



**Join us for the
2022 NephroCAGE Symposium
Aug 16, 2022 @ 6.15 am PDT / 9.15 am EDT / 3.15pm CEST**

Héloïse Cardinal, MD, PhD
Local site PI, CHUM



NEPHROCAGE

German-Canadian consortium on AI for
improved kidney transplantation outcome
2nd International NephroCAGE Symposium, Aug 16, 2022



PIRCHE



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NephroCAGE

What is in a name?

2nd Int'l
NephroCAGE
Symposium, Aug
16, 2022

- NephroCAGE is a German and Canadian research consortium that brings together experts in clinical transplantation, machine learning, data/ computer science, industry, to build clinical prediction models that will help transplant teams care for kidney transplant recipients
- Unique aspects of NephroCAGE
 - Use of state of the art assessment of immunological risk with epitope matching assessment (PIRCHE partner) to tailor immunosuppression
 - Use a federated learning infrastructure to build the clinical prediction models while ensuring data confidentiality



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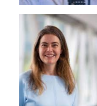
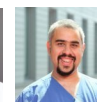
NephroCAGE

The people, the centers

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■ Clinicians

- Klemens Budde, Marcel Naik (Charité, Berlin)
- Ruth Sapir-Pichhadze (McGill University Health Center, Montreal)
- Paul Keown (St-Paul Hospital, University British Columbia, Vancouver)
- Héloïse Cardinal (Centre Hospitalier de l'Université de Montréal (CHUM), Montreal)



■ Machine learning experts

- Matthieu-P. Schapranow, Aadil Rasheed, Mozhgan Bayat (Hasso Plattner Institute, Potsdam)



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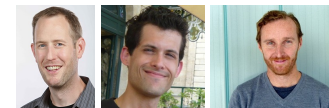
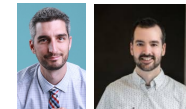
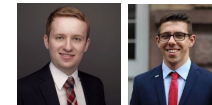
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- Federated learning infrastructure experts
 - Konstantin Pandl, Florian Leiser (Karlsruhe Institute of Technology)
 - Michael Chassé, Pascal St-Onge (CHUM)
 - David Buckeridge, David Bujold, Guillaume Bourque (McGill)
 - Oliver Gunther (UBC)
- Industrial partner
 - Matthias Niemann, Andreas Schimanski (Pirche)



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Activities in the past 2 years and ongoing

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- Activities divided in 'Work packages', shared webworkspace 'Confluence'
- WP 1: Federated learning infrastructure
 - Definition, implementation, and evaluation of the FLI for the NephroCAGE project.
 - Requirements analysis at each institution
 - Identification of DLT designs and framework for selection of a DLT-based FLI
 - Ongoing: design and development of DLT-based FLI architecture
- WP 2: Local data extraction
 - Extraction of relevant project data from local hospital information systems including use and access.
 - Protocol drafting and ethics approval at various centers
 - Data harmonization
 - Definition of minimal and extended datasets
 - Difference in units of measurements
 - Feature definition (proteinuria, cause of chronic kidney disease)



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- WP 3: Matching algorithm
 - Design and implementation of a pilot epitope matching algorithm (B cell and T cell)
- WP 4: Matching benchmark
 - Establishing, applying and evaluating a benchmark for HLA epitope matching algorithms based on retrospective cohort data
 - Anonymized access epitope match for clients
- WP 5: Local training of clinical prediction model
 - Choice of CPM (5-year graft survival with up to 1 year clinical data)
 - Initial training on Charité data



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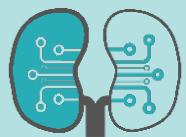
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Activities in the past 2 years, ongoing and future

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- WP 6: CPM deployment
- WP 7: CPM demonstrator
- WP 8: Project management and dissemination
 - Overall coordination of projects-WP
 - Knowledge translation initiatives (consortium, web-based publications)
 - Legal contracts between institutions
 - Funding opportunities in Canada and Germany



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