players of the health industry in innovation management, 2/ develop strategic analysis to convert therapeutic advancement into economic and social progress. The Chair welcomes each year international MBA and post-graduate students from a wide variety of backgrounds, wishing to direct their career towards the healthcare sector. Besides its teaching activities, the Chair conducts socio-economic studies and sets out to create a stimulating laboratory of ideas, a space for free and forward thinking on the managerial challenges of the drug industry.





G rard Uf ras/Rapho

About sanofi-aventis

N 1 in Europe and in France, sanofi-aventis, a world leader in the pharmaceutical industry, present in more than 100 countries, adapts its development model to the world's emerging human and economic problems. Sanofi-aventis invested 4,5 billion euros in 2007 (16 % of turnover) to discover and develop therapeutic solutions in the Groups' key areas of expertise: thrombosis, cardiovascular diseases, diabetes, vaccines, oncology, central nervous disorders and internal medicine.

www.sanofi-aventis.com

Message from sanofi-aventis



Christian Lajoux,
Chief Executive Officer,
sanofi-aventis, France

Drugs are at the heart of a triple alliance: health, society, and business. Research is the condition and the driver of development, whose end purpose is to promote life and prevent disease. The approaches and issues that control the balances in biopharmaceutical corporations are evolving and are often complex. They raise questions that reach beyond technology and expert knowledge. Number one in Europe, sanofi-aventis tackles these challenges involving society, research, and market access. While developments in biomedicine offer new therapeutic hopes, they also engender new economic and public health debates.

The ESSEC-sanofi-aventis Chair offers a space for dialogue and training to structure these debates, cool passions, and enables discussions to serve economic and social progress. The future managers of the pharmaceutical industry, with their diverse training backgrounds and geographic origins, should find the tools needed to decipher, interpret and act in a world that is ours for the making. So it is with a radically forward-thinking approach and a break with conventional knowledge that the know-how and reputation of ESSEC and sanofi-aventis join forces. By creating this Chair, our main goal is to actively participate in society's debate over innovation and progress with regards to health, bringing human values back to the core of technological and economic issues.

About ESSEC Business School

ESSEC Business School is a pioneer by nature, tirelessly seeking out new and innovative management models based upon its European roots and humanist outlook.

Its teaching approach favors independent thought and is characterized by the varied, comprehensive business course offer. The incorporation of professional and international experience encourages students' maturity, whilst a pronounced geopolitical culture and the spirit of enterprise are shared throughout the school community. These combined qualities enable graduates of ESSEC to become successful leaders in their professional life.

Thirty-five programs at Initial and Executive Education levels provide students and managers with the opportunity not only to acquire new ideas and concepts, but also to put forward their own and anticipate the consequences of their decisions. This is achieved respectful of the values that make ESSEC a business school with a difference: Humanism, Innovation, Responsibility, Diversity and Excellence.

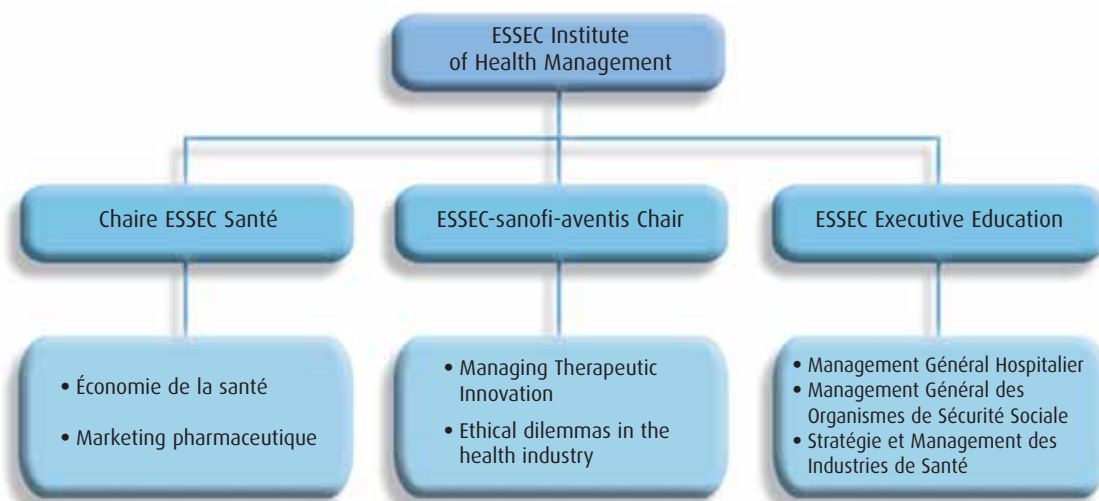
Key figures	3 900	full-time students and 6 000 executives enrolled in programs each year
	125	professors (90% hold a Ph.D. or Doctorate, 43% are qualified to supervise research, and 40% are of international background)
	299	articles and 105 books published over the past 5 years
	35	programs
	90	nationalities present on 3 campuses
	15	double degree agreements
	118	partner universities in 30 countries make up a global exchange network
	280	partner companies involved in educational programs and recruitment
	32 000	Alumni and 42 international Alumni offices in the world's major capital cities
	100+	student societies - 3 halls of residence - 880 rooms



The ESSEC Institute of Health Management

The ESSEC-sanofi-aventis Chair is part of the ESSEC Health Management Institute, alongside the *Chaire Santé* and the Executive Education programs dedicated to the health sector.

A Chair is a center of academic excellence supported by a public or private partner. Each Chair is managed by an ESSEC professor, who is in charge of coordinating the research and educational program. Courses and seminars allow students to study an academic field in greater depth or explore the full complexity of a business sector. The ESSEC Chairs are part of the MBA program curriculum. Every year they each admit around twenty high-potential students, whose selection is based on a written application and an interview. Through the privileged relationships between partner companies, professors and students, the Chairs represent a linchpin for leading intellectual and business communities.



This Chair provided the greatest courses I have ever taken.
It also provides tons of opportunities for students to find jobs.”

Zeyu LI, Bachelor of Business Administration, Nanjing University

Chair Faculty



Gregory KATZ, PhD, PharmD, MBA
Chaired Professor

Gregory Katz is associate Professor at ESSEC Business School (Paris-Singapore) and ESSEC-sanofi-aventis Chaired Professor of Therapeutic Innovation. He holds a doctorate of philosophy, a doctorate of biopharmaceutical sciences and a MBA. His research activities focus on the socio-economic impact of stem cell research, biobanking, pharmacogenomics and genetic testing. In 2002, he published *The Cipher of Life: Reconciling Genetics & Humanism* (Seuil). Prefaced by Elie Wiesel, a revised edition is forthcoming (Yale University Press). Visiting professor at INSEAD (Singapore) and at Bocconi University SDA (Milan), he was deputy director of the Bioethics Advisory Committee of the French Israelite Consistory. He was the co-founder and the vice president of the Eurocord Association, an international platform specialized on cord blood stem cells research. He is a member of several editorial boards of academic journals including *Philosophy of Management* and the *International Journal of Pharmaceutical and Healthcare Marketing*. He was the 2008 Laureate of the San Benedetto Prize awarded by the Fondazione Sublacense for his work on bioethics and humanism.



Antonia MILLS, BSc, MiM
Research engineer

Antonia Mills is a research engineer in the ESSEC-sanofi-aventis Chair. She holds a Bachelor of Science in Biology from London Imperial College and a Masters in International Business and Strategy from ESSEC Business School. Before joining the Chair, Antonia worked for sanofi-aventis in Global Marketing. Her research in the Chair focuses on the industrial development of genetic testing, and its socio-economic impact. She is also conducting research on the economic models of umbilical cord blood banks.



Denis Felix/Corbis

If you are interested in a career in the health industry, this Chair is a must!"

Harald van AUBEL, MSc International Economics, Rotterdam School of Economics

Chair Seminars

The two Chair seminars are held from January to March. Their duration is 90 hours (3 credits), fully integrated into the ESSEC curriculum. The sessions are taught in English and coordinated by Professor Katz. Leading international guest lecturers from a wide range of backgrounds tackle students with the ethical, scientific and economic issues of the biopharmaceutical industry.

Managing Therapeutic Innovation (60 hours/2 credits)

This seminar enables students to decipher the mutations and the strategic challenges of the healthcare industry. Throughout the sessions, a wide variety of themes are explored: regulatory challenges, life cycle management, portfolio valorisation, generic and vaccine markets, marketing development, institutional communication, niche market strategies, animal testing, clinical trial management, pharmacogenomic-derived products, biobanking, stem cell research, etc. International guest speakers will share their professional experience with participants. Sanofi-aventis, as well as other companies, are invited to contribute to the seminars (Amgen, Roche, Novartis, Pfizer, GlaxoSmithKline, Genzyme, etc.). Teaching dynamics and the seminar's international dimension create an outstanding environment for the Chair participants. Course evaluation is based on case studies, class participation, a mid-term and a final exam, and a group work project.

Ethical Dilemmas in the Health Industry (30 hours/1 credit)

This seminar analyses the ethical tensions of the healthcare sector and their socio-economic impact. It attempts to identify the pathologies of power as well as the methods of converting scientific advancement into social progress. Sessions deal with a wide variety of topics including: human genome patentability, genetic tests and health insurance companies, biobanking and regenerative medicine, innovation management and the precautionary principle, orphan drugs and rare diseases, access to treatment in developing countries, end of life and palliative care, etc. All these topics open a dialogue between conviction and responsibility, performance and risk, price and dignity. The teaching approach is based on case studies, role plays, videos, and extensive class debates. The international experience of lecturers aims at broadening the scope of the debate beyond cultural differences. Course evaluation is based on class participation, a book review, a group presentation, a mid-term and a final exam.



The tremendous richness of the seminars is mainly due to the wide variety of lecturers and the quality of the debates among participants, providing me with a radically new view of the health industry."

Baolei HAN, Bachelor of Medicine and Health Administration, Beijing University



Some Guest Lecturers

- > **Bill Abernethy**, Director, Global Marketing, Genzyme
- > **Fidah Alsagoff**, Director, Corporate Development, Singapore Health Services
- > **Laurent Bertin**, Vice-President, Prospective and Portfolio Management, sanofi-aventis
- > **Jean-Claude Ameisen**, Director of the INSERM Ethics Committee
- > **Alan Colman**, Chief Executive Officer, Embryonic Stem Cell International
- > **Marc de Garidel**, Vice-President Southwest Europe, Amgen International
- > **Hervé Gisserot**, Chief Executive Officer, GlaxoSmithKline France
- > **Marlene Haffner**, Director, Office of Orphan Products Development, FDA
- > **Damian Hine**, Professor of Management, University of Queensland, Australia
- > **Michel Jean**, Chairman of the International Bioethics Committee, UNESCO
- > **Claudio Jommi**, Head of the Osservatorio Farmaci, Bocconi University
- > **Axel Kahn**, Dean of Paris-Descartes University
- > **Evelyn Fox Keller**, Professor of epistemology, Massachusetts Institute of Technology
- > **Philippe Kourilsky**, Professor at the Collège de France
- > **Christian Lajoux**, Chief Executive Officer, sanofi-aventis France ; President of LEEM
- > **Yann Le Cam**, Chief Executive Officer of Eurordis, Vice Chair of the COMP at the EMEA
- > **Pierre Le Sourd**, Chief Executive Officer, Bristol-Myers Squibb France
- > **Thomas London**, Associate Director, McKinsey
- > **Thomas Lönngren**, President of the European Medicine Agency
- > **Alex Matter**, Director of the Novartis Institute of Tropical Disease
- > **Luc Montagnier**, President of the World Foundation for AIDS Research & Prevention
- > **Stuart Schweitzer**, Professor of Health Economics, UCLA School of Public Health
- > **Françoise Simon**, Professor of Marketing, Columbia University
- > **Tommy Tierney**, Vice-President, General Manager, Emerging markets, Genzyme
- > **Fred Turner**, Chairman & Chief Executive Officer, Genzyme, France
- > **Willem Verhoofstad**, Head of Project Management, Roche
- > **Christophe Weber**, Senior Vice-President, GlaxoSmithKline
- > **Jean Zetlaoui**, Vice-President, Portfolio Value Development, sanofi-aventis

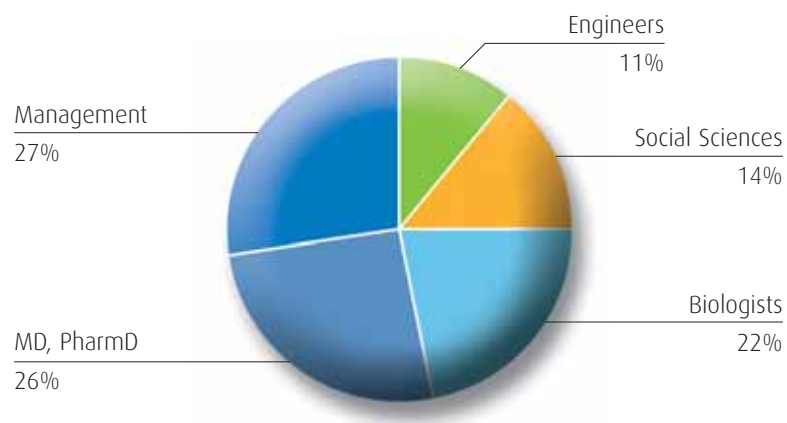
The lively class discussions with industry experts were captivating and immensely insightful. Overall an incredibly rich learning experience that is essential for anyone who is interested in a high level decision-making role in the healthcare sector."

Tuan DUC PHAM, Bachelor of Science in Economics, Toronto University, Canada



Student Profiles

The Chair selects students with strong potential who are highly motivated by a career in the healthcare industry. The global span the Chair's curriculum makes it attractive to students with international experience. A scientific background is not a prerequisite for admission to the Chair. Admissions are open to all students from the ESSEC MBA program, the specialized masters, the doctorate program, as well as foreign students from university exchange programs.



Through lively, invigorating debates with the lecturers, the Chair course was among the most exciting of the whole MBA program."

Verena WEBER, Bachelor of Arts and Intercultural Qualification, Mannheim University

If I were to summarize the Chair seminars, I would say: I learnt and, moreover, I understood. Beyond facts and figures, I discovered a highly innovative industry. The Chair is definitely worth it, from an academic, professional and personal point of view."

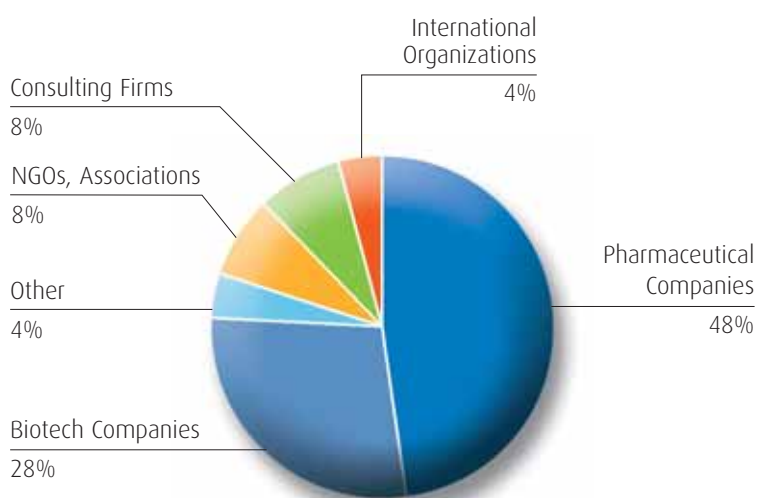
Sophia LAHLOU, Bachelor of Biological Sciences, Laval University

Alumni Careers

Chair alumni often pursue careers in the pharmaceutical and biotech industries. Some graduates go on to work for consulting firms, NGOs, patient associations and international organizations. Drug companies include: sanofi-aventis, GlaxoSmithKline, Novartis, Roche, Bristol-Myers Squibb, Merck Sharp & Dohme-Chibret, Pfizer, Baxter, AstraZeneca, Jansen-Cilag, Amgen, Genzyme, etc.

Most of the Chair graduates gain positions in the following areas: marketing, commercial operations, production, medical and regulatory affairs, economic and governmental affairs, communication, project management, legal affairs, sustainable development, finance, human resources, etc.

Other companies and organizations include: GEHealthcare, McKinsey, Arthur D. Little, IMS Health, Ernst&Young, SG Asset Management, World Health Organisation, Ministère de la Santé, Ministère de la Recherche, Assistance publique, Médecins du monde, Care, etc.



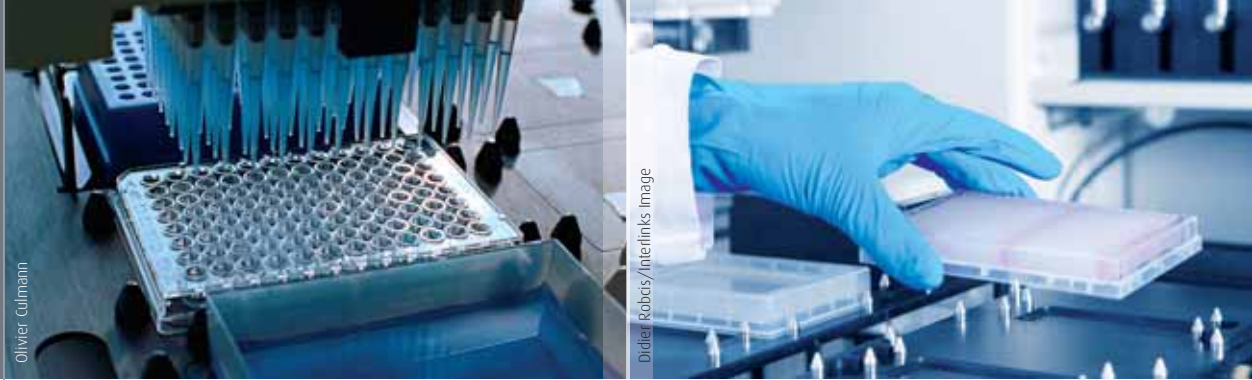
When I applied for a position in one of the leading healthcare PR companies in Asia, the Vice-President was very impressed by my resume. I think the Chair was a precious asset that helped me to be appointed as Associate Account Executive."

Theresa LEE, Bachelor of Humanities and Foreign Literature, Yonsei University, Seoul



The Chair is not only an outstanding learning experience, it is also a tremendous opportunity to build a professional network in the healthcare sector."

Hiroshi OTAKE, Doctor of Medicine, Tokyo University; MBA, Chicago Graduate School of Business



Areas of Research

1/ Regenerative medicine and umbilical stem cell banking

Umbilical cord blood stem cells offer major therapeutic progress in the treatment of blood disorders, and promising avenues for research in regenerative medicine. The Chair is conducting a survey on the various models for cord blood biobanks worldwide, analysing their economic and medical impact on healthcare systems. On an organisational level, the Chair seeks to evaluate the structure of a cord blood collection network in maternities, whilst optimising existing storage platforms. The study focuses particularly on allogeneic and hybrid models that guarantee equal access to biosources, regardless of the patient's social or ethnic background. The Chair is also conducting a European survey on pregnant women's attitude towards cord blood stem cell storage, for scientific or therapeutic purposes. This survey is being conducted in France, the United-Kingdom, Spain and Italy.

2/ Valorization of pharmaceutical innovation

Research conducted by Prof. Gérard de Pourville

In most developed countries that benefit from broad social cover, there is growing discrepancy between healthcare expenditures and public financial capacities. New solutions need to be thought up in order to manage tensions between, on the one hand, the public powers' concern to maintain the solvency of a universal health insurance system that guarantees a high level of healthcare and access to therapeutic innovation for the wider population, and on the other hand, the continuation of an industrial innovation dynamic requiring increasing means. The research program consists in analyzing the processes and payers' decision criteria regarding valorization of pharmaceutical innovation as well as pricing and reimbursement decisions. This analysis is conducted on six major European markets: France, Germany, Italy, Spain, Sweden and the United-Kingdom.

3/ Pharmacogenomics and genetic testing

Since the sequencing of the human genome, the development of genetic tests has broadened the horizon for pharmacogenomics. The economic impact on traditional pharmaceutical markets is expected to be considerable, suggesting the emergence of new types of blockbusters, new approaches for valorization and public healthcare coverage. The economic model for personalized medicine, adapted to the genetic profile of a group of patients, should enable the marketing of targeted drugs, with significantly improved safety/efficacy ratios compared with reference treatments. The Chair studies the economic viability of such a model for industrial players and its impact for health authorities. A detailed analysis of filed patents as well as ongoing clinical trials involving gene markers suggests the emergence of a new market dynamic. The Chair also studies marketing implications linked to the online commercialization of genetic tests, the digitalization of personal medical records, as well as the use of this data by insurance companies or employers.