



# Research Grant Report Form

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## Name and origin of applicants:

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Pernille Bundgaard Koefoed-Nielsen, MD, PhD, senior consultant, Department of Clinical Immunology, Aarhus University Hospital

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## Purpose of research project granted:

**Project title:** Unravelling immunological mechanisms of unexplained graft rejection by *in silico* HLA epitope matching in solid organ transplantation: a proof-of-concept pilot trial exploring the relevance of HLA epitope matching

**Purpose:** The purpose of the research project is to examine the performance of *in silico* HLA epitope matching in patients who underwent kidney and heart transplantation to evaluate the functional distance between donor and recipient HLA type and explore the association to rejection versus no rejection. Further, the evaluation will include a comparison of organ transplant recipients experiencing 1) no rejection, 2) acute antibody-mediated rejection, 3) acute T-cell-mediated rejection and 4) unexplained rejection

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**Amount granted:** DKK 362.000,00

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## Report of scientific progress:

The project was initiated in line with the original time schedule presented in the grant application.

### Original time line

		2023				2024			
		Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
1	Authority approvals								
2	Collection of clinical data								
3	Additional HLA (NGS) typing								
4	Bioinformatical analyses								
5	Reporting of results								

Unfortunately, the project was delayed in the early phase by an unforeseeable long processing time before authority approvals were obtained to share data between participating institutions.

The project plans to include

- 20 patients with no clinical and immunological signs of rejection after 10 years; 10 heart transplanted patients and 10 kidney transplanted patients
- 20 patients with acute antibody-mediated rejection defined by pathology and the presence of measurable donor-specific HLA antibodies at time of diagnosis; 10 heart transplanted patients and 10 kidney transplanted patients
- 20 patients with acute T-cell-mediated rejection defined pathology (and no measurable HLA antibodies; 10 heart transplanted patients and 10 kidney transplanted patients
- 10 patients with unexplained rejection

A review of all patients from Aarhus University Hospital who have received a heart transplant in the period 2000 to 2022 has been completed (>300 patients). The review included the evaluation of clinical measures, immunological analyses and all pathological examinations to ensure patients matched the inclusion criteria as defined above. The review of kidney transplant recipients will be completed at the end of October 2024. The initial planning and preparations for HLA typing have been finalised, meaning that we expect to have obtained the results from the additional HLA (NGS) typing at the beginning of Q4 2024. No changes have been made with regards to the time plan for the bioinformatical analysis with expected duration of 6 months (~Q4 2024 and Q1 2025). Reporting of results will be performed in parallel with the bioinformatics. Project research activities have proceeded as initially planned. The delay of the project is an expected 6 months resulting in a new project completion date at the beginning of Q3 2025.