TOP 10 ARTHRITIS SOCIETY RESEARCH ADVANCES OF 2019

Thanks to the generosity and vision of our donors, the Arthritis Society is the leading charity sparking new ideas and careers in arthritis research across Canada. With this crucial support, innovative minds are answering the most pressing research questions spanning the many types of arthritis. Whether working in the lab, the clinic, or in the community, researchers are turning donor support into discoveries that both enhance care for people living with arthritis today and open the door for the new treatments and cures of tomorrow. Here are some of the many advances you made possible in 2019.

★ CONSUMER FAVOURITE ★

Advancing drug delivery for osteoarthritis
Dr. Frank Beier, Western University

The finding: While many scientists are working towards new treatments for osteoarthritis (OA), drugs that circulate throughout the whole body often have undesirable side effects. To help address this, researchers developed a new delivery method for an anti-inflammatory drug by converting it into tiny particles that could be injected directly into the joint.

The future: With further development, this innovative drug delivery system could be used to target new and existing OA treatments directly to the joint to help minimize side effects and maximize benefits.
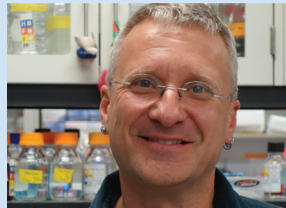
An innovative cell therapy for osteoarthritis
Dr. Sowmya Viswanathan, University Health Network

The finding: Treatments to limit the impact that osteoarthritis (OA) has on lives are limited. Cell-based therapies could hold the key but have not yet been proven to be safe or effective. Canada's first clinical trial on cell therapy for advanced knee OA revealed that it could be a safe approach to reducing joint pain and improving function, likely by combatting inflammation.

The future: This groundbreaking discovery lays the foundation for larger clinical trials on the path to new treatments. Reducing joint inflammation and pain while restoring mobility and quality of life with a single injection of cells could give people with knee OA back the life they're missing.

First Nations and Métis patient preferences for rheumatoid arthritis management
Dr. Glen Hazlewood, University of Calgary

The finding: Rheumatoid arthritis (RA) is more common in First Nations and Métis Peoples than in non-Indigenous populations. However, little is known about the preferences of Indigenous patients regarding RA management. Researchers found that First Nations or Métis patients with RA at rheumatology clinics in Southern Alberta accept a holistic approach to managing the physical, mental, emotional and spiritual aspects of living with RA. Their preferences for medication were also influenced by clinical, familial and societal factors.

The future: These insights will help healthcare providers build relationships with their First Nations and Métis patients based on trust and effective communication. This is expected to encourage shared decision-making in a culturally safe environment to improve RA treatment in this population.

Preventing a life-threatening complication of scleroderma
Dr. Sabrina Hoa, Jewish General Hospital – Lady Davis Institute
(Supervisors: Dr. Marie Hudson and Dr. Sasha Bernatsky)

The finding: Scleroderma (sometimes called systemic sclerosis) is a rare autoimmune disease that involves a build-up of tough scar-like tissue in the skin and sometimes other organs. If the lungs are involved, people can develop a complication called interstitial lung disease (ILD), which can be fatal. Researchers found that drugs that suppress the immune system in people with mild ILD help preserve lung function and prevent ILD progression.

The future: This suggests a promising "window of opportunity" to treat ILD early on, when it is mild, to prevent its progression to a life-threatening complication. With further study, this treatment approach could save lives for those with scleroderma.

Earliest joint changes on the path to post-injury osteoarthritis
Dr. Steven Boyd, University of Calgary

The finding: Tearing the anterior cruciate ligament (ACL) in the knee is a common sports injury that increases the risk of developing knee osteoarthritis (OA). In more detail than ever before, researchers were able to use advanced medical imaging to visualize some of the earliest changes to the bones in the knee joint after an ACL injury.

The future: Knowing how the bone is lost or damaged in the injured joint in the months immediately after an ACL tear suggests that efforts to rehabilitate the joint should begin early after injury to prevent future OA.

Long wait times for multidisciplinary pain treatment
Simon Deslauriers, Université Laval
(Supervisor: Dr. Kadija Perreault)

The finding: People with arthritis can receive comprehensive pain management services in pain clinics, where multiple healthcare providers provide coordinated care for chronic pain. Pain clinic services can improve patients' quality of life but often have long wait times. Researchers found that about a third of people with arthritis in Quebec waiting to be seen at a pain clinic waited longer than 6 months before their first appointment.

The future: This research highlights a gap in access to timely and effective care and identified several barriers to be addressed to improve access to comprehensive pain management services.
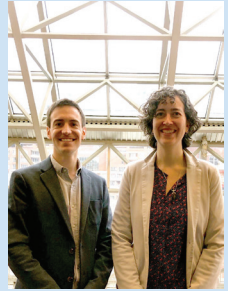
Artificial intelligence to guide treatment in childhood arthritis
Dr. Simon Eng, The Hospital for Sick Children
(Supervisor: Dr. Rae Yeung)

The finding: Some children have mild forms of arthritis, while others can have forms with devastating impacts that last into adulthood. It's hard to predict which children might be able to avoid unnecessary treatments and side effects. Researchers discovered an algorithm using artificial intelligence that can predict how childhood arthritis will behave.

The future: This new approach will shape clinical practice and inform tailored treatment decisions to keep children with arthritis healthy.

Depression and anxiety in lupus
Dr. Zahi Touma, University Health Network

The finding: Lupus, or systemic lupus erythematosus (SLE), is a serious inflammatory disease that can involve the joints and many organs, including the nervous system. This can lead to several mood disorders that can often go undiagnosed. Researchers found that simple patient screening questionnaires could be helpful in identifying people with lupus who may have depression or anxiety and found that these conditions were present in up to half of all lupus patients.

The future: Bringing attention to the high prevalence of depression and anxiety in people with lupus and providing reliable tools to help healthcare providers screen for them can help ensure patients get the timely psychiatric care and support they need.
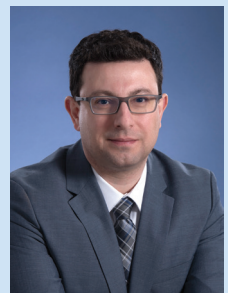
Vitamin D and rheumatoid arthritis?
Dr. Vidyanand Anaparti, University of Manitoba
(Supervisors: Dr. Hani El-Gabalawy and Dr. Neeloffer Mookherjee)

The finding: First Nations people have high rates of rheumatoid arthritis (RA), but it's not clear why. Surprisingly, researchers found that vitamin D levels in the serum of the blood increased in a small group of First Nations people with a high risk of RA as they started to show clinical symptoms of the disease.

The future: This research provides early clues into a new area for investigation – how vitamin D might be involved in the development of RA in this population.

Wearable technology to measure function before knee replacement
Dr. Matthew Teeter, Lawson Health Research Institute

The finding: Wearable sensors may become the future of preoperative assessment of people with arthritis preparing for knee replacement surgery. Researchers found that combining wearable sensors to track knee movement with a form of artificial intelligence called machine learning could be used at pre- and post-operative appointments to classify people according to their likelihood of improving their knee function.

The future: With further development, this technology could be used to help patients manage their expectations and inform their post-operative recovery and rehabilitation plans.

Note: "Consumer Favourite" was selected through an online survey of the Arthritis Society Online Consumer Panels, which include people with lived experience of arthritis volunteering their perspectives.