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## Penn Immunologist to Develop Drugs for Renal Disease

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John Lambris

John Lambris, the Dr. Ralph and Sallie Weaver Professor of Research Medicine in the department of pathology and laboratory medicine at Penn's Perelman School of Medicine, is part of an \$8 million European Union FP7 grant, which has been awarded to a consortium of academic institutions and the biotech company called Amyndas Pharmaceuticals (based on Penn technology developed in the Lambris lab).

The consortium will conduct mechanistic and clinical studies involving the innate immune system with the aim to significantly improve the quality of life and life expectancy for patients with end-stage renal disease (ESRD) who are currently treated by hemodialysis and particularly by kidney transplantation.

The rate of new ESRD cases per million in the US, which has been relatively stable since 2000, was 348 cases in 2010, according to the US Renal Data System. New cases continue to be driven by a relatively linear increase in the number of patients age 45–64.

The Penn team will study inhibitors that work on the oldest part of the human immune system called the complement system, or simply "complement." Complement is a network of more than 50 proteins in the blood and on cell surfaces and is part of the innate immune system, in contrast to the adaptive system consisting of antibodies which can "learn" and adapt themselves on the fly to different antigens. The complement proteins quietly cruise the blood system, keeping a low profile until triggered into action.

Complement has been shown to contribute to a broad spectrum of immune, inflammatory and age-related diseases. Dr. Lambris and colleagues are developing novel therapeutics to tame inappropriate complement activation and/or protect cell surfaces from an attack by this defense system. Using small inhibitors of central complement components, engineered regulatory proteins and protective cell coatings, they are demonstrating the benefit of therapeutic complement modulation in a variety of clinical situations, including organ transplantation and hemodialysis-related complications.

Penn will receive \$1 million in research funding, and Amyndas will receive \$1.3 million, as part of the consortium. The Lambris lab will study mechanisms and control points of immune regulation for the complement inhibition compounds, and Amyndas will perform and coordinate toxicity studies and coordinate the Phase 1 and 2 clinical trials for incompatible kidney transplantation using promising candidate compounds.

Dr. Lambris is a founder of Amyndas and an equity holder of the company, but will have no direct involvement with the conduct of the clinical trial. Amyndas has licensed patents and other relevant intellectual property pertaining to the complement inhibitor compounds from Penn. The license provides Penn with an equity stake in Amyndas and potential license payments and royalties that would result from any commercialized products. As a Penn faculty member, Dr. Lambris is entitled to a share of any license payments or royalties pursuant to the Penn patent policy, although no license income has been received to date.