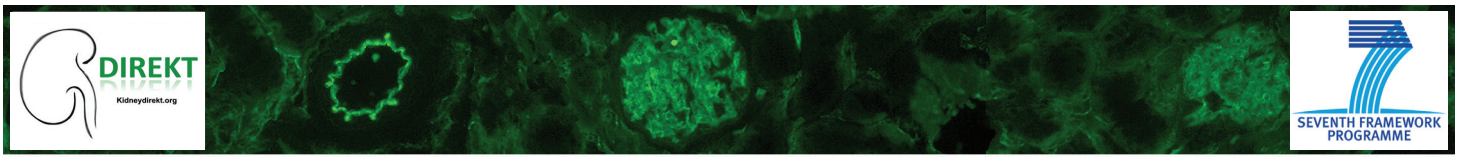

Chronic kidney disease is world wide a major cause of end-stage renal disease affecting millions of patients. These patients require long-term treatment of hemodialysis that could be discontinued after kidney transplantation but still with great risks of delayed graft function and organ failure. The therapies are often associated with severe adverse reactions involving the innate immune system, which is important in our immediate defence against alien/foreign substances such as microorganisms. In a similar manner, reactive biosurfaces of hemodialysis equipment but also cell surfaces of transplanted kidneys will trigger an immune response resulting in poor outcome of the therapy. The scientific work of the DIREKT partners aims to dampen such immune reactions and reduce side effects during treatment to the benefit for kidney patients.

DIREKT (grant agreement no602699 "Disarming the intravascular innate immune response to improve treatment modalities for chronic kidney disease") is a EU FP7 funded project. The **DIREKT** project is headed by **Prof. Bo Nilsson**, Uppsala University, Uppsala, Sweden in collaboration with world leading professors, physicians, researchers in addition to PhD students, CEOs and business developers in the fields of innate immunity, chemistry and biotechnology. The DIREKT project is divided into 12 work packages focusing on innovative biopharmaceuticals and advanced coating techniques, as well as the development of a biopharmaceutical drug administered to transplanted patients to reduce adverse immune reactions.

- Within the DIREKT consortium we are investigating the benefit of using innate immunity inhibitors of which the biopharmaceutical drug AMY-101 is the first candidate drug to be used in clinical studies of kidney transplantation. The drug AMY-101 is developed by **Amyndas Pharmaceuticals** that is an enterprise partner in DIREKT.
- To acquire cellular protection in kidney transplantation, inhibitors of innate immunity will be anchored to the kidney vasculature, thereby creating a local protection. These two strategies of systemic and local administration of immune regulators, separately or in combination, will aim towards improved organ function in transplantation leading to increased well-being and quality of life for the patients.
- We are also creating nano-profiled surfaces with low activating properties to use in hemodialysis. Initially, these surfaces will be used for hemodialysis catheters produced by the project partner **Bactiguard**.
- **Hycult Biotech** is developing species-specific research tools used to monitor the effect of the different techniques to modulate innate immunity described above. These immunoassays are currently distributed within the DIREKT consortium for evaluation contributing to new products that eventually become available for the scientific community.

Courses and lectures intended for scientists and students on different levels, both inside and outside the DIREKT consortium, are organized regularly. To view an example please visit: http://www.kidneydirekt.com/web/education/. Furthermore, the non-profit partner **Aegean Conferences** is an educational organization managed by the research community that contributes to scientific meetings of high quality. The book "Immune Responses to Biosurfaces – Mechanisms and Therapeutic Interventions" (http://www.springer.com/in/book/9783319186023) edited by Prof. Bo Nilsson and colleagues discuss research topics of the DIREKT project presented during the 1st International Conference on Response to Biosurfaces.

For more information about the DIREKT project please visit:

www.kidneydirekt.com or www.kidneydirekt.org

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