

Internship Proposition
(one page max)

Master 2 GP Immunology & ImmunolIntervention (I³)
2025-2026



Lab: Centre de Recherche Translationnelle en Transplantation et Immunologie (CR2TI)

Team: Team 3 “Integrative transplantation, HLA, Immunology and genomics of kidney injury”

Name and position of the supervisor: Sarah Bruneau, chargée de projets translationnels

Email of the supervisor: sarah.bruneau@univ-nantes.fr

Candidate (if internship filled): None

Title of the internship: Neddylation blockade as a new kidney transplant preconditioning strategy

Summary of the internship proposal :

The number of patients with end-stage renal failure waiting for a kidney transplant has been rising constantly, while the number of kidneys transplanted every year remains fairly stable. To meet this ever-increasing demand for organs, transplant from donors with extended criteria (over 60 y/o, history of diabetes or high blood pressure...) and from donors after cardiac arrest are now being used. However, these “lower quality” grafts are highly sensitive to ischemia-reperfusion and are more immunogenic, and therefore display a lower survival rate. Lately, a lot of effort has therefore been put into improvement of kidney transplant preservation strategies, not only to maintain graft viability, but also to improve its quality (so called “graft preconditioning”). Ex vivo injection of protective molecules into the graft presents the advantage of targeting the graft only and especially its endothelium, thus avoiding many of the limitations associated with systemic drug delivery. In our previous in vitro work, we have identified a powerful protective molecule for endothelial cells through its capacity (1) to block endothelial activation and proinflammatory responses, (2) to inhibit endothelial prothrombotic responses, and (3) to decrease hypoxia and hypothermia-induced endothelial cell death. Importantly, these effects are observed upon a simple pretreatment of endothelial cells for 3 hours at 4°C prior to stimulation with TNF α /IFN γ , which makes it perfectly applicable to a preservation method in hypothermic perfusion or even static cold storage, which are commonly used in the clinical practice. The objective of this project is to test the protective effect of this molecule ex vivo on whole pig kidneys to confirm our in vitro results.

Option(s) linked to the project:

- ☐ Clinical Research Profile (Recherche Clinique)
- ☐ Data Analyst Profile (Recherche et Analyse de Données Omiques)
- ☒ Experimental Biology Profile (Recherche Expérimentale)

Form to be sent by email to : gpi3@univ-nantes.fr