



2008-2019

680 published Papers

14 Patents and licences

~1400 National and International Presentations

~\$40 million Research Funding

10 International Leaders: 5 ♀ 5 ♂

2 Tier 1 CRC, 1 Western Research Chair,

25 CIHR grants, 10 NSERC grants

1 HSFO Career Investigator, 2 CIHR New Investigators

2 Junior, 2 Mid-career, 6 senior investigators

The Precision MRI Initiative @ Western is a new interdisciplinary transfaculty research team that focuses on developing MRI measurements and methods to optimize and personalize the treatment of chronic disease and to non-invasively predict and prevent poor patient outcomes including quality of life, hospitalization and death.

The goal of the Precision MRI Initiative @ Western is to nurture the local ecosystem of researchers who together will work to discover and translate innovations for better health and health economic outcomes for Canadians.

Canadians with chronic diseases (including those of the heart, lung, brain, back, knee and hips) present with multiple co-morbidities needing specialized tertiary care and in Canada, such patients now outnumber those with urgent trauma, single disease foci and acute and infectious disease needing care in our health-care systems. As an example, asthma and chronic obstructive lung disease (COPD) are both chronic inflammatory airways diseases that affect over 6 million Canadians; their prevalence continues to increase, causing an enormous and growing cost burden on healthcare systems. In Canada, COPD is the leading cause of hospitalization, accounting for nearly 80,000 hospitalizations/year and 1 in 4 hospital beds, while asthma is the leading cause of pediatric hospital visits and lost school days. Direct and indirect costs of chronic lung disease alone are estimated at \$18 billion annually in 2020; the Conference Board of Canada projects that these costs will grow to over \$30 billion by 2030 unless novel treatments and preventive strategies are discovered and implemented.

In a similar manner, the health and economic burden of inflammatory joint and musculoskeletal disease as well as degenerative spine disorders has resulted in enormous morbidity, loss of work and quality of life as well as huge and growing costs to the health care system. Cancer, once considered an acute terminal illness is now managed over years as a chronic condition with improved treatments that is managed over years and decades. For cancer patients there is a real need for biomarkers to

understand why some cancers become metastatic, to improve prediction of treatment response and side effects and to predict recurrence.

Our Western-based research consortium recognizes the economic need and strategic opportunity to transform how chronic disease is treated from a one-size-fits all approach to a more personalized system of predictive, preventive, and precision healthcare that is tailored to a population or individuals. With this framework in mind, our research plan will investigate and generate new ways to identify, phenotype and treat chronic diseases while lowering overall health care costs.

We will achieve this by discovering, developing, validating and translating novel multinuclear (including ^{23}Na , ^{129}Xe , ^3He , ^{19}F , ^{13}C) magnetic resonance imaging (MRI) and integrating our findings within a Western-wide **Precision MRI Initiative** framework which has been developed as a novel application of Precision Medicine, an innovative long-term research vision spearheaded by the National Institutes of Health (NIH) and Canadian Institutes of Health Research (CIHR). Precision medicine aims to change the way we approach the understanding, diagnosis, and treatment of disease using existing and emerging clinical tools. Emerging technologies include those related to genomics, epigenomics, proteomics, nanotechnology, molecular diagnostics and advanced imaging.

Our team of fundamental and translational health research investigators is focused on developing conventional and multinuclear MRI methods to exploit the full potential of imaging and personalized medicine which lies in their combination and utilization towards improving human health and outcomes.

Team Members include Drs Parraga, Bartha, Battie, Drangova, Foster, McCormack, Ronald, Scholl, Seguin and Teeter in the Faculties of Health Sciences, Engineering and Schulich School of Medicine & Dentistry at Western University

Google Scholar accounts

Robert Bartha https://scholar.google.ca/citations?user=UqMT_nAAAAAJ&hl=en&oi=ao

Michele Battié <https://scholar.google.ca/citations?user=oKlq1HUAAAAAJ&hl=en#>

Maria Drangova <https://scholar.google.ca/citations?user=7ekKkd0AAAAAJ&hl=en>

Paula Foster https://scholar.google.ca/citations?user=kdGx_U8AAAAAJ&hl=en#

Grace Parraga <https://scholar.google.ca/citations?user=1vIK0EEAAAAAJ&hl=en>

Dave McCormack https://scholar.google.com/citations?hl=en&user=dLxmBNYAAAAAJ&view_op=list_works&gmla=AJsNF58b9gm5HTPEIDgnQYg1DiMYO8GveerlxmnTsKEBm5Dd8u5DIL_7rGxGN_DIAEvgLo9p-ULeljr9dd4cVEpdpBe4xQqpvjqeOoI0BQJSJ1bhw5stk6Q56KL8D3TuJngAZxR_8EOio1dIMmABVLUwsESjXkf-g

John Ronald <https://scholar.google.ca/citations?user=mVXL-YEAAAAAJ&hl=en>

Timothy Scholl <https://scholar.google.com/citations?user=1AckymgAAAAAJ&hl=en#>

Cheryle Séguin https://scholar.google.ca/citations?user=_08fJg8AAAAAJ&hl=en

Matthew Teeter <https://scholar.google.ca/citations?user=F2N3p7kAAAAAJ&hl=en>

Investigator	Number of Trainees 2008-19 (still training or graduated)								
	UG	MSc	PhD	PDF	MD UG	MD resident	MD fellow	DDS/other	Total
Bartha	29	9	14	5	4	0	0	0	61
Battié	10	0	7	1	0	1	0	0	19
Drangova	14	4	10	3	1	0	0	0	31
Foster	21	16	9	6	1	0	0	0	53
McCormack	25	5	5	2	5	17	0	0	59
Parraga	55	23	11	5	5	19	0	0	118
Ronald	12	5	3	0	0	0	0	0	20
Scholl	17	5	4	4	0	0	0	0	30
Séguin	21	9	6	4	0	0	0	4	44
Teeter	15	11	2	6	1	5	7	0	40
Grand Total	216	85	71	36	17	40	7	4	482

Investigator	Papers, Presentations and Funding 2008-19			
	Publications*	National & International Presentations**	International Research Leadership	Research Funding
Bartha	102	128	Lead, Canadian Consortium Neurodegeneration Aging (CCNA), Lead, Ontario Neurodegenerative Research Initiative	\$5,260,000
Battié	75	78	1 board, Chair standards working group, Chair SAC International Research Forum	\$2,215,323
Drangova	83 incl 4 patents	100		\$9,174,500
Foster	68	240	1 Society	\$3,475,000
McCormack	50	30	Chair-Chief Respiriology	\$1,500,000
Parraga	182	351	3 Boards, 2 Societies, Chair SAC Canadian Lung Association	\$8,143,070
Ronald	31 incl 1 patent	80	1 Society	\$2,014,200
Scholl	49 incl 4 patents	96		\$3,994,000
Séguin	30	150	1 society, 1 editorial board, Chair of NCE, Chair Ontario Institute Regenerative Medicine	\$3,575,000
Teeter	87	198	1 Board, 1 Society	\$1,381,333
Grand Total	680	1462		\$40,762,723

*peer-reviewed; ** invited or peer-reviewed abstracts and oral presentations, eposters