



### THE STATISTICS ARE STAGGERING, AND THEY'RE GETTING WORSE

One in five adult Canadians is currently living with arthritis, a painful, debilitating chronic health condition that affects the mobility of joints and bones. By 2040, that number is expected to rise by 50 per cent, affecting nearly a quarter of our population.

These shifting demographics currently leave our aging population with increasing levels of disability, which in turn limits earning potential in the most productive years, affects relationships with family and friends, and even impacts mental health. Arthritis hits us where it hurts the most.

This is a crisis, and we at the Krembil Research Institute are on the front line. It's time to invest in our future, by empowering scientific research, so that we can help more people, sooner.

University Health Network's (UHN) Arthritis Program, based at Toronto Western Hospital, incorporates rheumatology, orthopedics, hand and osteoporosis programs under one roof. The program has evolved with the changing needs of our society.

We have assembled a team of the world's most innovative arthritis clinicians and researchers. We have given them the tools, the resources and the support they need to push the boundaries of discovery and to translate those discoveries into advanced patient care.

New technologies – such as sophisticated imaging and biological profiling with immune and inflammatory markers, as well as predictive analytics and artificial intelligence – allow us to diagnose patients earlier, customize their treatment and track their progress in real time.

This interdisciplinary approach helps us to break down silos in order to speed up progress. Our quest for answers has led us to discover, innovate and improve patient care for those who need it most.

It's patients like Jill Miller, Susan Rivers and Everton Williams, all featured in this magazine, who inspire and energize us. We are driven by a passion to make a difference in their lives – to diagnose them earlier and provide them with effective treatments, to help them better manage their symptoms and improve their mobility. Ultimately, we want to help them achieve productive and fulfilled lives, free of pain and disability.

Today, there is no cure for arthritis, but we're envisioning one for tomorrow.

Let's all work together to make this dream a reality.

**Dr. Robert Inman**  
Medical director, UHN Arthritis Program  
Senior scientist, Krembil Research Institute

**Dr. Mohit Kapoor**  
Research director, UHN Arthritis Program  
Senior scientist, Krembil Research Institute

## Krembil Research Institute

# By the numbers

Incidences of arthritis have ballooned, and it's only going to affect more people in the future. Here are some numbers – about arthritis and University Health Network's Arthritis Program – to put things into perspective.

350 million



People living with arthritis around the world – it's a leading cause of disability

(Global RA Network)

\$35 billion +



Cost of arthritis, injuries and musculoskeletal-related diseases to the Canadian health care system

(Canadian Institutes of Health Research)

50%

Canadians living with arthritis who are under 65.

(Arthritis Society)

20 years



until the number of Canadians living with arthritis increases by 50%

(Arthritis Society)

6 million

Canadians currently living with arthritis

(Arthritis Society)

## UHN'S ARTHRITIS PROGRAM

80,000+

Patients treated annually

1,200+

JOINT REPLACEMENT procedures performed every year



150,000+

TISSUE SAMPLES

from ankylosing spondylitis, lupus, osteoarthritis and psoriatic arthritis – in Krembil's arthritis biobank, one of the largest of its kind in North America



Researchers at the Krembil Research Institute were the **FIRST TO DISCOVER microRNA TISSUE BIOMARKERS** associated with spine osteoarthritis

**LARGEST MULTIDISCIPLINARY ARTHRITIS RESEARCH PROGRAM IN CANADA**, integrating medical, surgical and basic science aspects of arthritis

5

Number of international research networks studying arthritis that are headquartered at Krembil

## KREMBIL

2019 / 2020 • ISSUE 5  
ARTHRITIS

### EDITOR

Bryan Borzykowski

### ART DIRECTOR

Kamille Chin

### PHOTOGRAPHY

Tim Fraser

### CONTRIBUTORS

Elizabeth Chorney-Booth  
Wendy Glauser  
Wendy Haaf  
Tamar Satov  
Anna Sharratt  
Sarmishta Subramanian  
Tony Lei

### GLOBE CONTENT STUDIO

#### MANAGING DIRECTOR

Tracy Day

#### HEAD OF GLOBE CONTENT STUDIO

Sean Stanleigh

#### DEPUTY HEAD OF GLOBE CONTENT STUDIO

Katherine Scarrow

#### PROJECT DELIVERY MANAGER

Rachel Pryce

#### DIRECTOR PRODUCTION, THE GLOBE AND MAIL

Sally Pirri

#### PRODUCTION CO-ORDINATOR, THE GLOBE AND MAIL

Isabelle Cabral

### TORONTO GENERAL & WESTERN HOSPITAL FOUNDATION BOARD OF DIRECTORS

#### Chair: Raj Kothari

Sam Ajmera  
Vonna Bitove  
Marc Caira  
Jenny Coco  
Patrick Dovigi  
George R. Eaton  
Paul Farrell  
Ivan Fecan  
Angela Feldman  
Martin Goldfarb  
Leo Goldhar

#### Dr. J. Bernard Gosevitz

Daniel J. Greenglass  
Todd A. Halpern  
Donald K. Johnson  
Joanne Kearney  
Edward Kress  
Hank Latner  
Jim Leech  
Marc J. Lipton  
Kim Mason  
Deb Matthews  
Cheryl McEwen

#### Lynn M. McGrade

Alan Menkes  
Nadir Mohamed  
Marc Muzzo  
Philip Orsino  
Loretta Rogers  
Jeff Rubenstein  
Francis Shen  
Dr. Kevin Smith  
Richard Wachsberg  
Henry Wolfond  
Marvin Yontef

### UHN BOARD OF TRUSTEES

#### Chair: Brian Porter

Ross Baker  
Dean Connor  
Janice Fukakusa  
Todd Halpern  
Eric Horlick  
Stu Kedwell  
Raj Kothari

#### Fei Fei Liu

Doug McGregor  
Peter Menkes  
Lawrence Pentland  
Cheryl Regehr  
Joy Richards  
Janet Rossant  
Shirlee Sharkey

#### Kevin Smith

Barbara Stymiest  
Peter Wallace  
Jaime Watt  
Cornell Wright  
Trevor Young

## IN THIS ISSUE



### 3 Back in the game

More and more athletes are returning to competitive sports after ACL injuries.

### 5 No more pain

Osteoarthritis afflicts one in six Canadians. Scientists at Krembil are hoping to stop it before it starts.

### 9 Improving OA through education

Education and exercise can help prevent and improve OA symptoms, says Dr. Aileen Davis.

### 10 In good hands

Dr. Heather Baltzer conducts more hand surgeries than most other doctors in Canada. We take you inside the operating room to show you how it's done.

### 13 Back pain breakthrough

Nearly everyone feels back pain at some point, with many experiencing chronic pain. Krembil's researchers hope that new tools and tests can alleviate, if not eliminate, the suffering.

### 17 It's a young person's problem, too

Arthritis affects thousands of teenagers and young adults. Here's what Krembil researchers are doing about it.

### 20 Using AI to better understand arthritis

Drs. Igor Jurisica and Christian Veillette aim to improve treatments and eventually stop arthritis from developing in patients. How? With data and analysis.

### 23 Living with lupus

How advancements in lupus research helped one grateful mom get her wish.

### 26 Fighting arthritis for 40+ years

A look at how far University Health Network's Arthritis Program has come.