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# **ADVANCING MEDICINE & SAVING LIVES**

**IMPACT REPORT**

November 2020

**Fondation  
du Centre universitaire  
de santé McGill**



**McGill University  
Health Centre  
Foundation**

## CHANGING THE COURSE OF LIVES

Over the past few years, the John R. McConnell Foundation has given \$300,000 to two important projects, *Transforming diabetic care at the MUHC* and *Optimization of outcomes for kidney transplantation*. Your generous support is enabling our talented clinician-researchers to push the boundaries of medical science to usher in new breakthroughs in patient care.

Kidney disease affects up to 3 million Canadians, and for many a kidney transplant is the best course of treatment. Your gift is helping advance transplant medicine to ensure more viable donor organs are available, and that they remain viable for years after transplantation.

You are helping us change the course of lives for the millions of Canadians living with diabetes or kidney disease.



# OPTIMIZATION OF OUTCOMES FOR KIDNEY TRANSPLANTATION

## INTRODUCTION

In 2017 and 2019, the John R. McConnell Foundation provided two generous donations of \$100,000 to optimize the outcomes for kidney transplantation. Currently, all kidney transplantation results in temporary dysfunction for the first two to twelve weeks after surgery. With the help of your donation, surgeon Dr. Jean Tchervenkov is investigating whether umbilical cord stem cells can improve the speed at which transplanted kidneys become functional.

## RESEARCH

### **Doubling the number of kidneys available for transplantation**

Dr. Tchervenkov and his team have established that previously unused donor kidneys from individuals with cardiovascular disease can be transplanted. It was previously thought that these organs were not good candidates for transplantation, and this finding has doubled the number of organs available for transplantation. The team's research shows that kidneys from older donors that have excellent initial function or that return to good function within 90 days after transplantation are capable of keeping patients alive and well without need for dialysis for 10 years or more.



### **DR. JEAN TCHERVENKOV**

Jean I. Tchervenkov is Associate Professor of Surgery at the MUHC. He is recognized worldwide for his innovative research in transplantation medicine. He is currently the Director of Live Donor Kidney Transplantation Services at the Royal Victoria Hospital and Director of Pediatric Transplantation at The Montreal Children's Hospital. His main research activities are in the areas of solid organ transplantation and immunosuppression. Dr. Tchervenkov has over 100 publications in peer reviewed medical journals and has presented over 150 abstracts.

## Understanding the mechanisms behind failed kidney transplantation

Dr. Tchervenkov's research has shown that patients with low levels of immune-regulating cells called T cells are at higher risk to develop poor kidney function or rejection after transplantation. The poor immune regulation in these patients can result in Type 2 diabetes, cardiovascular disease and kidney failure.

In a paper published in November 2020, Dr. Tchervenkov and his team showed that kidneys under stress (i.e. due to transplantation) leach out microscopic structures called extracellular vesicles (EVs) by the billions. EVs are essentially messengers that carry molecules between the cells of the body. The EVs carry foreign antigens from the kidney, which activate the immune system and suppress the response of the T cells that are so essential for good kidney function. This imbalance results in inflammation and transplant rejection. The study found that transplanted kidneys that secrete the most EVs do the worst post-transplantation.

This finding is important because it better defines the mechanisms that lead to poor kidney function after transplantation, allowing physicians to direct therapies and interventions more effectively. It also plays a role in determining which patients might require stem cell therapy. Dr. Tchervenkov and his team believe they can reverse this effect using umbilical stem cells.

## THANK YOU

Thank you for your generous gift to the McGill University Health Centre. We are so grateful to the John R. McConnell Foundation for its continued support of medical innovation and excellence in patient care. Your gift is enabling scientific breakthroughs that will change the lives of countless individuals with diabetes and kidney disease. It is also ensuring the expert staff at the MUHC can provide the very best in personalized care to the thousands of patients that pass through our doors each year.

You are helping us realize our big dream of changing the course of lives and medicine. Thank you.

