

School/Department:	Erasmus School of Economics, Econometric Department
Project Title:	Improving access to transplantation via novel graft survival predictive models applied to living and deceased donor kidney allocation
Abstract:	<p>Kidney transplantation is a life-saving treatment for patients with end-stage renal disease (ESRD). Compared to the standard treatment of dialysis, it can improve life expectancy and quality of life for patients suffering from ESRD which is increasingly prevalent ESRD and causes around 2% of death globally.</p> <p>Unfortunately, new kidneys are often rejected over time by the recipient's immune system. The limited durability of transplanted kidneys is a significant clinical problem. Graft and patient survival rates after transplantation have hardly changed over the past 25 years despite the development of potent immunosuppressive drug therapy.</p> <p>Combined with clinical data, high-resolution genomic (HLA) data enable to more accurately estimate individual rejection risks. Such advanced understanding can subsequently support more accurate decisions on allocation of donor kidneys to patients, thus reducing risk of rejection for them or postponing rejection. Moreover, high-resolution genomic (HLA) data may further reduce rejection risks (and other negative health effects) by personalizing immunosuppressive therapy. A first research objective is to develop such personalized rejection risk models, which incorporate personalized therapies.</p> <p>In combination with the personalized medicine, such advances in organ and patient survival risk estimates can subsequently be incorporated into allocation policies which decide on the matching of available donor organs and patients. This particularly applies to kidney exchange programs for living donor donation. A second research objective is to advance current kidney exchange allocation algorithms by incorporating the aforementioned risk models and personalized therapies.</p> <p>As patients with living donors typically also enroll for the deceased donor waitlist, application to and interaction with this waitlist can be considered to maximize patient benefits of including high resolution genomic data and personalized medicine in kidney allocation decisions. Extending the models developed for the second research objective to include deceased donation forms the third research objective.</p> <p>To achieve the aforementioned objectives, the study will advance on survival models and their application to kidney allocation using operation research techniques and methods from artificial intelligence.</p>
Requirements of candidate:	<p>Background:</p> <p>The perfect candidate has a machine learning (deep learning) and</p>

	<p>operations research (mathematical programming, simulation) background. Strong computational skills and past work with medical data is a plus.</p> <p>Exceptional research ability must be demonstrated by thesis work, and/or other reports on conducted scientific research in the form of published academic reports, preprints, or journal and conference publications.</p> <p>Good verbal, visual, and written communication skills.</p> <p>Ability to work in a highly collaborative and interdisciplinary environment, bridging the gap between Computer Science and Operations Research on the one hand, and medical sciences and policy on the other hand.</p> <p>The candidate may be required to carry a limited teaching load at the university; hence prior teaching experience is recommended but not required.</p> <p>Master's degree: Yes</p> <p>Erasmus School of Economics (Tinbergen Institute): IELTS: 7.0 (min 6.0 for all subs.) TOEFL: 100 or 600 (paper) GMAT: 680 or GRE-test: top 10% and Q score above 160</p>
Supervisor information:	<p>The student will be co-supervised by three supervisors:</p> <p>Co-supervisor 1: Prof. dr. Joris van de Klundert, Professor, Erasmus School of Health Policy & Management</p> <p>vandeklundert@eshpm.eur.nl https://www.eur.nl/people/joris-van-de-klundert Publication list: Google Scholar</p> <p>Co-supervisor 2: dr. Michal Mankowski, Assistant Professor, Erasmus School of Economics</p> <p>mankowski@ese.eur.nl Publication list: Google Scholar</p> <p>Co-supervisor 3: Prof. dr. Albert Wagelmans, Professor, Erasmus School of Economics</p> <p>wagelmans@ese.eur.nl https://www.eur.nl/people/albert-wagelmans Publication list: Google Scholar</p>

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Erasmus University China Center -> CSC Scholarship -> "I am a prospective CSC PhD Candidate" -> Table 1
Each institute requires difference level of English.

Erasmus University Rotterdam, the Netherlands
CSC PhD 2022 Project Description
Application to: EuccChinaOffice@eur.nl
Application deadline: Friday Mar 4, 2022

