# SOPHIA ANTIPOLIS FOUNDATION

# RESEARCH FOUNDATION FOR LIFE MODELLING AND SIMULATION

*Institute for Life Modelling and Simulation*
*ILMS*

# RESEARCH FOUNDATION FOR LIFE MODELLING AND SIMULATION

## Objectives of the Foundation

The objective of the Research Foundation for Life Modelling and Simulation is to develop, in Sophia Antipolis, the Institute of Life Modelling and Simulation, destined to be a centre for international research, a think tank, a conference centre, a training centre for applying mathematics, IT and automatic control engineering to the complexity of living organisms, and to life modelling and simulation.

## Missions

- Become a place of convergence for biologists, doctors, mathematicians, informaticians and researchers of all origins concerned by the complexity of living organisms.
- Contribute to the development of this new discipline and to the development of concepts, of systems, software for the modelling and simulation of living organisms, supported by a platform incorporating the most advanced IT equipment.
- Collaborate with other large centres studying complexity and IT models – in particular in Asia – through joint activities, inviting researchers, and joint think tank activities.
- Build partnerships with scientific institutions, associations and foundations, with biotechnology and pharmaceutical companies, in order to explore with users the range of applications of complexity sciences for biology and medicine.
- Actively and regularly develop information campaigns and training by organising in Sophia Antipolis summer schools, congresses, seminars and regular international conferences.
- Award each year the Sophia Prize, a prestigious international prize for science, for the work of a researcher in the field of complexity, modelling and simulation of life-related systems.

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# RESEARCH FOUNDATION FOR LIFE MODELLING AND SIMULATION

## Setting up the Foundation

The project to create a Research Foundation for Life Modelling and Simulation (**FRMSV**) is the result of discussions over several years run by the founders from various backgrounds with complementary approaches: **Jérôme Chailloux** (CERTICS), **Michel Cosnard** (INRIA Sophia Antipolis), **Michel Lazdunski** (CNRS Sophia Antipolis), **Marc Vasseur** (Serono France Holding)1. These people, along with **Roselyne Koskas** (Sophia Antipolis Foundation) initially met at the Sophia Complexity Association whose mission is to set up the **FRMSV**.

The **FRMSV** will be under the aegis of the Sophia Antipolis Foundation, recognised for its public utility, created and presided over by **Pierre Laffitte**, Senator of the Alpes Maritimes.

The Sophia Antipolis Foundation is authorised to act as an umbrella organisation for foundations that are said "under aegis". Preparation for the Agreement linking the Research Foundation for Life Modelling and Simulation is underway, and the signing of this convention is planned for November. On this date, the Research Foundation for Life Modelling and Simulation will officially come into being.

In order to avoid any delay to the important stages for setting up the **FRMSV**, it has been decided that the funds gathered (donations and government aid) will be managed temporarily by the Sophia Antipolis Foundation in a special account. These funds will then be transferred to the account of the **FRMSV** and managed in compliance with the applicable rules and regulations for foundations under the aegis of another organisation.

During this transitional period, while the **FRMSV** is being set up, it will be run by an Executive Committee consisting of:

| | |
|---|---|
| **Jérôme Chailloux** | CERTICS. |
| **Michel Cosnard** | INRIA Sophia Antipolis. |
| **Michel Lazdunski** | CNRS Sophia Antipolis. |
| **Marc Vasseur** | Serono France Holding. |

[1] The CVs of personnalities cited in the text are in the annexe

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# Governing bodies of the Foundation

The **FRMSV** will be managed by a Board of Directors with 11 members, assisted by a Scientific Council. The **FRMSV** will also be supported by a Committee of Honour, comprising prominent personalities who will give their patronage to this project.

## Board of Directors

The Board of Directors of the **FRMSV** will comprise 11 members. It will include the current members of the Executive Committee:

| | |
|---|---|
| **Jérôme Chailloux** | CERTICS. |
| **Michel Cosnard** | INRIA Sophia Antipolis. |
| **Michel Lazdunski** | CNRS Sophia Antipolis. |
| **Marc Vasseur** | Serono France Holding. |

The President of the Sophia Antipolis Foundation, Mr. **Pierre Laffitte** is an ex-officio member of this Council.

## Scientific Council

The scientific council presided over by Michel Lazdunski, helps the Board of Directors and will comprise at least 8 scientific personalities. The Council currently comprises:

| | |
|---|---|
| **Gérard Berry** | Esterel Technologies. |
| **Jacques Demongeot** | Laboratoire TIMC, CNRS. |
| **Gérard Huet** | INRIA. |

## Committee of Honour

The first members of the Committee of Honour are currently:

| | |
|---|---|
| **Georges Charpak** | Nobel Prize for Physics. |
| **François Gros** | Permanent Honorary Secretary of the Academy of Sciences. |
| **Pierre Laffitte** | Senator of the Alpes Maritimes, President of the Sophia Antipolis Foundation. |
| **Jean-Marie Lehn** | Nobel Prize for Chemistry. |
| **Noëlle Lenoir** | Ex-minister, Member of the Council of State. |
| **Joël de Rosnay** | President of Biotics International |
| **Gérard Worms** | Manager-shareholder of Rothschild & Co. |

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# RESEARCH FOUNDATION FOR LIFE MODELLING AND SIMULATION

## Foremost Business Partners:

### IBM France

IBM France, as part of the IBM Life Science project is a founding partner of the **FRMSV**. IBM Life Sciences is the branch of IBM in charge of providing solutions in the biotechnology, pharmaceutical and health fields. Supported by the IBM research centre, in Europe, in the United States and in Asia, and the strength of IBM corporate, IBM Life Sciences is the best partner both in terms of hardware (Linux farms, clusters, grid etc.) and in terms of software solutions to build the basis of an exceptional platform, a showcase for the most advanced technology for Life Sciences.

IBM is providing the **FRMSV** with financial assistance and equipment, software, technical support as well as collaboration of its best research centres.

## Dassault Systèmes

Dassault Systèmes is also a founding partner of the **FRMSV.** Dassault Systèmes is developing the CATIA and ENOVIA software suites, which are the most advanced systems in terms of computer aided design, simulation, integration and knowledge management.
Certain aspects of this software have already been used for one-off applications to resolve biological problems (mapping of the brain, hair model, surgical implants etc.).

Dassault Systèmes is donating the CATIA software suite to the **FRMSV** for 18 computer stations, as well as maintenance for 5 years.

### Other partners

The **FRMSV** is having talks with the main French bioinformatics companies to attract more support and pool research.

Among others, GenoMining is donating its biological, genomic and proteomic data base analysis software to the **FRMSV**. GenoMining is specialised in the discovery and interpretation of biological data and has actively contributed to the Décrypthon project.

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# RESEARCH FOUNDATION FOR LIFE MODELLING AND SIMULATION

## Resources:

- The **FRMSV** will be financed by capital and recurrent donations. In order to ensure both the flexibility and the perennial nature of the Foundation, it is intended that the capital be consumable to a maximum of 50% and non-consumable for the remaining 50% (see budget page 24).

- Donations from companies (financial support and help in kind).

- Additional **FRMSV** capital from government aid (Law of 1st August 2003).

- Donations from individuals (a donation campaign and request for tax reduction is underway, in compliance with the terms of the Law of 1st August 2003).

- Personnel will be made available through secondment agreements or detached by large research organisations (creation of partnerships are underway with the CNRS, INSERM, INRIA, CEA, INRA etc.).

- European and international financing through research programmes, revenue from research partnerships with companies and other entities.

- Revenue from the organisation of summer schools, congresses, seminars, professional training and a whole range of events.

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## Operations:

- A balance will be kept between a limited number of residents and temporary researchers. The resident/temporary ratio of researchers should be around 1/3. Such a rate of visitors is essential to guarantee a high level of excellence, and the creativity and dynamism of the **FRMSV**.

- Residents will typically be scientists on a secondment or sent to the **FRMSV** by national or international research organisations. They are there to supervise the research project and keep the scientific research on track. Residents will be on secondment for a period of 4 to 6 years.

- Temporary researchers will typically be scientific personalities from France and abroad will stay for between 3 to 18 months to carry out a research study.

- Temporary personnel will be offered attractive remuneration and working conditions (grant/salary) that compete with equivalent offers in the United States and Asia, in order to attract and pick out the best.

- The themes to be dealt with as part of the research projects will be decided with the aid of the scientific council and the resident personnel. A preference for research into the neuromuscular system and/or the epidermic system is already being considered.

- The **FRMSV** will have a full administrative and technical staff (15-20 employees), including an office of 2 to 3 people to manage fund raising campaigns, and a high level communication team to market the activities of the **FRMSV** and push its role as showcase for the most advanced technology.

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# RESEARCH FOUNDATION FOR LIFE MODELLING AND SIMULATION

## Why create life models and simulations?

- The world of biological and medical science is more and more buried beneath huge quantities of data that cannot be exploited because of the sheer quantity and variety of it.

- The advent of IT and a reduction in technological costs have opened the way up to an era of biology on a large scale. The human genome has been fully sequenced and it is now possible to analyse it in several days. New technological tools and new machines appear every day enabling parallel molecular analysis on a large scale.

- The challenge today is to create a new science which builds this information into models to enable life modelling and simulation – both normal and pathological – from the molecule to the organism via the cellular and physiological levels.

- In terms of application, these data integration systems, semantic analysis, modelling and experimental simulation *in silico* are today essential both for fundamental and pharmaceutical research for predictive medicine, environmental research and biometrics.

- This science of complexity of living systems is a recent field that is growing rapidly. It is referred to under a variety names: "*computational biology*" "*systems biology*", "*integrative biology*", "*systemic biology*".

**2005-2010 WILL HERALD A FUNDAMENTAL CHANGE IN PARADIGM WITH THE APPEARANCE OF LIFE MODELS AND SIMULATION SYSTEMS MAKING POSSIBLE COMPUTER ASSISTED EXPERIMENTS FOR BIOLOGICAL, MEDICAL AND PHARMACEUTICAL RESEARCH.**

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# RESEARCH FOUNDATION FOR LIFE MODELLING AND SIMULATION

The creation of the Research Foundation for Life Modelling and Simulation is part of a global scientific movement that is in full swing.
It is essential that initiatives geared towards these issues are set up rapidly in France in order to become a world centre of excellence in the field, taking advantage of mathematical, IT and biological skills of the highest level in France.

## Other initiatives on model creation and simulation of living organisms in the world

- Santa Fe Institute for complexity studies

  The forerunner in the field of complexity: a multidisciplinary institute founded in 1984 to study biological, physical and economic systems with an approach using mathematics of complexity and chaos.

- Institute for Systems Biology (Seattle)

  Founded in 2001, its self-proclaimed mission is to "revolutionise" biology through the modelling and development of *in silico* systems, with a view to applying it to the development of predictive, preventative and personalised medicine.

- Numerous institutions and academic networks

  CNRS, Action sur la Complexité, BioPathways Consortium, GO Consortium, SystemsX in Switzerland, numerous institutes with specialist departments in India, Japan, China, Singapore, etc.

- Specialised start-ups

  Entelos, Gene Network Science, Ingenuity, RealTwo… for example, which develop software for life modelling and simulation.

- Large companies

  IBM, IBM Life Sciences, HP, SUN etc.

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# ANNEXE 1

# CV

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# Jérôme CHAILLOUX

Jérôme Chailloux was born on 20th October 1949 in Créteil.

Until 1980, Jérôme Chailloux was a student then lecturer-researcher at the laboratory of Artificial Intelligence at the University of Paris 8 in Vincennes.

From 1980 to 1987, Jérôme Chailloux worked at INRIA as a researcher then project leader, whilst occupying a number of teaching positions (École Polytechnique, CERICS). He works in the areas of automatic VLSI circuit design, software engineering and knowledge-based systems, and is the main inventor and developer of the programming language Le-Lisp, specialising in artificial intelligence.

From 1987 to 1995, Jérôme Chailloux co-founded the second subsidiary of INRIA, called ILOG, taking on the roles of Chief Scientific Officer and director. ILOG is company listed on the Nouveau Marché (Paris) and NASDAQ stock exchanges. It is a world leader in the production of software components in the fields of optimisation, decision aid and visualisation.

From 1995 to 2001, he was Chief Information Officer of the genomics company GENSET, listed on the Nouveau Marché and NASDAQ stock exchanges. He decides upon strategy, implements IT and bio-informatics resources and leads a team of over fifty information scientists and bioinformaticians. He is also very much involved in the WEB community.

Up till 1999, he was a member of the INRIA evaluation committee, responsible for assessing research teams and scientific personnel, and preparing work of the scientific council in particular by defining the direction of the Institute's activities.

Up till 2000, he was a member of the Co-ordination Committee for Science and Information Technology and Communication of the National Ministry for Education, Research and Technology.

He is president of the Sophia Complexity association, director of the companies Mauna Kea Technologies and Chiasma, a member of the supervisory board of Evologic, partner in the investment fund of The Hyper Company, scientific adviser for Genclis, the Thrombosis Research Institute and manager of the consultancy firm CERTICS.

# Michel COSNARD

Michel Cosnard was born in Grenoble on 9th July 1952. He qualified in Computer Science and Applied Mathematics from ENSIMAG (first in his year), and obtained a Masters degree in Applied Mathematics from Cornell University (USA) and his Doctorate in Information Science from the University of Grenoble in 1975 and 1983 respectively.

In 1979, he was recruited by the French National Scientific Research Centre (CNRS). In 1987, he became IT Professor at the École Normale Supérieure in Lyon where he set up the Laboratoire d'Informatique du Parallélisme (LIP) of which was director until August 1997. From September 1997 to December 2000, Michel Cosnard was director of the Lorraine region INRIA unit and of LORIA (Lorraine region research laboratory in IT and its applications). In June 2001, he was appointed director of the INRIA research unit in Sophia Antipolis and made Professor of the University of Nice – Sophia Antipolis in September 2002. He has been a member of the INRIA management committee since 1997.

From 1989 to 1995, he was Chairman of the IFIP Working Group WG10.3 on Parallel Processing, of which he is still a member, and is also a member of IFIP Working Group WG10.6 on Neural Networks. He is a member of the editorial committee of several journals (IEEE TPDS, Parallel Computing, Mathematical Systems Theory…) and Editor of the magazine Parallel Processing Letters. He takes part in several Laboratory Scientific Committees and the Scientific Councils of ORAP and ESIEE. In February 2001, he was appointed Director of the Concerted Incentive Action on "Globalisation of IT Resources and Data (GRID)" by the Ministry of Research.

From September 1993 to September 1995, he was Deputy Director of the Information Science and Technology department at MESR (DSPT 4). In January 1996, he was appointed president of the GE4 experts group.

His fields of research are design and analysis of parallel algorithms, grid computing, and complexity of automaton and neural networks. He had published over 100 papers in these fields.

In 1994, he received a prize from the Academy of Sciences. In 1995, he was awarded the Sliver Core from IFIP and in 2003 the Charles Babbage Award from the Institute of Electrical and Electronics Engineers Computer Society.

# Michel LAZDUNSKI

Michel Lazdunski, Chemical Engineer, Ph.D., Doctor of Science – Professor at the Institut Universitaire de France (1991-) – Professor of Pharmacology at the Faculty of Medicine at the University of Nice Sophia Antipolis.

Founder and Director of the Biochemistry Centre of the CNRS in Nice (1971-1989), then of the Molecular and Cellular Pharmacology Institute of the CNRS in Sophia Antipolis (1989-2003).

He is or has been a member of various charity Foundations, numerous national Commissions of the CNRS, of INSERM, of the Board (or National Board) of Universities, of the Research Ministry and/or National Education Ministry.

He has been a member of the Scientific Board of the CNRS, of the Board of the European Molecular Biology Organisation (EMBO).

He has been president of numerous committees or national and international Boards including recently the National Concerted Action board for "Young Researchers", the National Coordination Commission for Life Sciences, Human Capital and Mobility Committee of the European Union for Life Sciences.

He is currently a member of the Board of the CNRS and of the Scientific and Strategic Steering Committee of the Pasteur Institute.

He has received many national and international awards including recently the prize awarded by the Foundation for Medical Research and the CNRS Gold Medal. He is a member of the Academy of Sciences, of the Royal Academy of Medecine (Belgium), and of the Academia Europae.

# Marc VASSEUR

Marc Vasseur, PhD, professor of Virology and Molecular Biology, has been a researcher at the Institute of physico-chemical biology (1972-1975), at the Cancer Research Institute (1975-1979) at the Pasteur Institute (1980-1987), and manager of the molecular virology laboratory at the University of Paris 7 (1987-1991). Marc Vasseur was Biological Research Manager at L'Oréal (1990-1992), and at the same time he turned towards more entrepreneurial activities creating the company Genset in 1989.

Genset has rapidly become the biggest French biotechnology company (with many subsidiaries in the USA and in Asia). It is the world leader in the field of sequencing and human genome analysis applied to the discovery of new lines of therapeutic treatment. Genset was the first company to be listed on the stock exchange - in 1996 – simultaneously on the NASDAQ in New York and the Paris Nouveau Marché.

In 2002, Genset was bought out by Serono (Geneva) following a friendly takeover approved by both companies. After this operation, Marc Vasseur became the chairman of Serono France Holding, which is the structure that carried out this takeover bid.

Apart from these activities, Marc Vasseur is involved in creating a number of companies for which he has played the role of ''business angel'', both in France and abroad. He has also placed money in investment funds in the high-tech sector.

Marc Vasseur has also worked on numerous projects with China, Singapore and Japan, both in education/research and business creation and industrial development projects. He is notably the founder and chairman of the company Molecular Acupuncture based in Singapore.

Marc Vasseur is now the chairman of Serono France Holding, director of Pasteur Mediavita, of LMD Pharmacognosie, a board member of Genethon, and Vice-President of France Biotech…

Marc Vasseur is also the author of fifty scientific publications and numerous patents. He is co-author of ''Genset, case study'', Harvard Business School, and author of the book ''Virus oncogènes et biologie moléculaire du cancer'' (''Oncogene viruses and the molecular biology of cancer), Éditions Hermann, Paris, 1990.

# Scientific Council

The Scientific Council is presided over by Professor Michel Lazdunski.

## Current Members:

## Gérard BERRY

Gérard Berry, born in 1948, qualified as engineer from the École Polytechnique, the Ecole des Mines, and obtained his science doctorate in 1979. He was at INRIA from 1972 to 1976, at the Centre for Applied Mathematics and the École des Mines de Paris engineering school in Sophia Antipolis from 1977 to 1982, and then co-ran a joint project between the École des Mines and INRIA from 1982 to 2001. Since 2001, he has been the scientific director of Esterel Technologies.

Gérard Berry has been a member of the Academy of Sciences since 2002 and the Academia Europaea. He was awarded the CNRS bronze medal in 1979, the Academy of Sciences Monpetit prize in 1989 and the Science and Defence prize in 1999.

## Jacques DEMONGEOT

Jacques Demongeot was born in 1946 and is a doctor of mathematics, doctor of medicine and is a qualified teacher of medicine. He is director of the medical information department at the Grenoble medical school and of the laboratory "Techniques de l'Imagerie, de la modélisation et de la Cognition" (Techniques for Imaging, Modelling and Cognition) (TIMC - CNRS).

Jacques Demongeot was director of the "Technology for Health" programme at the Ministry of Research and is a member of numerous international scientific associations: the Mathematic Society of France, the French Theoretical Biology Society, French College of Medical informatics (President 94-98), European Society for Mathematical and Theoretical Biology (President 97-2000), National University Committee of Biostatistics and Medical Informatics (President 97-2000).

## Gérard HUET

Gérard Huet was born in 1947, obtained his science doctorate in 1976, and is research director at the French National Institute for Research in Computer Science and Control (INRIA) and is former delegate for international relations of this institute.

Gérard Huet has been a member of the Academy of Sciences since 2002 and is a member of Academia Europaea. He received the Herbrand award for the "Conference on automated deduction" in 1998 and is an Honoris Causa doctor of Chalmers University. He is a member of the International Advisory Board of the Tata Research Centre.

# Committee of Honour

## Georges CHARPAK

The French physicist Georges CHARPAK was born on 1st August 1924 in Poland. He qualified from the Ecole des Mines engineering school and has a doctorate in physics. He was awarded the Nobel Prize for physics in 1992, the Ricard award from the Society of Physics, and the Atomic Energy Commission award from the Academy of Sciences.

In 1948, he turned to research and entered the French National Centre for Scientific Research (CNRS). He worked at the same time for the Collège de France where he developed his skills in experimental physics. He started work at the European Organisation for Nuclear Research (CERN) in 1959 where he was to spend the whole of his career.

In 1997 he founded Biospace Mesures which develops high-tech imaging equipment used in the fields of medical research and molecular biology.

He has now turned his attention to education, creating an association "La main à la pâte" (Let's Join In) so that school pupils can learn the basics of science while learning to listen to each other when carrying out their experiment.

Mr. Charpak has been a member of the Institute (Academy of Sciences) since 1985, a member of the High Council for Integration since 1994, a member of the Universal Academy of Cultures, and director of Fimalac since 1997.

He is the author of several works on physics and nuclear research.

# Committee of Honour

## François GROS

François Gros was born on 24th April 1925 and is a molecular biologist.

He spent some time in the United States (1953-1955) at the Bacteriology Laboratory of the University of Illinois and at the Rockefeller Institute. After working as lecturer-researcher at the CNRS (1957-1962), he became Research Manager (1962-1968), then took the Chair of Molecular Biology at the Science Faculty in Paris (1968-1972). In 1972, he was appointed head of the Biochemistry Department at the Pasteur Institute and respectively Director General of the Institute (1976) and Honorary Director (1982). Since 1973, he has been Full Professor of the Cellular Biochemistry Chair at the Collège de France.

François Gros also has positions of responsibility in consulting organisations for Education and Research such as President of the Cellular Biology Commission of the CNRS (1971), Member of the Scientific Council of the European Molecular Biology Organisation (EMBO) (1972), Member of the Board of the CNRS (1976). In 1991, he was appointed Permanent Secretary of the Academy of Sciences and has been Honorary Permanent Secretary since 2001.

He is, among others, a Member of the following Scientific Societies: American Academy of Arts and Science, American Society of Biological Chemists, Academy of Sciences of Paris, Associate member of the Academy of Athens, Associate Member of the Royal Academy of Belgium.

He has been awarded several prizes and medals: 1964, Gold Medal by the Pontifical Academy of Sciences; 1967, National Knight of the Order of Merit; 1968, the Lacassagne Foundation prize; 1969, Charles Léopold Mayer Prize by the Academy of Sciences; 1976, Knight of the Legion of Honour; 1990, the Alexander von Humboldt prize.

# Committee of Honour

## Pierre LAFFITTE

Pierre Laffitte was born on 1st January 1925. He is a politician, a graduate from the École Polytechnique and the Ecoles des Mines engineering school.

As geologist for the Geological Map of France, he was appointed to the Board of the geological, geophysical and mining bureau in 1953.

From 1984 to 1995, he was Director then President of the education committee of the École Nationale Supérieure des Mines de Paris in Saint-Étienne (1988-1995) and the Mining, Mineral and Metal Industries Foundation.

He was elected senator of the Alpes-Maritimes in 1985, re-elected in 1989 then again in 1998. He is Vice-President of the Cultural Affairs Commission of the Senate and the Parliamentary Office for the assessment of scientific and technological choices, and member of the Rassemblement Démocratique et Social Européen (a group for democratic and social reform in Europe).

He is the founder and president of Sophia Antipolis and the International Association of Science Parks.

As part of his work as senator, he is President of the Franco-German Association for Science and Technology (AFAST) and the Franco-German High Cultural Council; he is a member of the special Commission in charge of examining the economic initiative bill; Member of the public service Commission for Post and Telecommunications.

He is the author of a number of works dealing with research on mining, geophysics, geological informatics, and economic development.

In 1994, he received the Adenauer-de Gaulle prize, and in 2004 the Promoter of the Information Society prize. Pierre Laffitte is Honoris Causa Doctor of the Colorado School of Mines (USA), Order of the Polar Star (Sweden) and Order of Merit of the Federal Republic of Germany.

# Committee of Honour

## Jean-Marie LEHN

Jean-Marie LEHN was born on 30th September 1939. He is a specialist in supramolecular chemistry, is a French chemist and was awarded a Nobel Prize for chemistry.

Jean-Marie LEHN started work as a researcher at the CNRS in 1960, and became Chemistry Professor at the University of Strasbourg in 1970. He was made professor at the Collège de France in 1979 and has also taught at Harvard in Cambridge (United States). From 1968, his research led him to carry out work on molecular dynamics, molecular receptors, cryptates, and supramolecular chemistry. These studies earnt him a name as one of the first molecule-creating chemists, winning him the Nobel Prize for chemistry in 1987.

He has occupied, among others, various roles such as Scientific Advisor for chemistry (1987-1992); President of the Rhône-Poulenc Science Council (1992-1999); President of the Science Committee for the National Education Ministry (1989-1993).

He has been a member of the Strategic Steering Committee for research since 1995 and the following scientific societies:

Académie des Technologies
American Chemical Society
France Chemical Society
Chemical Society (London)
Foreign member of the National Academy of Sciences of the United States of America, the American Academy of Arts and Sciences and the Royal Academy of Arts of the Netherlands
Foreign member of the Léopoldina Academies (Germany), and the Dei Lincei (Italy).

He has been bestowed with a great number of distinctions and international awards: Bronze medal (1963), silver medal (1972) and Gold Medal (1981) by the CNRS, Gold Medal by the Pontifical Academy of Science (1981), the Academy of Science Atomic Energy Agency prize (1984), the Karl Ziegler award (1989).

# Committee of Honour

## Noëlle LENOIR

Noëlle LENOIR was born on 27th April 1948. She is an ex-member of the Council of State and the Constitutional Council, and has been a lawyer at the Bar of Paris since 2001.

Noëlle Lenoir has been minister for European Affairs (2002-2004), and has been Administrator at the Senate (1972-1982); Director of Regulations at the CNIL (1982-1984); lecturer at the Politics Institute of Paris (1982-1990); master at the Council of State (1984-2001); cabinet director of the Ministry of Justice (1988-1990); special assistant for bioethics for the Prime Minister (1990-1991). She has presided over the International Bioethics Committee of UNESCO (1992-1998) and has been a Member and President of the European Ethics Group for the European Commission (1992). Since 1998 she has been president of the European Group on ethics in science and new technology and Member of the Academy of Technology since 2002.

Noëlle LENOIR is a specialist in Public Law, is the honorary president of the Gray's Inn in London and Member of the American Law Institute (since 1996); member of the Streaming Committee of the European Institute of Law and Comparative Law of the University of Oxford (since 1998); Associate Professor at the New-York Law School, Yale University in New Haven, at University College and the Institute of Global Law in London (since 2001). She is affiliated professor at the HEC management school since 2002.

She has written several papers on bioethics and justice.

Noëlle LENOIR is honoris causa Doctor at the universities of Suffolk in Boston and in London.

# Committee of Honour

## Joël de ROSNAY

Joël de Rosnay, a Doctor of Science, is the executive President of Biotics International and Advisor to the President of the Science and Industry Complex in Paris, of which he was Director of Prospecting and Assessment until July 2002. Between 1975 and 1984, he was Director of Research Applications at the Pasteur Institute.

He has worked as lecturer and researcher at the Massachusetts Institute of Technology (MIT) in the field of biology and IT, and then appointed Scientific Attaché of the French Embassy in the United States and Scientific Director at the European Venture Capital Company.

He takes a particular interest in advanced technologies and in systems theory applications. He wrote "Le Macroscope" (the Macroscope) (1975, Prize from the Academy of Moral and Political Sciences), "les Chemins de la Vie" (Paths of Life) (1983), "le Cerveau Planétaire" (The Planetary Brain) (1986), and several reports, notably: "Biotechnologies et Bio-Industrie (Biotechnologies and the Bio-industry)(1979), an annexe to the report "Sciences de la Vie et Société" (Life Sciences and Society) by Professors Gros, Jacob and Royer, and the report that led to the creation of CESTA (Systems and Advanced Technologies Study Centre, 1982).

He was scientific chronicler on Europe1 radio station from 1987 to 1995 and has written several scientific papers for a wide public including "Les origines de la vie" (The Origins of Life) (1965), "La révolution biologique" (The Biological Revolution) (1982), "Branchez-vous" (Plug in) (Award for micro-informatics literature for the general public 1985), "l'Aventure du vivant" (the Adventure of Life (1988), "L'avenir en direct" (Live from the Future) (1989). "Les Rendez-vous du Futur" (Rendezvous with the Future) (1991). "L'homme symbiotique, regards sur le troisième millénaire", (Symbiotic Man, a look into the third millennium) Seuil, 1995. "La plus belle histoire du monde" (The Most beautiful History of the World), with Yves Coppens, Hubert Reeves, and Dominique Simonnet, Seuil, 1996.

Joël de Rosnay won the IT prize in 1990 from the Academy of Sciences and the Benjamin Constant prize for Communication in the Arts in 1994 from the Society for the Encouragement of National Industry.

# Committee of Honour

## Gérard WORMS

Born on 1st August 1936, Gérard WORMS is an engineer of Mines.

In 1967, he was appointed by the Industry Minister, Olivier Guichard, to a position as technical advisor. He took part in the "decolonisation" of large national companies. He entered the cabinet of Prime Minister, Jacques Chaban-Delmas, in 1969 then took up a position at the Hachette group in 1972 and was managing director until 1981. During this period, he was vice-president of the General Publishers Union (Syndicat général de l'édition) (1975-1980).

In 1981, was appointed Director at Rhône-Poulenc until 1984 then was appointed president of the Suez Company (1984-1995). He oversaw several operations, in particular the buy-out of Victoire insurance company of which he became President in 1992. He then moved to Rothschild & Co bank where he became president of the Conseil des Commanditaires (Board of Limited Partners). Since 1999, he has been manager and shareholder of Rothschild and Co. and Rothschild and Co. Bank.

From 1997 to 1999, he was President of the Health Information Systems Board. He has been President of the research centre for the expansion of the economy and development of companies since 1996, President of the History channel since 1997 and Vice-President of the M6 television channel Surveillance Council since 2003.

Gérard Worms has been awarded the National Order of Merit and Maritime Merit. He is a member and former president of Siècle.