

# Centre of Excellence: Hôpital Européen Georges Pompidou European Society of Hypertension (ESH) Hypertension Centre of Excellence



**A Tertiary Hypertension Referral Centre With Expertise in All Types of Hypertension and Performing Pioneering Clinical and Basic Research**

**Pierre-Francois Plouin, MD, PhD, professor of vascular medicine, Université Paris Descartes and Hôpital Européen Georges Pompidou, Paris, France, and head, Hôpital Européen Georges Pompidou European Society of Hypertension (ESH) Hypertension Centre of Excellence, describes the centre to Mark Nicholls.**

The Centre of Excellence for Hypertension in Paris, France, was first set up at the University Hôpital Broussais, Paris, by Professor Paul Milliez, MD. With additional expertise provided by Professor Jean-Michel Alexandre, MD, Professor Pierre Corvol, MD, PhD, Professor Joël Ménard, MD, and Professor Michel Safar, MD, PhD, the centre was the first to organise the management of difficult cases of hypertension and bring together all the facilities required (hormone determinations, haemodynamics, pharmacology, physiology).

In 2000, Pierre-Francois Plouin, MD, PhD, head of the Hôpital Européen Georges Pompidou European Society of Hypertension (ESH) Hypertension Centre of Excellence professor of vascular medicine, Université Paris Descartes, and Hôpital Européen Georges Pompidou, Paris, France, transferred the centre to Hôpital Européen Georges Pompidou and extended its activities to clinical epidemiology, clinical trials, and comparisons of strategies, noninvasive arterial approaches, and genetics.

As a result of its success, the European Society of Hypertension asked the Hôpital Européen Georges Pompidou Hypertension Centre of Excellence to organise the French centres of excellence into a network and to conduct a pilot experiment in national synergy between the centres. Professor Plouin coordinates this French network, which is currently seen as a reference for other European centres of excellence in the field.

The centre coordinates a variety of networks for hypertension of renal or adrenal origin and resistant hypertension and national and international research programmes, which have given rise to hundreds of publications. It is the only French centre involved in the development of international early (phase I/II) clinical trials for new drugs to treat hypertension.

Of patients referred to the Hôpital Européen Georges Pompidou ESH Hypertension Centre of Excellence, ≈80% have resistant or grade 3 hypertension, and 25% have secondary hypertension. The unit has defined reference



*Members of staff at the Hôpital Européen Georges Pompidou ESH Hypertension Centre of Excellence. From left to right: Guillaume Bobrie, MD, Laurence Amar, MD, Marie Briet, MD, PhD, Professor Plouin, Pierre Boutouyrie, MD, PhD, Professor Michel Azizi, MD, PhD, and Professor Stéphane Laurent, MD, PhD. Photograph courtesy of Professor Plouin.*

values and thresholds for intervention, and facilities for the various forms of imaging and telemedicine available onsite.

Professor Plouin says, “General practitioners, cardiologists, nephrologists, and endocrinologists refer ≈1200 new patients to my unit each year. Most have severe, resistant, secondary, or complicated hypertension. A tertiary hypertension referral centre also has to develop expertise in rare diseases. We manage cases of complicated hypertension, which brings us into close contact with the cardiologists, vascular surgeons, and neurologists of Hôpital Européen Georges Pompidou. We also care for patients with hypertension requiring emergency treatment, including about ≈10 cases of malignant hypertension per year, patients with unstable hypertension, hypertension associated with orthostatic hypotension, monogenic hypertension (and their relatives), hypertension induced by vascular endothelial growth factor pathway inhibitors among patients treated for cancer, and hypertensive children >15 years of age.”

Publications issued by the centre provide patients with precise information about the risks and benefits associated with the invasive procedures undertaken, and the centre also has a role in training general practitioners and future specialists in hypertension.

Professor Plouin says, “Our mission is also to improve knowledge on the pathophysiology of hypertension and its treatments via active clinical and basic research.”

### Staff Involved in the Recruitment, Investigation, and Follow-up of Cohorts of Hypertensive Patients

**Michel Azizi, MD, PhD**, professor of vascular medicine, scientific director, Assistance Publique–Hôpitaux de Paris Institut National de la Santé et de la Recherche Médicale (INSERM), Centre d’Investigation Clinique of the Hôpital Européen Georges Pompidou, and assistant head of the Hypertension Unit, is a cardiologist and works as a researcher in UMRS INSERM 970. Since 2000, he has coordinated 81 research projects on the physiology, pathophysiology, genetics, and pharmacology of the renin-angiotensin-aldosterone system, a haemoregulatory peptide (AcSDKP), and a peptide involved in water metabolism (apelin).

Professor Azizi has developed new strategies for evaluating the effects on blood pressure and hormone levels in humans of new antihypertensive molecules at early stages of drug development (vasopeptidase inhibitors, renin inhibitors, aldosterone synthase inhibitors, and brain aminopeptidase A inhibitors). He has also developed a new translational research and care activity extending from oncology to cardiovascular disease and relating to the cardiovascular and renal complications of molecules targeting the vascular endothelial growth factor pathway.

**Xavier Jeunemaitre, MD, PhD**, is professor of genetics, Université Paris Descartes, head of the Genetics Department at Hôpital Européen Georges Pompidou, and director of INSERM team 3 “Genes and Arterial Blood Pressure,” Paris Centre de Recherche Cardiovasculaire (PARCC) U970

Hôpital Européen Georges Pompidou Research Centre. Together with Professor Jean-Noël Fiessinger, MD, he runs the Rare Vascular Diseases Centre of Hôpital Européen Georges Pompidou, which is affiliated to the Hypertension and Vascular Medicine Department, .

**Pierre Boutouyrie, MD, PhD**, is a cardiologist and specialises in pharmacology. He is responsible for the Clinical Pharmacology unit. Its activities are split between Hôpital Européen Georges Pompidou and PARCC-INSERM U970. He and his colleagues were the first to demonstrate the predictive value of arterial rigidity for cardiovascular morbidity and mortality in patients with hypertension, to show the modes of arterial remodeling in hypertensive patients, and to propose an intermediate phenotype in patients with fibromuscular dysplasia.

**Anne-Paule Gimenez-Roqueplo, MD, PhD**, professor of genetics, specialises in endocrinology and molecular genetics and is responsible for the molecular oncogenetics activities of the Genetics Lab of Hôpital Européen Georges Pompidou.

**Stéphane Laurent, MD, PhD**, is professor of pharmacology and head of the Pharmacology Department at Hôpital Européen Georges Pompidou. His research interests include the pathophysiology and pharmacology of the arterial system in common diseases such as hypertension and atherosclerosis and in rare vascular diseases.

**Maria-Christina Zennaro, MD, PhD**, an endocrinologist, is a research director at INSERM. She leads the team “Genetic Mechanisms of Aldosterone-Related Disorders” at PARCC-U970 Hôpital Européen Georges Pompidou Research Centre. Her research focuses on the genetics and pathophysiology of blood pressure regulation in relation to adrenal secretion and the peripheral action of mineralocorticoid hormones.

**Laurence Amar, MD**, is an endocrinologist and his work focuses on endocrine hypertension (primary aldosteronism and pheochromocytoma/paraganglioma).

**Marie Briet, MD, PhD**, is a nephrologist and junior lecturer in pharmacology and works at the Centre d’Investigation Clinique. Her research focuses on arterial remodelling associated with chronic renal disease, its impact on the cardiovascular prognosis of patients, and pharmacological management.

**Guillaume Bobrie, MD**, is a nephrologist and a part-time hospital practitioner in the Hypertension and Vascular Medicine Department. His clinical research focuses on alternatives to conventional clinical blood pressure measurement, telemedicine, patient questionnaires, and management of resistant hypertension.

*Mark Nicholls is a freelance medical journalist.*