LE GOUVERNEMENT
DU GRAND-DUCHÉ DE LUXEMBOURG

MINISTÈRE DE L'ÉCONOMIE
ET DU COMMERCE EXTÉRIEUR

MINISTÈRE DE LA CULTURE,
DE L'ENSEIGNEMENT SUPÉRIEUR
ET DE LA RECHERCHE
Recherche et innovation

MINISTÈRE DE LA SANTÉ

PRESS CONFERENCE
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HOTEL LE ROYAL

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Translational Genomics Research Institute
Dr Jeffrey M. Trent

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About TGen

Traditional diagnosis focuses on the symptoms of a patient's illness. A personalized medicine approach looks at an individual's genetic make up, allowing physicians to give the right drug, at the right dose, to the right patient, at the right time. **TGen's vision is of a world where an understanding the subtle differences in an individuals genome be rapidly translated to the diagnosis and treatment of disease in a manner tailored to one's genetic composition.** TGen's areas of focus include cancer, neurogenomic and cardiovascular disease research and metabolic disorders.

TGen's research platform combines cutting-edge technology and bioinformatics with basic science to sift through the human genome is search of genes that play a role in disease development and progression. By partnering with academic and scientific collaborators worldwide, TGen believes it can make a substantial contribution to the efficiency and effectiveness of the translational process.

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Based in Phoenix, Arizona, **TGen is home to nearly 300 scientists, physicians, and staff, including more than three-dozen lead investigators, working in some of the best-equipped genetic research laboratories in the world.** TGen bases its research strategy on three main principles: discovery, translation, and clinical application. In this way, TGen focuses on accelerating the transfer of scientific discoveries made in the lab to patients who need them the most.

Research Divisions and Clinical Research Service

Discovery fuels TGen's translational research and lies at the heart of our scientific investigations. The design of TGen's research divisions enables a range of investigations into the underlying cause of various diseases and disorders. Each division is multidisciplinary in nature and draws heavily upon TGen's scientific platforms to expedite and analyze findings. Key technology platforms that enable TGen research include DNA sequencing, SNP genotyping, bioinformatics and microarray technology.

TGen's Clinical Research Service (TCRS), a strategic alliance with Scottsdale Healthcare (SHC), provides a direct clinical research site for TGen. The TCRS is housed within the Virginia G. Piper Cancer Center on the Scottsdale Healthcare Campus, Scottsdale, Arizona. TCRS currently has a number of active clinical trials, which include both phase I and II trials. Current trials give options that did not exist before to Phoenix-area patients as well as patients from all over the country. TCRS is conducting clinical trials across a number of cancer types. Further development of cancer specific divisions in pancreatic cancer, breast cancer, leukemia, prostate cancer and melanoma are under development.

In addition to its headquarters location in downtown Phoenix, TGen also occupies laboratory space at the Mayo Clinic Collaborative Research Building in Scottsdale, Arizona, which houses **TGen's Pharmaceutical Genomics Division** and **TGen Drug Development, LLC (TD2)**. As a wholly owned subsidiary of TGen, TGen Drug Development Services is a contract research organization (CRO) located in the Mayo Clinic Collaborative Research Building in Scottsdale. TD2 focuses on innovation and acceleration in the early stage development of oncology experimental agents. TD2 is uniquely positioned to ensure the most relevant animal models and genomic analyses are used to characterize safety, activity, and to identify the clinical dose.

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TGen North, a pathogen genomics and biodefense research facility in Flagstaff, Arizona, was developed in partnership with Northern Arizona University. TGen North is the heart of TGen's **Pathogen Genomics Division**, led by Dr. Paul Keim, one of the world's foremost experts in anthrax and other dangerous infectious diseases. TGen North's focus rests on diagnostic, analytic, forensic and epidemiologic research related to pathogens important to medicine, public health and biodefense. These activities are linked across TGen North's four research centers: 1) Center for Public Health and Clinical Pathogens; 2) Center for Metagenomics and Human Health; 3) Center for Dangerous Pathogens; and 4) Center for Pathogen Information.

The Translational Research Process

Translational research is the process of translating basic scientific discoveries into clinical applications such as new diagnostics and treatments. It serves as a bridge between lab bench discoveries and the patient bedside. Information collected at the patient bedside can circle back to the laboratory to fuel additional discoveries. In the wake of sequencing the human genome, genetic research, fueled by advanced technology, is happening at an accelerated pace.

Recent breakthroughs in technology, mathematics, and physics have advanced our understanding of life down to its smallest component, DNA, which is the basic building block of life. We now know more about genes than ever before and this increased understanding provides scientists and clinicians with an unparalleled opportunity to base diagnoses and treatment on an individuals unique genetic make-up rather than symptoms — in other words, personalized medicine.

Dr. Jeffrey Trent, TGen's founding President and Scientific Director, is an internationally recognized scientist who envisioned an institute where many of the world's leading scientists and physicians would turn breakthroughs in genetic research into medical advances benefiting patients and their families.

www.tgen.org

Biography

Jeffrey M. Trent, Ph.D., F.A.C.M.G.
President and Scientific Director
Translational Genomics Research Institute, Phoenix, Arizona

Dr. Trent is the founding President and Scientific Director of the Translational Genomics Research Institute (TGen). TGen's mission is to make and translate genomic discoveries into advances in human health by taking knowledge gained from the Human Genome Project and creating practical discoveries that will ultimately help diagnose and treat many diseases.

Hallmarks of Dr. Trent's scientific career are discoveries involving the factors that contribute to the occurrence and progression of cancer.

After completing a postdoctoral fellowship in 1980 under the guidance of the late Sydney E. Salmon, M.D., founding director of the Arizona Cancer Center, Dr. Trent spent a decade establishing his career at the University of Arizona.

During his decade-long affiliation with the University of Arizona, Dr. Trent rose to the rank of Associate Professor within the Department of Medicine at the College of Medicine, Tucson, Arizona; and became the first Associate Director for Basic Sciences at the University of Arizona Cancer Center. He also served as a Member of the Cancer Biology Graduate Program and the Graduate Committee on Genetics, and the Molecular Biology Graduate Program.

In 1990, the University of Michigan, Ann Arbor, named Dr. Trent the Emanuel N. Maisel Professor of Oncology and Professor of Radiation Oncology and Human Genetics. In addition, he served as Professor and Director for the Division of Cancer Biology, Department of Radiation Oncology, School of Medicine; Professor of Human Genetics, School of Medicine; and as the Deputy Director and Director of Basic Research of The University of Michigan Comprehensive Cancer Center in Ann Arbor. While at Michigan, Dr. Trent's research efforts received nearly 12 million dollars in external funding.

In 1993, Dr. Trent joined the National Institutes of Health (NIH) in Bethesda, Maryland, where he established and served as the founding Director of the Division of Intramural Research (DIR) of the National Human Genome Research Institute (NHGRI). He also established the Cancer Genetics Branch and served as its Chief until his recruitment to head the Translational Genomics Research Institute (TGen) in Phoenix, Arizona in 2002. Under his guidance, the NHGRI's Division of Intramural Research division became an internationally recognized research center in human genetics.

Throughout his career, Dr. Trent has specialized in integrating new technologies from the human genome project into the study of molecular changes related to the predisposition to, and progression of human cancer and other complex diseases.

Dr. Trent is the author of over 300 manuscripts in the scientific literature, numerous book chapters, invited reviews in the scientific literature, and hundreds of invited lectures. He sits on the editorial boards of a dozen scientific publications. He is a member of the American College of Medical Genetics; the American Association for Cancer Research; the American Association for the Advancement of Science; the American Society of Human Genetics; and the American Society of Clinical Oncology.

Dr. Trent's awards and honors include the G. Burroughs Mider Lecture (Honoring annually the outstanding Intramural Investigator at the National Institutes of Health); the Swedish Society of Medicine, Invited Plenary Lecture; the Leroy Hoeck, M.D. Lecture, Children's National Medical Center; the Richard T. Israels Memorial Lectureship, British Columbia Cancer Center, Vancouver, B.C.; the Bruce Cain Memorial Lecture, New Zealand Society for Oncology; the Director's Award, National Institutes of Health; the MERIT Awardee, National Cancer Institute, National Institutes of Health; the Leukemia Society Scholar Award, Leukemia Society of America.

About CRP Santé

Centre de recherche public-Santé is the first and largest public research centre for life sciences in Luxembourg.

CRP-Santé's vision is to become an internationally recognised research institution with a strong focus on clinically oriented biomedical research and public health. Subsequently in 2007, its mission has been expanded as follows: "In line with the major health challenges defined at European and national levels, CRP-Santé's mission is to generate knowledge on the pathogenesis, diagnosis and treatment of diseases with large impact on public health, and to perform epidemiological surveillance of these diseases and research on related health determinants in the population." CRP-Santé's strategic strength originates from its close interaction between laboratory research, clinical research and public health. High quality research at CRP-Santé benefits from the multiple, outstanding scientific collaborations with European and international research organisations. Therefore, CRP-Santé looks forward to an exciting and far reaching collaboration with our new American partners TGen, ISB and PPM.

CRP-Santé originated initially from 15 independent research units now grouped into the following 6 departments: VAI (virology, allergology and immunity), Immunology, Oncology, Cardiovascular Diseases, Public Health and the Clinical and Epidemiological Investigation Center (CIEC). It has a strong focus on diseases with a large impact on public health and the population in general. Therefore, CRP-Santé maintains a close relationship with hospitals and other health organisations in Luxembourg and the surrounding regions.

CRP-Santé is largely involved in teaching and Master and PhD training in collaboration with many universities in Europe.

Under the current performance contract with government, driven by a proactive research expansions strategy, CRP-Santé will experience strong growth, increasing its research budgets to over 30 million euro per year in 2010. During the same time, human resources will grow from 200 to more than 300 persons. We plan to move soon into our new research building with additional spaces for laboratory research and state-of-the-art equipment. This new building will also host the Integrated BioBank Luxembourg (IBBL) which will closely interact with our clinical investigation centre and the major hospitals in the greater region.

www.crp-sante.lu

Biographies

Dr Jean-Claude Schmit is a staff member of the National Service of Infectious Diseases and Microbiology Laboratory, Centre Hospitalier de Luxembourg, and Scientific Coordinator of the Retrovirology Laboratory, Centre de Recherche Public-Santé, Luxembourg. He has served as General Director and director of biomedical research of the CRP-Santé since June 2007. He is Head of the Retrovirology Laboratory, CRP-Santé since 2002, and a member of the Hospital Infection Prevention Committee, Centre Hospitalier de Luxembourg since1996.

Dr. Schmit is also a member of the Scientific Committee of the Luxembourg Social Security, President of the working group: Antibiotics and Antibiotic Resistance and President of the Research Coordination Committee, Centre Hospitalier de Luxembourg, as well as a member of the "Conseil Supérieur d'Hygiène" (Higher Council of Hygiene), Section des Maladies Transmissibles (Infectious Diseases section), Luxembourg since 1997.

Dr Guy Berchem graduated from the Université Libre de Bruxelles (ULB) medical school in 1990. He did his Hematology-Oncology training at Brussels *Institut Jules Bordet* Cancer Center (Jean Klastersky and Martine Piccart) and his laboratory training as a research fellow in Lombardi Cancer Center, Georgetown University, Washington, D.C. (Mark Lippman and Ed. Gelman). During his fellowship he contributed to the understanding of apoptotic mechanisms in hormone sensitive and hormone resistant prostate cancer and has participated in studies on angiogenesis in breast cancer.

Since then he has had part clinical and part laboratory research appointments, for three years at Institut Bordet in Arsène Burny's lab, and in 2003 he founded the "Laboratoire d'Hémato-Cancérologie Expérimentale" of CRP-Santé which he is still heading. He also holds a clinical position as attending physician in Onco-Hematology at the Centre Hospitalier in Luxembourg. His clinical work is focused on lung cancer, head and neck cancer and gastrointestinal cancers, as well as chronic lymphocytic leukemia (CLL) and multiple myeloma (MM).

Dr. Berchem has participated in many national and international studies of these diseases. The work of his lab has been focused on the better understanding of cell death mechanisms in MM and CLL and has resulted in the identification of autophagy as one of the mechanisms of cell death in HDAC induced cell death in MM. Another focus of his lab is the analysis of the cancerizaton field hypothesis in lung cancer.

INSTITUTE FOR Systems Biology

Revolutionizing science. Enhancing life.

About ISB

The Institute for Systems Biology

In 2000, Drs. Lee Hood, Ruedi Aebersold, and Alan Aderem created the Institute for Systems Biology (ISB), an independent, non-profit research institution that was the first research organization focused entirely on systems biology. Their central premise was that new ideas such as systems biology require new organizational structures. Systems biology research had to be practiced differently from the classic academic biology of the past 50 years, as it is a new and very different science. This new science meant removing boundaries between science, mathematics, and engineering, thus building an effective multidisciplinary environment. Inherent in that environment are high-throughput data acquisition and technology development facilities; a strong computational and engineering focus; and scientists working in cross-disciplinary teams. ISB not only collaborates across boundaries of disciplines but reaches outside organizational and institutional boundaries to share and leverage knowledge and expertise with partners in both academia and industry.

"Studying the interactions and interplay of many levels of biological information, systems biology will enable us not only to cure complex diseases but also to predict an individual's health and extend the human body's natural lifespan by preventing diseases. The new era of preventive and personalized medicine—made possible by systems biology—represents a profound shift in the practice of medicine and will reach into many corners of our lives."

Leroy Hood, Ph.D., M.D.
President
Institute for Systems Biology

ISB's Approach

"Organisms function in an integrated manner—our senses, our muscles, our metabolism and our minds work together seamlessly. But biologists have historically studied organisms part by part and celebrated the modern ability to study them molecule by molecule, gene by gene. ISB is devoted to a new science, a critical science of the future that seeks to understand the integration of the pieces to form biological systems."

David Baltimore
Nobel Laureate
President
California Institute of Technology
Pasadena, California

Over the eight years of its existence, ISB has developed a scientific philosophy and a method for doing systems-biology research that will serve science well into the future. The underlying idea is not a fundamentally new one, but its integration with the interdisciplinary and teamwork environment make this approach particularly effective. The fundamental notion is that the study of biological systems should be holistic or comprehensive rather than atomistic, which focuses on one gene or protein at a time. This requires new methods, whether they are computational, technology development, or any combination found in the systems biology lexicon, which should first be developed and then tested on the simplest possible biological “model organisms.”

Lessons learned from this can then be extended to other organisms, finally including humans.

This paradigm has already led to new scientific discoveries and the development of a wide range of software tools.

There are many distinguishing features of ISB in addition to its unique organization, infrastructure, and science that set it apart from other research institutions. Led by its Center for Inquiry Science group, ISB brings science to society through its innovative activities in improving K through 12 science education.

The Accelerator

ISB is also distinctive in the way that it bridges between academic science and commercial applications. ISB conducts world-class research and couples this with turning the results of its research into products to improve healthcare and reduce health-care costs. As a model to encourage research commercialization, the Accelerator Corporation was founded in 2003 and is a first-of-its-kind collaboration between commercial life science leaders and ISB. The Accelerator is a privately held biotechnology company that specializes in the creation of early-stage companies focused on technical platforms, new strategies for drug discovery, and early diagnostics. It builds value through its commercialization of the science and enhances economic development for the region.

Leadership for the Future of Medicine

The promise of systems biology has attracted notable members of the community willing to serve on the ISB Board of Directors and the President's Council. Members represent diverse fields including biotech, venture capital, and business entrepreneurs. One notable member, Bill Gates, is known world wide for his commitment to global health and has been a long-time supporter of Lee Hood's visionary approach to science.

www.systemsbiology.org

Biographies

Dr. Leroy Hood, MD, PhD

Dr. Hood's research has focused on fundamental biology (immunity, evolution, genomics) and on bringing engineering to biology through the development of five instruments—the DNA and protein sequencers and synthesizers and the ink-jet oligonucleotide synthesizer (making DNA arrays)-- for deciphering the various types of biological information (DNA, RNA, proteins and systems). These instruments constitute the technological foundation for modern molecular biology and genomics. He has applied these technologies to diverse fields including immunology, neurobiology, cancer biology, molecular evolution, and systems medicine.

Dr. Hood has been driven by the conviction that the needs of frontier biology should drive the selection of technologies to be developed, and once a new technology is developed these technologies can revolutionize biology and medicine. His professional career began at Caltech where he and his colleagues pioneered four of the five

instruments mentioned above. In particular, the DNA sequencer has revolutionized genomics by allowing the rapid automated sequencing of DNA, which played a crucial role in contributing to the successful mapping of the human genome during the 1990s. He applied all of these technologies to the study of molecular immunology (and discovered many of the fundamental mechanisms for antibody diversity) and neurobiology (he cured in mice the first neurological disease by gene transfer). In the late 1980s he realized that to really understand immunology would require a systems approach, and began thinking about systems biology.

In 1992, Dr. Hood moved to the University of Washington as founder and Chairman of the cross-disciplinary Department of Molecular Biotechnology (MBT) and developed the ink-jet oligonucleotide synthesizer which synthesized DNA chips. At MBT he initiated systems studies on cancer biology and prion disease. In 2000, he co-founded the Institute for Systems Biology in Seattle, Washington to more effectively continue pioneer systems approaches to biology and medicine. Here he has contributed seminal papers to delineating the systems approach to biology and disease and to pioneer developing new technologies (microfluidics/nanotechnology and molecular imaging) in collaboration with colleagues at Caltech and UCLA, that are establishing the framework for medicine evolving from its current reactive mode to a predictive, preventive, personalized and participatory mode (P4 medicine) over the next 5-20 years.

Dr. Hood was awarded the Lasker Prize in 1987 for his studies on the mechanism of immune diversity. Dr. Hood was also awarded the 2002 Kyoto Prize in Advanced Technology for the development of the five different instruments. He received the 2003 Lemelson–MIT Prize for Innovation and Invention—for the development of the DNA sequencer. Most recently, Dr. Hood's lifelong contributions to biotechnology have earned him the prestigious 2004 Biotechnology Heritage Award, and for his pioneering efforts in molecular diagnostics the 2003 Association for Molecular Pathology (AMP) Award for Excellence in Molecular Diagnostics. In 2006 he received the Heinz Award in Technology, the Economy, and Employment for his extraordinary breakthroughs in biomedical science at the genetic level. In 2007 he was elected to the Inventors Hall of Fame (for the automated DNA sequencer). Dr. Hood has received 14 honorary degrees from Institutions such as Johns Hopkins, UCLA, and Whitman College. He has published more than 600 peer-reviewed papers, received 14 patents, and has co-authored textbooks in biochemistry, immunology, molecular biology, and genetics, and is just finishing a text book on systems biology. In addition, he coauthored with Dan Keveles a popular book on the human genome project—The Code of Codes.

Dr. Hood is a member of the National Academy of Sciences, the American Philosophical Society, the American Association of Arts and Sciences, the Institute of Medicine and the National Academy of Engineering. Indeed, Dr. Hood is one of 7 (of more than 6000 members) scientists elected to all three academies (NAS, NAE and IOM). Dr. Hood has also played a role in founding more than 14 biotechnology companies, including Amgen, Applied Biosystems, Systemix, Darwin, and Rosetta. He is currently pioneering systems medicine and the systems approach to disease.

Dr. Hood has had a life-long commitment to K-12 science education and has a major effort at ISB in this regard. Dr. Hood enjoys reading, mountaineering, skiing, sea kayaking, and exercise.

Dr. David J. Galas, PhD

Currently Dr. Galas is Vice President and Chief Science Officer for Life Sciences of the Battelle Memorial Institute, where he directs and coordinates biological science programs across several national laboratories and other research institutions. He is also Professor at the Institute for Systems Biology, Seattle, WA, where he conducts his research, and leads multi-investigator projects. He was previously Chancellor, Chief Scientific Officer and Norris Professor of Applied Life Science at the Keck Graduate Institute of Applied Life Sciences (KGI), in Claremont, CA, a new research and educational institution in the applied life sciences, which he co-founded. Prior to that, Dr. Galas served as President and Chief Scientific Officer of Seattle-based Chiroscience R&D Inc., a genomics and drug discovery company. This company was formed through the acquisition of Darwin Molecular Corporation, which Dr. Galas co-founded in 1993 and served as CEO and Chief Scientific Officer. Prior to his involvement in the biotechnology industry, Dr. Galas served as Director for Health and Environmental Research at the U.S. Department of Energy's Office of Science, where he headed the DOE's Human Genome Project from 1990 to 1993, while on leave from the University of Southern California. He was Professor of Molecular Biology at USC, on the faculty for twelve years, and chairman for five years.

Dr. Galas' formal educational training was in physics. He received his undergraduate degree in physics, and his PhD in physics from the University of California. He has also held research positions at the University of Geneva, Switzerland, and the University of California's Lawrence Livermore Laboratory. His broad research interests include areas of molecular biology and human genetics, the development and application of new technologies in the life sciences, and the understanding of complex biological networks, in both experiment and theory. He is the recipient of several awards including the Smithsonian Institution-Computer World Pioneer award in 1999. He has served on many federal, university and corporate boards, including several biotechnology companies he has co-founded, and on various advisory and NRC committees, including the National Research Council Board on Life Science, the Board of Directors of the Fannie and John Hertz Foundation, and the National Cancer Policy Board. He is a lifetime National Associate of the National Academy of Sciences.

About University of Luxembourg

The University of Luxembourg, founded in 2003, is considered as a selected multilingual and innovative school, focused on research. It offers bachelor and master degrees as well as doctorates.

Research concentrates on a limited number of study fields that are considered as priority. Seven of those are top-priority until 2009, including the **life sciences**, which rank among the most promising areas.

Thanks to the Life Sciences Research Unit within the Faculty of Sciences, Technology and Communication, and the new master degree in Integrated Systems Biology, the University of Luxembourg concretises one of the government's initiatives. The government has indeed designated biotechnology and biomedical sciences as key fields for public research.

The Life Sciences Research Unit, based on campus Limpertsberg, focuses on experimental and molecular medicine and systems biology. Experimental and molecular biology aims at better understanding chronic inflammatory processes and biological disorders linked to age-related diseases, such as type 2 diabetes, Alzheimer's disease or cancer. As for systems biology, it aims at studying the organization and process of molecular networks in biological functions linked to chronic inflammation.

As at today, the Life Sciences Research Unit comprises some 50 persons, including an international scientific research team of seven professors, one assistant-professor, 17 postdoctoral researchers and 12 Ph.D. students. The unit is divided into five departments: Signal Transduction, Cytoskeleton and cell plasticity, Neuro Inflammation, Computational Biology and Inflammation.

In a bundled effort at the Life Sciences Research Unit, research teams assess the communication of cells thematically (cell migration/adhesion and inflammation) and mechanistically (signal transduction, bioinformatics and computational biology). Further, collaboration with computer scientists is strengthening the interdisciplinary research perspectives of the life sciences within the University of Luxembourg. Those integrated approaches provide a more complete and interdisciplinary understanding of cellular and molecular responses observed during diseases and may lead to the discovery and recognition of new therapeutic targets.

www.uni.lu

Biographies

Prof. Dr. Rolf Tarrach is the Rector of the University of Luxembourg. He holds a Ph.D. in Physics from the University of Barcelona and did his postdoctoral stay at the world-famous CERN, Geneva. He then became full professor of Theoretical Physics at the Universities of Valencia and Barcelona.

Since then he has written more than one hundred publications in international journals and has shown extraordinary international mobility; His research visits took him to renowned research centres including the "Centre de Physique Théorique", Marseille; DESY, Hamburg; the University of Arizona, Tucson; Nordita, Copenhagen; Oxford University, UK and Leningrad State University, Saint Petersburg, where he also holds an honorary degree.

During the following years he had the opportunity to actively participate in several public research projects: He has been president of the Spanish Research Council, he has been a member of the E.U. Research Advisory Board and of the five-year assessment panel of experts of the European Union in 2004. Moreover he has been a member of the Steering Committee of the Euroscience Open Forum in 2004, 2006 and 2008. His participation in the private sector is relevant too as he has been member of the Board of Telefònica in Catalonia since 2004. Furthermore Mr Tarrach has served as referee for international funding agencies such as CONICYT in Chile, FDR in South Africa, and the Guggenheim Foundation in the USA.

Since 2005 he has been a member of the Board of Directors of the CRP-Gabriel Lippmann and of the "Fondation Alphone Weicker", Luxembourg.

Eric Tschirhart is Advisor to the Rector, in charge of research at the University of Luxembourg. He has been a professor of physiology at the University of Luxembourg since August 2002 and is also "ancien chef de groupe" at CRP Santé.

His research subjects are Physiology and Pharmacology, Inflammation, Intracellular signal transduction, Oxidative stress, Intracellular calcium, and Biophysics. His teaching interests include Physiology, Embryology, and Development.

He holds a Master in Business Management, University of Nancy; PhD in Pharmacology, University of Strasbourg, and Master in Pharmacology and Pharmacochemistry, University of Strasbourg.

PARTNERSHIP *for*
PERSONALIZED MEDICINE

About PPM

The Fred Hutchinson Cancer Research Center was opened in 1975 in Seattle, Washington, and named in memory of major-league baseball player and manager Fred Hutchinson, who died of cancer in 1964. The Center pursues its mission, to eliminate cancer as a cause of human suffering and death through ground-breaking research in cancer prevention, early detection, and therapy. The Hutchinson Center developed bone marrow transplantation as a life saving treatment for leukemia and other diseases under the leadership of Dr. E Donnall Thomas, who received the Nobel prize in 1990 for this work. The Hutchinson Center is the coordinating site for many national and international research studies, including the Women's Health Initiative, the most far-reaching study ever devoted to women's health, and the HIV Vaccine Trials Network, a global effort to develop and test successful HIV vaccines. More than 1 million people worldwide have participated in public-health studies led by Hutchinson Center researchers.

The Hutchinson Center is the only National Cancer Institute-designated comprehensive cancer center in the Pacific Northwest region of the United States. In 1998, the Center teamed with UW Medicine and Children's Hospital and Regional Medical Center to form the Seattle Cancer Care Alliance, a state-of-the-art cancer-care clinic that offers patients access to first-rate cancer care and the most promising research. The Hutchinson Center has a staff of 2,700 people, a faculty of more than 180 internationally renowned scientists who lead more than 750 research projects and trains more than 300 graduate and postdoctoral students each year. More than half of Washington's biotechnology and medical-device companies are based on technologies spawned from the Hutchinson Center. Six Hutchinson Center researchers have been elected to the National Academy of Sciences, five have been named Howard Hughes Medical Institute investigators and three have received the Nobel Prize in Physiology or Medicine.

www.pipertrust.org/news/october2007announcement.aspx

Biography

Lee H. Hartwell, Ph.D.

Dr. Hartwell is President and Director of Seattle's Fred Hutchinson Cancer Research Center and recipient of the 2001 Nobel Prize in Physiology or Medicine.

Dr. Hartwell's primary research contributions were in identifying genes that control cell division in yeast and the processes that assure its accuracy. Subsequently many of these

same genes have been found to control cell division in humans and often to be the site of alteration in cancer cells.

Recently his interests have turned to how our increasing understanding of biology can be used to improve healthcare. He believes that the most efficient path is to improve molecular diagnostics to identify individuals at high risk for disease, detect cancer and other diseases at an early stage when they can be cured, provide prognostic information and monitor therapeutic response. He has directed his efforts recently to national and international projects to support team science in molecular diagnostics and stimulate new technology development. He currently chairs the executive committee of the Partnership for Personalized Medicine, which is committed to engaging healthcare systems internationally in the discovery and validation of biomarkers for cost-effective disease management.

Centre de Recherche Public
Gabriel Lippmann

About CRP Gabriel Lippmann

The Centre de Recherche Public - Gabriel Lippmann is a public establishment devoted to applied scientific research and technological development, and to technology transfer and permanent high-level training. Its activities aim to reinforce the country's economic fabric through the creation of new technological skills within the CRP- Gabriel Lippmann and by transferring this know-how to companies.
In view of the current major stakes in terms of sustainable development, i.e. scientific and technological as well as economic and environmental, the CRP - Gabriel Lippmann has focused on three major axes: technology of innovative materials, in particular nanotechnologies and instrumental development, sustainable management of the natural resources and the technologies of the information society.
To succeed with its tasks, the CRP relies on more than 160 researchers, teacher-researchers, 3rd cycle trainees and members of the administrative and technical department. The research is carried out in four departments:

- EVA - Environment and Agro-biotechnologies;
- ISC - IT, Systems and Collaboration;
- SAM - Science and Analysis of Material;
- REA - Research in Equipment for Automitive Industry

Public health research activities at CRP-Gabriel Lippmann:

EVA Department

Due to the increased prevalence of obesity, cardiovascular and other chronic diseases, linked to poor eating habits, research plays an essential role highlighting healthy nutrition and eating behaviors. Thus, the research activities include examining food safety and human dietary aspects related to health and wellbeing of the population. In this field the emphasis is placed on the identification of biomarkers enabling an assessment of the effects of different food compounds on health, in particular on **illnesses associated with nutrition**. The EVA Department is particularly interested in studying the effects of factors like food fibres, antioxidants or other phytochemical substances on indicators of obesity, type II diabetes and metabolic syndrome (insulin, lipidic profile, antioxydative stress, isoprostanes, etc.).

Moreover, in the field of **environmental toxicology** the EVA Department studies toxic substances present in our various environments. The effects, their health impact and the means of prevention, are among the activities in this line of research. It covers the entire spectrum from exposure to the effects of substances to their biological evolution. In particular, it is a matter of developing, ratifying and fostering the application of biomarkers as tools for the surveillance of environmental contamination, or even for the

study and development of methods to measure exposure to environmental contaminants in order to use them, in epidemiological studies.
To carry out these research activities, the EVA Department relies on state-of-the-art technological **platforms** in proteomics, biochemistry, microscopy and high performance computing.

SAM Department

With its state-of-the-art analytical capabilities (Secondary Ion Mass Spectrometry, X Photoelectron Spectrometry, Auger Electron Spectroscopy, Scanning Electron Microscopy, Transmission Electron Microscopy, Near-field microscopy), the SAM Department offers the opportunity to access instrumentation enabling the characterization and the imaging of biological tissues up to the nanoscale. Furthermore, research focuses on the application of **nanotechnologies** to develop new types of materials and sensors for biosystems.

www.crpgl.lu

Biography

Dr Lucien Hoffmann is Scientific Director, Department Environment and Agro-biotechnologies, Public Research Center - Gabriel Lippman. He holds a Ph.D. in Biological Sciences.

He was a member of the Scientific Advisory Committee to examine the Toxicity and Ecotoxicity of chemical compounds (CSTE) at the European Commission (1993-1997). He was also member of the « Comité de pilotage du projet de développement d'un système intégré de gestion de l'environnement au Grand-Duché de Luxembourg » (1995-1997) and member of the scientific council of the International Association for the promotion of cooperation with scientists from the New Independent States of the former Soviet Union (INTAS) (3-year mandate, 1997-2000), and a member of the « Comité de nomenclature pour les algues » of the International Association for Plant Taxonomy for the period 1999-2005 (designated by the XVI International Botanical Congress in St. Louis, Etats-Unis).

CENTRE DE RECHERCHE PUBLIC
HENRI TUDOR
www.tudor.lu

About CRP Henri Tudor

The Public Research Centre Henri Tudor - whose name comes from one of the most brilliant engineer Henri Owen Tudor who invented Tudor batteries - was born with the blueprint law on public research passed in 1987.

The main mission of the Centre is to strengthen the economical and social network of the Grand-Duchy of Luxembourg with a European open-minded way of thinking. From the beginning, the Public Research Centre Henri Tudor has developed its visions and founding principals gathering its whole activities. "From research to innovation" is the leitmotiv that the Centre has kept in mind at each stage of its development.

CRP Henri Tudor contributes to the improvement and strengthening of the innovation capacity of companies and public organisations. The Centre offers a large scale of services and activities:

- applied and experimental research;
- doctoral research;
- development of tools, methods, labels, certifications and standards;
- technological assistance, consulting and watch services;
- knowledge and competence transfer as well as incubation of high-tech companies.

Training and high-level qualification complete this large offer: over 150 training courses regrouped in a unique catalogue, which can be downloaded on www.sitec.lu, are organised every year for professionals.

The Centre's activities are mainly orientated towards the following scientific and technological fields:

- Information and Communication Technologies (ICT);
- Materials Technologies;
- Business Organisation and Management;
- Environmental Technologies;
- Health Care Technologies.

www.tudor.lu

Biography

Pierre Plumer is an engineer in electrotechnical engineering from the ETH Zürich, with a specialisation in biomedical engineering. After his studies he worked for one year as a scientific collaborator at the ETH's Institute for Food Technology, before becoming a research engineer in healthcare technologies at the CRP Henri Tudor in 1994.

In 1996 he became the managing director of Henri Tudor's department SANTEC (Technologies for Healthcare) where he is responsible for the strategic, administrative and partnership management, as well as the definition and follow-up of SANTEC's activities (R&D projects, technological assistance and consultancy, PhD research, initial and continuous training, as well as technological, scientific and regulatory watch). A year later he became a Member of the Management Board of the CRP Henri Tudor and was co-responsible for all corporate strategic and management matters.

During the following years he had the opportunity to become an expert/consultant for various fields such as the eHealth Working Group of the Healthcare Ministry, the evaluation and coaching of start-ups for Business Initiative, the Technoport, and BIP Investment Partners. Today SANTEC department is active in the following fields: Information and Communication Technologies applied to Healthcare, eHealth, Clinical Engineering, Public Health, and Image Processing.