

Prof. Madhukar Pai, MD, PhD

Canada Research Chair in Translational Epidemiology & Global Health
Professor of Epidemiology, McGill University
Director, McGill Global Health Programs
Associate Director, McGill International Tuberculosis Centre

Date of Last Revision: 9 August 2017

A. Contact Information

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B. Education

Medical

1993	MB BS Stanley Medical College, Chennai, India Dr MGR Medical University, Chennai, India
1997	MD (Community Medicine) Christian Medical College, Vellore, India Dr MGR Medical University, Chennai, India

Graduate/Doctoral

2004	PhD (Epidemiology) University of California, Berkeley, CA, USA Dissertation: Evaluation of Newer Diagnostic Tests for Tuberculosis Supervisor: Professor John M Colford, Jr.
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Postgraduate/Post-Doctoral

2005 – 2006	Postdoctoral fellowship University of California, San Francisco & University of California, Berkeley, CA Focus: tuberculosis epidemiology Supervisors: Professor Philip C Hopewell & Professor Arthur L Reingold
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Postgraduate Clinical Training

1993 – 1994	Rotating Internship Stanley Medical College Hospital, Chennai, India
1994 – 1997	Community Medicine Residency Program Christian Medical College, Vellore, India
1997 – 2000	Consultant in Community Medicine Sundaram Medical Foundation Hospital, Chennai, India

Professional Certifications

1994 – Present	Unrestricted medical license, Indian Medical Council, India
1998 – Present	Diplomate of the National Board of Examinations (Board certification in Preventive & Social Medicine), National Board of Examinations, India
2008 – Present	Member, Council of Physicians, Dentists and Pharmacists (CPDP), McGill University Health Centre, Montreal

C. Appointments

University

2015 – Present	Full Professor, Department of Epidemiology, Biostatistics and Occupational Health, McGill University, Montreal
2011 – 2015	Associate Professor, Department of Epidemiology, Biostatistics and Occupational Health, McGill University, Montreal
2006 – 2011	Assistant Professor, Department of Epidemiology, Biostatistics and Occupational Health, McGill University, Montreal
2006 – Present	Associate Member, Department of Medicine, McGill University, Montreal
2007 – 2012	Member, McGill Centre for the Study of Host Resistance, McGill University, Montreal
2013 – Present	Associate Director, McGill International TB Centre, McGill University, Montreal
2014 – Present	Director, McGill Global Health Programs, McGill University, Montreal

Hospital

2014 – Present	Associate Program Leader, Program on Infectious Diseases and Immunity in Global Health, Research Institute of the McGill University Health Centre (MUHC).
2006 – Present	Medical Scientist, McGill University Health Centre (MUHC), Divisions of Respiriology and Infectious Diseases
2006 – Present	Member, Respiratory Epidemiology & Clinical Research Unit (RECRU), Montreal Chest Institute, Montreal

2006 – 2008 Assistant Director for Global Health Research, Research Institute of the McGill University Health Centre (MUHC-RI), Montreal

Visiting Professorships and external positions

2000 – Present Visiting Faculty, Department of Medicine, Mahatma Gandhi Institute of Medical Sciences, Sevagram, India

2008 – 2012 Professor Extraordinary, Department of Community Health, Faculty of Health Sciences, Stellenbosch University, South Africa

2009 – Present Honorary Professor, Department of Medicine, Faculty of Health Sciences, University of Cape Town, South Africa

2012 – Present Adjunct Faculty, Department of Pulmonary Medicine, Christian Medical College, Vellore, India

2013 – Present Honorary International Visiting Faculty, Translational Health Science and Technology Institute, New Delhi, India

2014 – Present TMA Pai Endowment Chair in Translational Epidemiology & Implementation Science, Manipal University, Manipal, India

2014 – 2015 Co-Director, Axe en Santé Mondiale, Réseau de recherche en santé des populations du Québec (RRSPQ), Quebec, Canada

D. Special Honors, Awards, Recognition

Honors

2012 Chanchlani Global Health Research Award, McMaster University

2014 Membership, Royal Society of Canada
[College of New Scholars, Artists and Scientists]

2015 Haile T. Debas Prize, Faculty of Medicine, McGill University

2017 David Johnston Faculty & Staff Award, McGill Alumni Association

2017 Finalist, Principal's Prize for Public Outreach Through Media, McGill University

2017 Fellow, Canadian Academy of Health Sciences

Career (Salary) Awards

2007 – 2012	CIHR New Investigator Award Canadian Institutes of Health Research (CIHR)	\$300,000
2007 – 2011	FRQS Chercheur Boursier – Junior 1 Fonds de la recherche du Québec – Santé (FRQS)	Declined

2007 – 2010	Établissement de jeunes chercheurs Fonds de la recherche du Québec – Santé (FRQS)	\$45,000
2012 – 2014	FRQS Chercheur Boursier – Junior 2 Fonds de la recherche du Québec – Santé (FRQS)	\$128,472
2014 – 2015	FRQS Chercheur Boursier – Senior Fonds de la recherche du Québec – Santé (FRQS)	\$211,962
2015 – 2022	Canada Research Chair (Tier 1) Canadian Institutes of Health Research (CIHR)	\$1,400,000

Research Awards

1994	Dr. Rangarajan Memorial Award in Community Health Christian Medical College, Vellore, India
2005	Warren Winkelstein Award for Excellence in Epidemiology University of California, Berkeley, USA
2006	Millennium Research Award Research Institute of the McGill University Health Centre, Montreal, Canada
2007	Union Scientific Prize International Union Against Tuberculosis and Lung Disease, France
2011	Canadian Rising Stars in Global Health, Grand Challenges, Canada
2013	Stars in Global Health, Grand Challenges, Canada

Teaching and Mentorship Awards

2002	Outstanding Graduate Student Instructor Award, University of California, Berkeley
2007	Core Teaching Award, Epidemiology, Biostatistics and Occupational Health Students' Society (EBOSS), McGill University
2007	Student Advocacy Award, Epidemiology, Biostatistics and Occupational Health Students' Society (EBOSS), McGill University
2008	Core Teaching Award, Epidemiology, Biostatistics and Occupational Health Students' Society (EBOSS), McGill University
2009	Core Teaching Award, Epidemiology, Biostatistics and Occupational Health Students' Society (EBOSS), McGill University
2009	Certificate of Merit award for teaching excellence from the Canadian Association for Medical Education (CAME)
2011	Core Teaching Award, Epidemiology, Biostatistics and Occupational Health Students' Society (EBOSS), McGill University

- 2012 Core Teaching Award, Epidemiology, Biostatistics and Occupational Health Students' Society (EBOSS), McGill University
- 2013 Faculty Honour List for Educational Excellence, Faculty of Medicine, McGill University

E. Teaching

E1. McGill Courses

Year/term	Course title	Course number	Credits	Role	# of students	In class hours
Fall 2006	Substantive Epidemiology 2	EPIB642	1	Instructor	23	13
Winter 2007	Practicum	EPIB640	1	Co-instructor	21	13
Summer 2007	Systematic reviews & meta-analysis	EPIB672	2	Instructor	20	26
Fall 2007	Fundamentals of Epidemiology 1	EPIB601	4	Instructor	22	52
Summer 2008	Systematic reviews & meta-analysis	EPIB672	2	Instructor	22	26
Fall 2008	Fundamentals of Epidemiology 1	EPIB601	4	Instructor	33	52
Summer 2009	Systematic reviews & meta-analysis	EPIB672	2	Instructor	25	26
Fall 2009	Fundamentals of Epidemiology 1	EPIB601	4	Instructor	34	52
Summer 2010	Systematic reviews & meta-analysis	EPIB672	2	Instructor	27	26
Fall 2010	Fundamentals of Epidemiology 1	EPIB601	4	Instructor	30	52
Summer 2011	Systematic reviews & meta-analysis	EPIB619	2	Instructor	28	26
Fall 2011	Fundamentals of Epidemiology	EPIB601	4	Instructor	30	52
Summer 2012	Systematic reviews & meta-analysis	EPIB619	2	Co-instructor	36	26
Summer 2013	Systematic reviews & meta-analysis	EPIB619	2	Co-instructor	24	26
Fall 2013	Knowledge Synthesis	EPIB677	3	Instructor	15	39
Summer 2014	Systematic reviews & meta-analysis	EPIB619	2	Co-instructor	25	39
Fall 2014	Knowledge Synthesis	EPIB668	2	Instructor	8	26

Winter 2015	Global health: epidemiology research	EPIB681	3	Co-instructor	13	39
Summer 2015	Systematic reviews & meta-analysis	EPIB619	2	Co-instructor	28	39
Fall 2015	Fundamentals of Global Health	PPHS511	3	Instructor	49	39
Fall 2016	Fundamentals of Global Health	PPHS511	3	Instructor	46	39

E2. Research Trainees Supervised

Graduated

2006 – 2009	Yasmin Akcikir MSc (epidemiology) Co-supervisor Thesis: <i>Correlates of treatment outcomes of Multidrug-Resistant Tuberculosis (MDR-TB): a systematic review and meta-analysis</i> Primary supervisor: Dick Menzies Funding: MUHC-RI studentship (2007 - 2008)
2007 – 2010	Kelty-Anne Hillier MSc (epidemiology) Primary supervisor Thesis: <i>The impact of increasing antiretroviral therapy use on trends in pediatric admissions and in-hospital mortality at a large South African referral hospital</i> Funding: MUHC-RI studentship (2008 - 2009)
2008 – 2010	Jessica Lee Minion MSc (epidemiology) Primary supervisor Thesis: <i>Evaluating light-emitting diode fluorescent microscopy for the diagnosis of active tuberculosis</i> Co-supervisor: Dick Menzies Funding: Quebec Respiratory Health Training Fellowship (2009 - 2010)
2008 – 2010	Laurence Brunet MSc (epidemiology) Primary supervisor Thesis: <i>Tobacco smoking in South African patients with suspected tuberculosis</i> Funding: European Commission, EU-FP7 Award (2009 - 2010)
2009 – 2011	Caroline Chartrand Msc (epidemiology) Primary supervisor Thesis: <i>Rapid diagnostic tests for influenza</i> Funding: CHU Sainte-Justine Hospital Foundation (2009 - 2011)

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| 2009 – 2011 | <p>Ioana Nicolau
Msc (epidemiology)
Primary supervisor
Thesis: <i>Urine-based Rapid Tests for Smoking and Isoniazid Treatment Adherence in Adult Patients in a Tuberculosis Clinic Setting</i>
Funding: European Commission, EU-FP7 Award (2010 - 2011)</p> |
| 2010 – 2012 | <p>Lancelot Pinto
Msc (epidemiology)
Primary supervisor
Thesis: <i>Chest radiograph scoring systems for the diagnosis of active tuberculosis</i>
Funding: European Commission, EU-FP7 Award (2010 - 2011)</p> |
| 2010 – 2012 | <p>Anurag Bhargava
Msc (epidemiology)
Co-supervisor
Thesis: <i>Nutrition and tuberculosis</i>
Funding: Quebec Respiratory Health Training Program (QRHTP) fellowship (2011 - 2012)</p> |
| 2008 – 2012 | <p>Alice Anne Zwerling
PhD (epidemiology)
Primary supervisor
Thesis: <i>Evaluating interferon-gamma release assays for routine screening of healthcare workers for tuberculosis infection</i>
Funding: MUHC-RI studentship (2008 - 2009)
Frederick Banting & Charles Best CIHR Doctoral Award (2009 - 2012)</p> |
| 2008 – 2012 | <p>Daphne Ling
PhD (epidemiology)
Primary supervisor
Thesis: <i>Alternative approaches to TB diagnostics research: methods for estimating the incremental value of new tests</i>
Funding: MUHC-RI studentship (2009 - 2011)
Harrison Watson Scholarship, Faculty of Medicine, McGill University (2009 - 2011)
Canadian Lung Association Fellowship (2011 - 2012)</p> |
| 2012 – 2014 | <p>Claudia M. Denkinger
Postdoctoral fellow
Primary supervisor
Funding: Richard Tomlinson Postdoctoral Fellowship, McGill University (2012 - 2014)
Burroughs –Wellcome Fellowship from the American Society of Tropical Medicine and Hygiene (2013 - 2014)</p> |
| 2013 – 2014 | <p>Sandra Vivian Kik
Postdoctoral fellow
Primary supervisor
Funding: Bill & Melinda Gates Foundation grant (2013 -)</p> |

2011 – 2015	Samuel Schumacher PhD (epidemiology) Primary supervisor Thesis: <i>Epidemiology of diagnostic delays in tuberculosis</i> Funding: MUHC-RI studentship (2011 - 2012) Funding: Quebec Respiratory Health Training Program (QRHTP) fellowship (2012 - 2013) & Harrison Watson Scholarship, Faculty of Medicine, McGill University (2013 - 2014)
2014 – 2015	Zhi Zhen Qin MSc (epidemiology) Primary supervisor Funding: FRQS fellowship (2015 - 16)
2014 – 2016	Andrew McDowell Postdoctoral fellow Primary supervisor Funding: Bill & Melinda Gates Foundation grant (2014 -)
2014 – 2016	Marzieh Ghiasi MSc (epidemiology) Primary supervisor Funding: CIHR Graduate Studentship (2015 - 16)
2009 – 2016	Hojoon Sohn PhD (epidemiology) Primary supervisor Thesis: <i>Impact and cost-effectiveness of point-of-care tests for tuberculosis</i> Funding: European & Developing Countries Clinical Trials Partnership (2010 - 2013)
2013 – 2016	Srinath Satyanarayana PhD (epidemiology) Primary supervisor Thesis: <i>Quality of tuberculosis care in India</i> Funding: MUHC-RI studentship (2013 - 2014) & Canadian Thoracic Society fellowship (2014 – 16)
Current	
2015 – Present	Sophie Huddart PhD (epidemiology) Primary supervisor Funding: Faculty of Medicine studentship, McGill University (2016-2017)
2016 – Present	Emily MacLean PhD (epidemiology) Primary supervisor Funding: McGill University
2016 – Present	Toyin Togun

Postdoctoral Fellow
Primary supervisor
Thesis: *Improving the diagnosis of childhood tuberculosis*
Funding: Steinberg Postdoctoral Fellowship

Contributions on Thesis Committees, McGill University

2007 – 2009	Caroline Gallant PhD Thesis Committee Thesis: <i>Genetic determinants that control anti-mycobacterial immune reactivity</i> Supervisor: Erwin Schurr
2009 – 2011	Patricia Fontela PhD Thesis Committee Thesis: <i>Surveillance of Catheter-Related Bloodstream Infections in Quebec Intensive Care Units</i> Supervisors: Robert Platt & Caroline Quach
2007 – 2010	Olivia Oxlade PhD Thesis Committee Thesis: <i>Development and application of a comprehensive tuberculosis transmission model to evaluate approaches to tuberculosis control</i> Supervisor: Dick Menzies
2008 – 2010	Erika Leung MSc Thesis Committee Thesis: <i>MODS for tuberculosis diagnosis</i> Supervisor: Dick Menzies
2011 –	Lena Shah PhD Thesis Committee Thesis: <i>Active case finding for TB cases in high burden, low HIV settings, Peru</i> Supervisors: Timothy Brewer & Jay Kaufman
2011 – 2012	Amr Albanna MSc Thesis Committee Thesis: <i>Does Fixed Dose Combination Anti-tuberculous Therapy Improve Treatment Outcomes? A Systematic Review and Meta-Analysis</i> Supervisor: Dick Menzies

Contributions on Thesis Committees, External

2011 – 2013	Peter Daley MSc Thesis Supervision Committee Thesis: A Randomized Trial of Efficacy and Safety of Adjunctive Vitamin D in the Treatment of Active Tuberculosis in India MSc Clinical Epidemiology Program, Memorial University of Newfoundland
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E3. Invited Lectures, Talks, Seminars, Presentations (2007 – Present)

Named lectures:

1. Pai M. Improving TB diagnosis: knowing the path is not the same as walking the path. Scott J. Thaler Lecture, AERAS Global TB Vaccine Foundation, Rockville, USA, 30 March 2011.
2. Pai M. The freakonomics of TB control in India. Inaugural Chanchlani Global Health Research Award, McMaster University, Hamilton, Canada, 27 November 2012.
3. Pai M. The freakonomics of TB diagnosis in India. Inaugural Ellen Jo Baron Lecture at the Department of Pathology, Stanford University, California, USA, January 10 2013.
4. Pai M. "India: the epicentre of global TB control", in Raviglione, M. and Nunn, P. (eds), *Tuberculosis*. The Biomedical & Life Sciences Collection, Henry Stewart Talks Ltd, London (online at <http://hstalks.com/?t=BL1533302-Pai>)
5. Pai M. New diagnostics for tuberculosis: converting technologies into health impact. Jubilee Lecture Series. De La Salle Health Sciences Institute, Manila, Philippines, 3 July 2013.
6. Pai M. The Doctor Charles Scriver Keynote Lecture: "Why should you care about global health?" Canadian Medical Hall of Fame Discovery Days, McGill University, Montreal, Dec 7, 2016.
7. Pai M. George W. Comstock Lecture: Putting quality on the tuberculosis agenda. 21st Annual Conference of The Union - North America Region, Vancouver, February 23, 2017.
8. Pai M. 10th Annual George W. Comstock Lecture: Time for a quality revolution in tuberculosis care. Johns Hopkins University, Baltimore, USA, April 5, 2017.

Invited lectures and seminar presentations:

9. Pai M. Serial testing with IFN- γ assays: how should we define conversions, reversions and thresholds? Invited presentation at the First Global Symposium on Interferon- γ Assays – Rethinking the epidemiology of tuberculosis infection, Vancouver, Canada, 21-22 February 2007.
10. Pai M. IFN- γ assays in contact and outbreak investigations: intriguing differences across exposure-gradient studies Invited presentation at the First Global Symposium on Interferon- γ Assays – Rethinking the epidemiology of TB infection, Vancouver, Canada, 21-22 February 2007.
11. Pai M. Tuberculosis infection among household contacts in rural India: comparison of a whole-blood interferon-gamma assay with the tuberculin skin test. Oral presentation at the First Global Symposium on Interferon- γ Assays – Rethinking the epidemiology of tuberculosis infection, Vancouver, Canada, 21-22 February 2007.
12. Pai M. Applications of IGRAs in the developing world: what is their potential? Invited presentation at the American Thoracic Society International Conference, San Francisco, USA, 20 May 2007.
13. Pai M. What is known about interferon-gamma assays and what are the areas of controversy? Invited presentation at the 4th European Regional Congress of the International Union Against Tuberculosis and Lung Disease, Riga, Latvia, 28 June 2007.
14. Pai M. Confounding in health research: how many ways to skin this cat? Research Master Class, Stellenbosch University, Cape Town, South Africa, 6 August 2007.
15. Pai M. Screening healthcare workers for TB infection: should T cell assays replace the tuberculin skin test? Invited seminar presentation at the University of Cape Town, South Africa, 13 August 2007.

16. Pai M. New tests for TB infection: what can they contribute to childhood TB diagnosis in high-burden regions? Invited symposium presentation at the 38th World Conference on Lung Health, Cape Town, South Africa, 9-12 November 2007.
17. Pai M., Dheda K. Challenges in the diagnosis of TB among individuals with HIV infection. Invited symposium presentation at the 38th World Conference on Lung Health, Cape Town, South Africa, 9-12 November 2007.
18. Pai M. Role of new T-cell based diagnostic tests to evaluate children and adults exposed to active TB. Invited symposium presentation at the 38th World Conference on Lung Health, Cape Town, South Africa, 9-12 November 2007.
19. Pai M. Introduction of what is known about IGRA tests. Invited presentation at the meeting on Interferon-gamma release assays, KNCV Tuberculosis Foundation, Cape Town, South Africa, 13 November 2007.
20. Pai M. IGRA reproducibility, conversions and reversions: longitudinal studies from India. Invited presentation at the meeting on Interferon-gamma release assays, KNCV Tuberculosis Foundation, Cape Town, South Africa, 13 November 2007.
21. Pai M. T-cell assay conversions and reversions among contacts of TB patients in rural India. Oral symposium presentation at the American Thoracic Society International Conference, Toronto, Canada, 19 May 2008.
22. Pai M. New tools and emerging technologies for the diagnosis of active tuberculosis and drug resistance. Invited symposium presentation at the Canadian Respiratory Conference, Montreal, Canada, 20 June 2008.
23. Pai M. Evidence-based TB diagnosis. Invited seminar presentation at the Institute of Infectious Diseases and Molecular Medicine (IIDMM), University of Cape Town, South Africa, 30 July 2008.
24. Pai M. Introduction to systematic reviews and meta-analysis. Invited guest lecture in the Clinical Research Methods course, Department of Medicine, University of Cape Town, South Africa, 30 July 2008.
25. Pai M. How close are we in differentiating infected from diseased in tuberculosis? Invited symposium presentation at the 39th World Conference on Lung Health, Paris, France, 16-20 October 2008.
26. Pai M. Evidence for active and passive smoke exposure and increased risk of TB infection, TB disease, and TB mortality. Invited symposium presentation at the 39th World Conference on Lung Health, Paris, France, 16-20 October 2008.
27. Pai M. Comparison of gamma interferon in human and animal tuberculosis: human. Invited symposium presentation at the 39th World Conference on Lung Health, Paris, France, 16-20 October 2008.
28. Pai M. Tobacco, TB and mortality in India and China. Invited symposium presentation at the 39th World Conference on Lung Health, Paris, France, 16-20 October 2008.
29. Pai M. LTBI diagnosis: advances and prospects. Annual Meeting of the Stop TB Partnership New Diagnostics Working Group, 39th World Conference on Lung Health, Paris, France, 16 October 2008.
30. Pai M. Evidence-based TB Diagnosis: How evidence informs practice and policy. Annual Meeting of

- the Stop TB Partnership New Diagnostics Working Group, 39th World Conference on Lung Health, Paris, France, 16 October 2008.
31. Pai M. IGRAs for the diagnosis of LTBI: are they relevant in TB endemic settings? FIND Scientific Forum on Recent Advances in TB Diagnostics, 39th World Conference on Lung Health, Paris, France, 17 October 2008.
 32. Pai M, Scano F. What is the evidence available to support TB infection control interventions? Invited symposium presentation at the 39th World Conference on Lung Health, Paris, France, 16-20 October 2008.
 33. Pai M. Serial Testing for Tuberculosis: Can We Make Sense of T-Cell Assay Conversions and Reversions? BCCDC Public Health Grand Rounds, BC CDC, Vancouver, Canada, 30 October 2008.
 34. Pai M. Tuberculosis among healthcare workers in the era of HIV and XDR-TB. Invited seminar presentation at Faculty of Health Sciences, Simon Fraser University, Burnaby, Canada, 31 October 2008.
 35. Pai M. Closing Plenary- New Technologies for TB Diagnosis: What's in the Cards? Ontario Lung Association TB Conference, Toronto, Canada, 25 November 2008.
 36. Pai M. Protecting healthcare workers from TB in the era of HIV and XDR-TB. Invited seminar presentation at the Hinduja Hospital, Mumbai, India, 18 December 2008.
 37. Pai M. Introduction to diagnostic meta-analysis. Workshop presentation at the South Asian Cochrane Centre, Christian Medical College, Vellore, India, 12 January 2009.
 38. Pai M. New diagnostics for tuberculosis: what's in the pipeline. Invited seminar presentation at St. John's Research Institute (SJRI), Bangalore, India, 17 January 2009.
 39. Pai M. Diagnosis of tuberculosis: stepping out of Robert Koch's shadow. Invited Winter Symposium presentation at Christian Medical College, Vellore, India, 22 January 2009.
 40. Pai M. New technologies for TB diagnosis: what's in the pipeline. Invited symposium presentation organized by VM Medical College & Safdarjung Hospital, India International Centre, New Delhi, India, 20 January 2009.
 41. Pai M. Effective Use of PubMed and EndNote for Searching and Managing Medical Literature. Workshop presentation at the University of Cape Town, Lung Infection and Immunity Unit, Department of Medicine and the School of Child Health, University of Cape Town, Cape Town, South Africa, 9 March 2009.
 42. Pai M. New technologies for TB diagnosis: what's hot and what's not? Invited seminar at the Department of Pediatrics, Chris Hani Baragwanath Hospital, Johannesburg, South Africa, 10 March 2009.
 43. Pai M. Evidence-based TB diagnosis: incorporating evidence into new policies. Invited symposium talk at the 5th Union Conference European Region, Dubrovnik, Croatia, 30 May 2009.
 44. Pai M, Joshi R, Gajalakshmi D, Reddy MVR, Kalantri SP. Unstable IGRA conversions and revisions in a high-incidence setting. Oral symposium presentation at the 2nd Global Symposium on IGRAs, Dubrovnik, Croatia, 30 May 2009.
 45. Pai M. Guidelines on IGRAs: concordant or discordant? Invited symposium talk at the 2nd Global

Symposium on IGRAs, Dubrovnik, Croatia, 1 June 2009.

46. Pai M. New diagnostics for TB: Current Status. Invited seminar presentation at the Research Institute of Tuberculosis, Tokyo, Japan, 30 June 2009.
47. Pai M. Serial Testing for TB Infection: How do We Interpret IGRA Conversions and Reversions? 6th Meeting of Research Unit for TB Infection Diagnostics, Sapporo, Hokkaido, Japan, 1 July 2009.
48. Pai M. Diagnosis of LTBI in BCG recipients. Invited symposium presentation at the 49th InterScience Conference on Antimicrobial Agents and Chemotherapy (ICAAC) Annual Meeting, San Francisco, USA, 12 September 2009.
49. Pai M., Minion J. Optimism bias, inflated accuracy estimates, and contradicted findings in TB diagnostic research. Invited seminar presentation, Department of Epidemiology & Biostatistics, McGill University, Montreal, Canada, 5 October 2009.
50. Pai M. New tests and biomarkers for LTBI. Invited seminar presentation at the Public Health Laboratory - Toronto, Ontario Agency for Health Protection and Promotion, Toronto, Canada, 8 October 2009.
51. Pai M. Interpreting Interferon Gamma Release Assays – “Show me the data”. Invited symposium presentation at the IDSA 47th Annual Meeting, Philadelphia, USA, 31 October 2009.
52. Pai M. Diagnosis of TB infection in HIV-infected persons. Invited symposium presentation at the IDSA 47th Annual Meeting, Philadelphia, USA, 31 October 2009.
53. Pai M. Mapping the landscape and quality of TB diagnostic research. Invited symposium presentation at the Annual Meeting of the Stop TB Partnership's New Diagnostics Working Group, 40th Union World Conference on Lung Health, Cancun, Mexico, 3 December 2009.
54. Pai M. TB Diagnostics: Translating Evidence to Policy and Practice. Invited symposium presentation at the Annual Meeting of the Global Laboratory Initiative, 40th Union World Conference on Lung Health, Cancun, Mexico, 3 December 2009.
55. Pai M. Do IGRAs have a role in developing countries? Invited symposium presentation at the 40th Union World Conference on Lung Health, Cancun, Mexico, 5 December 2009.
56. Pai M. Understanding the epidemiology of smoking and TB. Invited symposium presentation at the 40th Union World Conference on Lung Health, Cancun, Mexico, 5 December 2009.
57. Pai M. Optimism bias, inflated accuracy estimates, and contradicted findings in TB diagnostic research. Beer Seminar, Meakins-Christie Laboratories, Montreal, Canada, 1 February 2010.
58. Pai M. Are IGRAs adequate for LTBI diagnosis and disease prediction? Invited symposium presentation at the 41st Union World Conference on Lung Health, Berlin, Germany, 13 November 2010.
59. Pai M. Interferon-gamma release assays and serological tests for tuberculosis: the evidence is reviewed. Stop TB Partnership's New Diagnostics Working Group Annual Meeting. 41st Union World Conference on Lung Health, Berlin, Germany, 11 November 2010.
60. Pai M. Landscape of TB diagnostics in India. ICGB International Symposium on TB Diagnostics: Innovating to Make an Impact, New Delhi, India, 16 December 2010.
61. Pai M. TB Diagnosis in 2011: The Good, the Bad and the Ugly. Keystone Symposium on

- Tuberculosis: Immunology, Cell Biology and Novel Vaccination Strategies*, Vancouver, Canada, 15-20 January 2011.
62. Pai M. Squeezing predictive value out of IGRAs. Special Grand Rounds, BC CDC, Vancouver, Canada, 18 January 2011.
 63. Pai M. TB elimination: a realistic goal? World TB Day presentation, McGill AIDS Coalition, McGill University, Montreal, Canada, 24 March 2011.
 64. Pai M. Improving TB diagnosis: difference between knowing the path and walking the path. IFMSA-Québec's Global Health Colloquium, Montreal, Canada, 27 March 2011.
 65. Pai M. Diagnostic research: getting it right and going beyond test accuracy. Invited talk at the Association of Medical Microbiology and Infectious Disease Canada (AMMI) Annual Conference, Montreal, Canada, 7 April 2011.
 66. Pai M. Assessing the impact of novel tuberculosis diagnostics. Invited symposium talk at the 3rd North American Congress of Epidemiology, Montreal, Canada, 23 June 2011.
 67. Pai M. The medical, public health and economic consequences of bad diagnostics: the case of TB serology. Invited presentation. Diagnostics track. Grand Challenges Meeting, Bill & Melinda Gates Foundation, New Delhi, India, 7 November 2011.
 68. Pai M. Quality of healthcare in India: the case study of tuberculosis. Invited seminar presentation, Indian Institute of Management, Bangalore, India, 26 December 2011.
 69. Pai M. Advances in TB Diagnosis. Invited seminar presentation. Singapore Thoracic Society and Infectious Disease Society, Tan Tock Seng Hospital, Singapore, 5 January 2012.
 70. Pai M. Point of care testing for HIV and TB: bridging the divide. Invited seminar presentation. Red Cross War Memorial Hospital, University of Cape Town, South Africa, 7 March 2012.
 71. Pai M. Assessing the impact of new diagnostics. Invited presentation. Faculty of Health Sciences, Stellenbosch University, Tygerberg, South Africa, 7 March 2012.
 72. Pai M. India shining: TB control must not be left in the dark. Invited seminar presentation for World TB Day, Department of Clinical Microbiology, All India Institute of Medical Sciences, New Delhi, India, 24 March 2012.
 73. Pai M. The freakonomics of TB diagnostics in India. Invited presentation at the Kellogg School of Management, Northwestern University, Chicago, USA, 2 May 2012.
 74. Pai M. The freakonomics of TB diagnostics in India. Invited presentation at Global Health Strategies, New York, USA, 7 June 2012.
 75. Pai M. Meta-analysis: are you a lumpers or a splitter? Invited presentation at the LRS Institute of Tuberculosis and Respiratory Diseases, New Delhi, India, 5 September 2012.
 76. Denkinger C, Pai M. TB: diversity of target product profiles. Invited presentation at Global Health Strategies, New York, USA, 7 June 2012.
 77. Pai M. Moving forward in the diagnosis of infectious diseases in resource limited settings. Fondation Merieux, Veyrier du Lac, France, 8 September 2012.
 78. Pai M. TB diagnostics: global market analysis and potential. Invited presentation at Diagnostics innovation in China: bringing TB and HIV molecular diagnostics to market. Bill & Melinda Gates

- Foundation & Chinese Center for Disease Control and Prevention, Shanghai, China, 25 September 2012.
79. Pai M. India on the Rise: Can Tuberculosis be Controlled? Invited seminar presentation at the Geospectives Seminar Series 2012-2013, Department of Geography, McGill University, Montreal, Canada, 19 October 2012.
 80. Pai M. Innovations in TB diagnostics: Progress and Challenges. Symposium presentation at the 19th Canadian Conference on Global Health, Ottawa, Canada, 22 October 2012.
 81. Pai M. The changing face of TB diagnosis. Invited presentation at the symposium on New Therapeutic Avenues for Tuberculosis. Department of Biochemistry, McGill University, Montreal, Canada, 30 October 2012.
 82. Pai M. TB diagnostics: top 10 FAQs by test developers. Invited presentation at the Stop TB Partnership's New Diagnostics Working Group Annual Meeting, Kuala Lumpur, Malaysia, 13 November 2012.
 83. Pai M. Toward point-of-care: diagnostics pipeline and target product profiles. Invited presentation at: From Data to Scale-Up: Building on the Evidence Base for New TB Diagnostics. Union World Conference on Lung Health, Kuala Lumpur, Malaysia, 13 November 2012.
 84. Pai M. New TB diagnostics: pathway from concept to delivery, GRADE and beyond. Invited presentation at the Post-graduate course - Tuberculosis diagnostic research: providing the evidence for scale-up and sustainability at Union World Conference on Lung Health, Kuala Lumpur, Malaysia, 14 November 2012.
 85. Pai M. POC testing: diversity, complexity and barriers. Invited presentation. Diagnostics track. Grand Challenges Meeting, Bill & Melinda Gates Foundation & Grand Challenges Canada, Ottawa, Canada, 11 December 2012.
 86. Pai M. TB diagnostics: top 10 FAQs by test developers. Invited presentation. Biomarkers for diagnostics of TB program meeting. Grand Challenges Meeting, Bill & Melinda Gates Foundation & Grand Challenges Canada, Ottawa, Canada, 13 December 2012.
 87. Pai M. Diversity of TPPs. Invited presentation. Biomarkers for diagnostics of TB program meeting. Grand Challenges Meeting, Bill & Melinda Gates Foundation & Grand Challenges Canada, Ottawa, Canada, 13 December 2012.
 88. Pai M. The changing face of TB diagnosis. Invited presentation at the Department of Medicine, Sri Venkateswara Institute of Medical Sciences, Tirupati, India, 28 December 2012.
 89. Pai M. Point-of-care testing: rethinking the old paradigm. Invited Lecture at Cepheid Inc, Sunnyvale, USA, 9 January 2013.
 90. Pai M, Banaei N. Serial Testing for TB Infection with IGRAs: What-a-Mess! Grand Rounds at the Department of Infectious Diseases, Stanford University, California, USA, 10 January 2013.
 91. Pai M. POC testing for infectious diseases: Diversity, complexity, and barriers in developing countries. Invited symposium presentation, 5th Annual Symposium on Neglected Diseases, Henry Wheeler Center for Emerging and Neglected Diseases, University of California, Berkeley, USA, 11 January 2013.
 92. Pai M. TB control in India: challenges for universal access. Invited presentation at the Division of

- Communicable Disease Control, California Department of Public Health, Richmond, USA, 11 January 2013.
93. Kik S, Pai M. Update on IGRA predictive value. Invited presentation at the 3rd Semiannual TBESC-II Meeting, Tuberculosis Epidemiologic Studies Consortium, Centers for Disease Control and Prevention, Atlanta, USA, 6 February 2013.
 94. Pai M. Point-of-care TB testing: rethinking the old paradigm. Invited presentation at the 3rd Semiannual TBESC-II Meeting, Tuberculosis Epidemiologic Studies Consortium, Centers for Disease Control and Prevention, Atlanta, USA, 6 February 2013.
 95. Pai M. Testing for latent TB infection: a long way from perfection. Invited presentation at AERAS Global TB Vaccine Foundation, Rockville, USA, 25 February 2012.
 96. Pai M. Point-of-care TB testing: thinking beyond the dipstick paradigm. Invited presentation at PATH, Washington DC, USA, 25 February 2012.
 97. Pai M. Diagnosis: the weakest link in tuberculosis control? Invited presentation at the Department of Medicine, All India Institute of Medical Sciences, New Delhi, India, 20 March 2013.
 98. Pai M. The point behind point-of-care TB testing. Invited presentation at the Centre for Biodesign Translational Health Science and Technology Institute (THSTI), New Delhi, India, 21 March 2013.
 99. Pai M. New Diagnostic Tools for Active and Latent TB: What You Need to Know. Invited symposium presentation at the Canadian Respiratory Conference, Québec City, Canada, 13 April 2013.
 100. Pai M. Target product profiles: which attributes will increase impact? Invited presentation at the TB Modelling and Analysis Consortium meeting on "Impact and cost-effectiveness of current and future diagnostics for TB," Bill & Melinda Gates Foundation, Amsterdam, Netherlands, 24-25 April 2013.
 101. Pai M. Improving access to better diagnostics in the Indian private sector. 2013 Tuberculosis Market Forum. UNITAID and USAID. Washington DC, USA, 24 July 2013.
 102. Pai M. Point-of-care tuberculosis testing: opportunities and challenges. Keynote lecture at the 8th National Conference on Laboratory Aspects of Tuberculosis. Association of Public Health Laboratories, San Diego, USA, 19 August 2013.
 103. Pai M. IGRAs: update on serial testing and predictive value. Invited lecture at the 8th National Conference on Laboratory Aspects of Tuberculosis. Association of Public Health Laboratories, San Diego, USA, 20 August 2013.
 104. Pai M. Tips for getting published and transitioning from a postdoc fellowship to an independent position. Invited seminar presentation: GHP/CAP seminar, L'Université du Québec à Montréal (UQAM), Montreal, Canada, 20 September 2013.
 105. Pai M. Broken markets and broken patients: tuberculosis in India. Invited seminar at William Davidson Institute, Ross School of Business, University of Michigan, Ann Arbor, USA, 25 September 2013.
 106. Pai M. Priorities for TB diagnostics and TPPs of relevance. Invited presentation. Biomarkers for diagnostics of TB program meeting. Grand Challenges Meeting, Bill & Melinda Gates Foundation, Rio de Janeiro, Brazil, 28 October 2013.

107. Pai M. Market landscape for innovative TB diagnostics. Invited presentation at the annual meeting of the New Diagnostics Working Group of the Stop TB Partnership. 44th Union World Conference on Lung Health, Paris, France, 31 October 2013.
108. Pai M. TB diagnostics pipeline: beyond Xpert. Invited presentation at the Sponsored Satellite Symposium by UNITAID. 44th Union World Conference on Lung Health, Paris, France, 2 November 2013.
109. Pai M. Overcoming barriers to the uptake of WHO-endorsed TB tests in high burden countries. Invited presentation at the Sponsored Satellite Symposium New and classical TB diagnostics: together enhancing the management of challenging TB cases. 44th Union World Conference on Lung Health, Paris, France, 1 November 2013.
110. Pai M. TB diagnosis: market shortcomings in the private sector. Invited presentation at the 44th Union World Conference on Lung Health, Paris, France, 3 November 2013.
111. Pai M. Transforming the landscape of TB in India: Microbiologists can make a big difference. Invited presentation at the MICROCON conference of Indian Association of Medical Microbiology, Hyderabad, India, 23 November 2013.
112. Pai M. Open access publishing: the good, the bad, and the ugly. Invited seminar at the Department of Pharmacology, Faculty of Medicine, McGill University, Montreal, Canada, 2 December 2013.
113. Pai M. The value chain for diagnostics: from concept to product to impact. Invited lecture at the Diagnostics by Design: A Workshop on the Design, Development and Implementation of Global Health Technologies, University of California, Berkeley, USA, 9 January 2014.
114. Pai M. Initiative to promote affordable and quality TB tests in India. Guest lecture at the Ross School of Business, University of Michigan, Ann Arbor, USA, 12 February 2014.
115. Pai M. Quality of TB Care in India. Invited lecture at the All India Institute of Medical Sciences, New Delhi, India, 24 March 2014.
116. Pai M. Advances in TB Diagnosis. Invited lecture at Kasturba Medical College, Mangalore, Manipal University, India, 29 March 2014.
117. Pai M. Improving Quality of TB Care in India. Invited lecture at Kasturba Medical College, Manipal, Manipal University, India, 29 March 2014.
118. Pai M. Priorities for TB diagnostics and target product profiles of relevance. Invited lecture at Consensus Meeting on Target Product Profiles for new TB tests, World Health Organization, Geneva Switzerland, 28 to 29 April 2014.
119. Pai M. Point-of-care testing: what is the point? Invited talk at the American Society for Microbiology Annual Conference, Boston, 20 May 2014.
120. Pai M. Promoting affordable and quality TB tests in India: can the broken market be fixed? Invited seminar presentation at the Division of Infectious Diseases, Boston Medical Centre, Boston University, Boston, 21 May 2014.
121. Pai M. Improving the quality of tuberculosis care: a critical challenge for India. Invited Medical Grand Rounds, Department of Medicine, Beth Israel Deaconess Medical Center, Boston, 22 May 2014.

122. Pai M. Open access publishing: the good, the bad, and the predators. Keynote lecture. GSAN Research Symposium, Graduate Student Association for Neuroscience, McGill University, Montreal Neurological Institute, May 23, 2014.
123. Pai M. Quality of TB care in the Indian private sector: the challenge ahead. Invited presentation at the conference on "Public Private Mix (PPM) Models for the Sustainability of Successful TB Control Initiatives", co-sponsored by the World Bank and USAID, in collaboration with the Stop TB Partnership's PPM subgroup, and organized with PATH. Washington DC, 28 May 2014.
124. Pai M. IGRAs: what have we learnt from longitudinal studies? Invited symposium presentation at the 54th Interscience Conference on Antimicrobial Agents and Chemotherapy, Washington DC, 7 September 2014.
125. Pai M. Improving quality of tuberculosis care in India: can mystery patients help? Seminar presentation, Department of Epidemiology & Biostatistics, McGill University, 15 September, 2014.
126. Pai M. Assessing quality of care using standardized patients: the case study of tuberculosis. Inter-hospital Infectious Diseases Rounds, McGill University Health Centre, Royal Victoria Hospital, 23 October 2014.
127. Pai M. Advances in TB diagnosis. Invited plenary lecture at the 16th Joint National Conference of the National College of Chest Physicians (NCCP) & Indian Chest Society (NAPCON – 2014), Agra, India, 23 November 2014.
128. Pai NP, Pai M. Diagnostics at work: from the clinic to the community. McGill Mini-Med Lectures, Faculty of Medicine, McGill University, 25 November 2014.
129. Pai M. Quality of care and its importance in global health delivery. Grand Rounds, Department of Obstetrics and Gynecology, McGill University Health Centre, Royal Victoria Hospital, 22 January 2015.
130. Pai M. Importance of private sector in tuberculosis control: the case study of India. Brown Bag Seminar, Institute for the Study of International Development (ISID), McGill University, Montreal, 22 January 2015.
131. Pai M. Open access publishing: the good, the bad, and the predators. Invited seminar talk, Center for Clinical Epidemiology, Jewish General Hospital and Lady Davis Institute, Montreal, 3 February 2015.
132. Pai M. TB or Not TB: first use of the standardized patient methodology to assess quality of tuberculosis care in India. Medicine Grand Rounds, McGill University Health Centre, Montreal, 14 April, 2015.
133. Pai M. TB diagnostics in 2015. Invited seminar presentation at Lady Hardinge Medical College, New Delhi, India, 24 April, 2015.
134. Pai M. Tuberculosis: India's persistent health challenge. Invited presentation at the Canada India Healthcare Summit, Toronto, 19 May 2015.
135. Pai M. Quality of tuberculosis care in India and implications for new drug introduction. Invited presentation at the Global Alliance for TB Drug Development, New York, 20 May 2015.
136. Pai M. Global health technologies: what drives impact? Invited presentation at the Canadian Society for Epidemiology & Biostatistics (CSEB) conference, Toronto, 3 June 2015.

137. Pai M. Measuring and improving quality of TB care in India. Invited seminar presentation at the Department of Medicine, St. Michael's Hospital, Toronto, 3 June 2015.
138. Pai M. Bridging the gap between discovery and delivery in global health. Keynote lecture at the 6th Annual Lady Davis Institute Scientific Retreat, Montreal, 5 June 2015.
139. Pai M. Quality of TB care in India: why should we care? Invited lecture at the 2015 National TB Conference, Atlanta, 9 June 2015.
140. Pai M. Use of standardized patients to assess quality of TB care. Invited lecture at the Workshop on Quality of Healthcare: Measurement and efforts to improve quality. Bill & Melinda Gates Foundation and Sanford School of Public Policy, Duke University. Neemrana, India, 30 June to 1 July, 2015.
141. Pai M. A novel approach to assess and improve quality of tuberculosis care. Invited seminar at Infection and Immunity Research Club, Mayo Clinic, Rochester, USA, 1 September 2015.
142. Pai M. Bridging the gap between discovery and delivery in global health. Seminar presentation, MD-PhD Program Faculty of Medicine, McGill University, 24 September, 2015.
143. Pai M. Can we save open access publishing? Seminar presentation, Department of Epidemiology & Biostatistics, McGill University, 28 September, 2015.
144. Pai M. Open access publishing: the good, the bad, and the ugly. Seminar presentation, Quebec Network on Nursing Intervention Research (RRISIQ), Montreal, 5 October, 2015.
145. Pai M. Bridging the gap between discovery and delivery in global health. Seminar presentation, Infectious Diseases and Immunity in Global Health Program, McGill University Health Centre, Montreal, 7 October, 2015.
146. Pai M. Making tuberculosis diagnostics more affordable. Invited symposium presentation at the 22nd Canadian Conference on Global Health, Montreal, 6th November, 2015.
147. Pai M. Importance of private sector in tuberculosis control: the case study of India. Invited lecture at the International Masters for Health Leadership program, Desautels Faculty of Management, McGill University, 17 November 2015.
148. Pai M. Tuberculosis diagnostics in 2016. Invited talk at Harvard School of Public Health, Boston, 25 February 2016.
149. Pai M. India's private health sector: challenges and opportunities for TB control. Invited seminar at Harvard Global Health Institute, Boston, 25 February 2016.
150. Pai M. "TB or not TB: improving access to novel tuberculosis technologies in India". MDIIM Health Management Seminar, Desautels Faculty of Management, McGill University, Montreal, March 18th, 2016.
151. Pai M. TB diagnostics landscape – translational challenges. Invited talk at Critical Path to TB Drug Regimens (CPTR) conference, Washington, DC, April 6, 2016.
152. Pai M. OTC antibiotic use by pharmacists in urban India. Invited talk at Access Advisory Committee, Global Alliance for TB Drug Development, New York, June 10, 2016.
153. Pai M. Scale-up of new diagnostics. Invited talk at the 28th Coordinating Board Meeting of the Stop TB Partnership, New York City, 20 September, 2016.

154. Pai M. From tools to patient-centric solutions. Invited talk at the Global TB Symposium, 47th Union World Conference on Lung Health, Liverpool, UK, 25 Oct 2016.
155. Pai M. Engaging Private Sector and Road to a Successful Implementation. Invited talk at a Symposium entitled “New tools to support the End TB Strategy”, 47th Union World Conference on Lung Health, Liverpool, UK, 27 Oct 2016.
156. Pai M. Diagnosis of latent TB infection: incremental, not transformative progress. Invited seminar at Memorial Sloan-Kettering Hospital, New York, USA, 11 November, 2016.
157. Pai M. Suboptimal quality of care: a major impediment to TB control. Invited keynote lecture at the 2nd Annual Tuberculosis Symposium, Department of Global Health & School of Medicine, University of Washington, Seattle, Dec 2, 2016.
158. Pai M. TB management in the era of new diagnostics. Keynote plenary talk at 71st National Conference on Tuberculosis and Chest Diseases (NATCON 2016), Chandigarh, India, 17 December, 2016.
159. Pai M. Tuberculosis diagnostics: state of the art and future directions. Invited lecture at KingMed Center for Clinical Laboratory Co., Ltd, Guangzhou, China, January 7, 2017.
160. Pai M. Poor Quality of Care: A Key Driver of India's Tuberculosis Epidemic. Medicine Grand Rounds, Department of Medicine, St Michael's Hospital, Toronto, March 1, 2017.
161. Pai M. Poor quality of care: a major threat to global tuberculosis control. Medicine Grand Rounds, Boston Medical Center & Boston University School of Medicine, Boston, March 17, 2017.
162. Pai M. Quality of TB care. 8th Annual CUGH Conference, Washington DC, April 6, 2017.
163. Pai M. Urgent need to improve quality of TB care. Invited plenary talk at Canadian Respiratory Conference, Montreal, 28 April, 2017.

E4. Clinical Teaching

1. Diagnosis of latent TB infection. Inter-hospital Infectious Diseases Grand Rounds, Montreal General Hospital, 9 November 2006.
2. Introduction to systematic reviews & meta-analysis. Guest lecture in EPIB-679, Clinical Epidemiology, 22 June 2007. Instructors: Kevin Schwartzman & Dick Menzies.
3. IFN-gamma release assays for TB infection: time to abandon the tuberculin skin test? Inter-hospital Infectious Diseases Grand Rounds, Jewish General Hospital, 1 May 2008.
4. The diagnosis and misdiagnosis of tuberculosis. Invited presentation at Tropical Diseases: A Clinical and Laboratory Update. McGill Centre for Tropical Diseases, Montreal, 3 June 2008.
5. Evidence-based TB diagnosis. Grand Rounds presentation at the MUHC Medical Grand Rounds, Department of Medicine, McGill University, Montreal, Canada. 23 September 2008.
6. Diagnosis of tuberculosis: stepping out of Robert Koch's shadow. Respiratory Rounds, Ottawa General Hospital, University of Ottawa, Ottawa, 2 February 2009.
7. Diagnosis of latent TB infection: advances and challenges. Pneumo Club, University of Ottawa, Ottawa, 2 February 2009.

8. Interpreting diagnostic evidence. Invited teaching seminar at the Division of Gynecological Oncology, Department of Obstetrics & Gynecology, Royal Victoria Hospital, McGill University Health Centre, Montreal, 2 April 2009.
9. Tuberculosis - new tests, new guidelines. Invited lecture at conference on "Tropical diseases: a review of clinical and laboratory medicine", McGill Centre for Tropical Diseases, Montreal, 10 May 2010.
10. Introduction to systematic reviews & meta-analysis. Guest lecture in EPIB-679, Clinical Epidemiology, 21 June 2010. Instructors: Kevin Schwartzman & Sasha Bernatsky.
11. Guest lecturer for Module 5 on TB and Pneumonia. Course MDX-7001: Clinical aspects of research in respiratory diseases. Lead instructor: Kevin Schwartzman. Respiratory Health Network of the FRQS (RHN). Faculté de médecine - Université Laval. Winter 2011.
12. Guest lecturer for Module 5 on TB and Pneumonia. Course MDX-7001: Clinical aspects of research in respiratory diseases. Lead instructor: Kevin Schwartzman. Respiratory Health Network of the FRQS (RHN). Faculté de médecine - Université Laval. Winter 2012.

E5. Guest Lectures in Other McGill Courses

1. Introduction to systematic reviews & meta-analysis (4 hours). Guest lecture in EPIB-695, Intermediate Epidemiology, Winter, 2007. Instructor: Jean-François Boivin.
2. Diagnostics for infectious diseases (2 hours). Guest lecture in EPIB-678, Introduction to Infectious Diseases Epidemiology, Winter 2007. Instructor: Amee Manges.
3. Outbreak investigations in developing countries (2 hours). Guest lecture in EPIB-677, Global Health: Epidemiologic Research, Winter, 2008. Instructor: Theresa Gyorkos.
4. Diagnostics for infectious diseases (2 hours). Guest lecture in EPIB-678, Introduction to Infectious Diseases Epidemiology, Winter 2008. Instructor: Amee Manges.
5. International health: tuberculosis (1.5 hours). Guest lecture in EPIB-501, Public health and epidemiology, Winter 2013. Instructor: Jean-François Boivin.
6. Global health (1.5 hours). Guest lecture in EPIB-501, Public health and epidemiology, Winter 2015. Instructor: Jean-François Boivin.
7. Introduction to global health (2 hours). Guest lecture in the Interprofessional Global Health Course, Winter 2015. Coordinated by student representatives from the Schools of Medicine, Dentistry, Nursing, and Physical and Occupational Therapy, McGill University.
8. Introduction to global health (2 hours). Guest lecture in the Interprofessional Global Health Course, Winter 2016. Coordinated by student representatives from the Schools of Medicine, Dentistry, Nursing, and Physical and Occupational Therapy, McGill University.
9. Introduction to global health (2 hours). Guest lecture in the Interprofessional Global Health Course, Winter 2017. Coordinated by student representatives from the Schools of Medicine, Dentistry, Nursing, and Physical and Occupational Therapy, McGill University.

E6. Teaching Contributions in Other Universities

1. Module on Diagnostic Research. Master's in Clinical Epidemiology, Stellenbosch University, Cape Town, South Africa. 4-day course. 4 to 7 March 2009.
2. Effective Use of PubMed and EndNote for Searching and Managing Medical Literature. Workshop, Faculty of Medicine, University of Cape Town, South Africa. 9 March 2009.

E7. Coordination of Short Courses and Workshops

1. EPIB-668: Advanced Diagnostic Research, May 6 - 9, 2008, as part of Summer Session in Epidemiology & Biostatistics, McGill University. Instructor: Professor Karel Moons, Julius Center for Health Sciences and Primary care, Utrecht, Netherlands. Course coordinator: Madhukar Pai.
2. "Systematic reviews & meta-analyses of diagnostic test accuracy". 2-day workshop (25/26 May 2009) held at the Montreal Chest Institute. Instructors: Dr Mariska Leeflang, University of Amsterdam, and Madhukar Pai. Course coordinator: Madhukar Pai.
3. "Montreal TB Course". 1-day course held on 30 October, 2009, at the Montreal Chest Institute. Instructors: Madhukar Pai, Dick Menzies, Kevin Schwartzman, Marcel Behr, Christina Greenaway, Jessica Minion and Barry Rabinovitch. Course coordinator: Madhukar Pai.
4. "GRADE approach to diagnostic tests and strategies." 1-day course held on 12 February 2010 at the Montreal Chest Institute. Instructors: Professor Holger Schünemann & Dr Jan Brozek, McMaster University, Hamilton. Course coordinator: Madhukar Pai.
5. "Montreal TB Course". 1-day course held on 26th November 2010, at the Montreal Chest Institute. Instructors: Madhukar Pai, Dick Menzies, Kevin Schwartzman, Marcel Behr, Erwin Schurr, Maziar Divangahi and Barry Rabinovitch. Course coordinator: Madhukar Pai.
6. "TB diagnostic research - beyond the basics". 3-day advanced course on TB diagnostic research from 12 - 15 December 2010, at the Tuberculosis Research Centre, Chennai, India. Course coordinator: Madhukar Pai.
7. "Advanced TB Diagnostics Research." 4-day advanced course on TB diagnostic research from 5 - 8 July, 2011, at McGill University, Montreal. Course coordinator: Madhukar Pai.
8. "Advanced TB Diagnostics Research." 4-day advanced course on TB diagnostic research from 6 - 9 March, 2012, at the University of Cape Town, South Africa. Course coordinator: Madhukar Pai.
9. "Advanced TB Diagnostics Research." 5-day advanced course on TB diagnostic research from 9 - 13 July, 2012, at McGill University, Montreal. Course coordinator: Madhukar Pai.
10. "Introduction to TB Modeling." 3-day workshop at the International Union Against TB and Lung Diseases, New Delhi, from 8 - 10 November, 2012. Co-taught with David Dowdy, JHSPH, Baltimore.
11. "Advanced TB Diagnostics Research." 5-day advanced course on TB diagnostic research, from 8 - 12 July, 2013, at McGill University, Montreal. Course coordinator: Madhukar Pai.
12. "Advanced TB Diagnostics Research." 5-day advanced course on TB diagnostic research, from 7 - 11 July, 2014, at McGill University, Montreal. Course coordinator: Madhukar Pai.
13. "Workshop on "Evaluation of new TB diagnostics" at National Institute for Research in Tuberculosis, Chennai, India, from 8-12 December 2014. Course coordinators: Madhukar Pai & Soumya Swaminathan.

14. "Summer Institute in Infectious Diseases and Global Health". 2-week institute, from 6 - 17 July, 2015, at McGill University, Montreal. Institute director: Madhukar Pai.
15. "Global Health Diagnostics". 5-day course on global health diagnostics, from 6 - 10 July, 2015, at McGill University, Montreal. Course coordinators: Madhukar Pai, Nitika Pant Pai & Cedric Yansouni.
16. "Advanced TB Diagnostics Research." 5-day advanced course on TB diagnostic research, from 13 - 17 July, 2015, at McGill University, Montreal. Course coordinator: Madhukar Pai.
17. "Summer Institute in Infectious Diseases and Global Health". 2-week institute, from 13 - 24 June, 2016, at McGill University, Montreal. Institute director: Madhukar Pai.
18. "Global Health Diagnostics". 5-day course on global health diagnostics, from 13 - 17 June, 2016, at McGill University, Montreal. Course coordinators: Madhukar Pai, Nitika Pant Pai & Cedric Yansouni.
19. "Advanced TB Diagnostics Research." 5-day advanced course on TB diagnostic research from 20 - 24 June, 2016, at McGill University, Montreal. Course coordinator: Madhukar Pai.
20. "Global Health Diagnostics". 5-day course on global health diagnostics, from 12 - 16 June, 2017, at McGill University, Montreal. Course coordinators: Madhukar Pai, Nitika Pant Pai & Cedric Yansouni.
21. "Advanced TB Diagnostics Research." 5-day advanced course on TB diagnostic research from 19 - 23 June, 2017, at McGill University, Montreal. Course coordinator: Madhukar Pai.

F. Other Contributions

F1. Journals

Editorial Boards

2006 – Present	Editorial Board Member, <i>Indian Journal of Medical Microbiology</i>
2007 – Present	Associate Editor, <i>Int Journal of Tuberculosis & Lung Disease</i>
2007 – Present	Section Editor, <i>PLoS One</i>
2008 – 2011	Editor, Cochrane Infectious Diseases Review Group
2009 – Present	Academic Editor & Editorial Board Member, <i>PLoS Medicine</i>
2012 – Present	International Editorial Board, <i>Lancet Infectious Diseases</i>
2011 – 2013	Associate Editor, <i>Canadian TB Standards</i>
2013 – Present	Associate Editor, <i>Journal of Epidemiology & Global Health</i>
2013 – Present	Editorial Board Member, <i>Expert Review of Molecular Diagnostics</i>
2014 – Present	Editorial Board Member, <i>Indian Journal of Tuberculosis</i>
2014 – Present	Editorial Board Member, <i>EBioMedicine</i> (Elsevier)
2015 – 2017	Editorial Board Member, <i>Scientific Reports</i> (Nature)
2015 – Present	Editorial Board Member, <i>Indian Journal of Medical Research</i>
2015 – Present	Associate Editor, <i>Journal of Clinical Tuberculosis & Mycobact Dis</i>
2016 – Present	Reviewing Editor, <i>eLife</i>

Ad hoc Reviews

1. American Journal of Respiratory & Critical Care Medicine

2. Annals of the American Thoracic Society
3. Annals of Internal Medicine
4. Archives of Medical Research
5. BioMed Research International
6. BMC Infectious Diseases
7. BMC Medicine
8. Canadian Journal of Infectious Diseases & Medical Microbiology
9. Canadian Medical Association Journal (CMAJ)
10. Canadian Respiratory Journal
11. Chest
12. Clinical and Investigative Medicine
13. Clinical Infectious Diseases
14. Clinical Microbiology and Infection
15. Clinical and Vaccine Immunology
16. Cochrane Library
17. Drug Discovery Today
18. eLife
19. Emerging Infect Diseases
20. Epidemiology
21. Epidemiology and Infection
22. European Respiratory Disease
23. European Respiratory Journal
24. Expert Review of Anti-Infective Therapy
25. Expert Review of Molecular Diagnostics
26. Health Affairs
27. International J of Tuberculosis & Lung Disease
28. International Journal of Infectious Diseases
29. Journal of Clinical Investigation
30. Journal of Clinical Microbiology
31. Journal of Epidemiology & Global Health
32. Journal of Infection
33. Journal of Infectious Diseases
34. Journal of the American Medical Association (JAMA)
35. Lancet
36. Lancet Global Health
37. Lancet Infectious Diseases
38. Lancet Respiratory Medicine
39. Medical Letter
40. Microbes and Infection
41. Nephrology Dialysis Transplantation
42. New England Journal of Medicine
43. Pediatric Infectious Disease Journal
44. PLoS Medicine
45. PLoS One
46. Pulmonary Medicine
47. Respiratory Medicine

48. Scandinavian Journal of Infectious Diseases
49. Science
50. Thorax
51. Trends in Biotechnology
52. Trends in Microbiology
53. Tuberculosis
54. Tuberculosis Research and Treatment
55. Vaccine
56. eLife
57. Journal of Clinical Epidemiology
58. BMJ
59. BMJ Global Health

F2. Grant Reviews

Ad hoc Reviews

- | | |
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| 2004 | Young Epidemiology Scholars Competition, College Board, USA |
| 2005 | Medical Research Council (MRC), South Africa |
| 2006 | UNICEF/UNDP/World Bank/WHO Special Programme for Research and Training in Tropical Diseases (TDR), World Health Organization (WHO) |
| 2007 | McGill University Health Centre Research Institute Pilot Project Awards |
| 2007 | Research Council of Norway |
| 2008 | Natural Sciences and Engineering Research Council of Canada (NSERC) |
| 2008 | National Research Foundation (NRF), South Africa |
| 2008 | Canadian Institutes of Health Research (CIHR), Canada |
| 2009 | National Research Foundation (NRF), South Africa |
| 2009 | Ontario Ministry of Health, Canada |
| 2009 | Canadian Institutes of Health Research (CIHR), Canada |
| 2009 | McGill University Health Centre Research Institute Studentship Awards |
| 2010 | The Wellcome Trust, UK |
| 2010 | McGill University Health Centre Research Institute Studentship Awards |
| 2011 | McGill University Health Centre Research Institute Studentship Awards |
| 2011 | National Institute of Allergy and Infectious Diseases (NIAID), AIDS Research Review Committee (AIDSRRRC) |
| 2012 | International Science and Technology Partnerships Canada Inc. (ISTPCanada) |
| 2012 | Simple and Affordable Molecular Testing for Tuberculosis Proposal review panel, Bill & Melinda Gates Foundation, Seattle |
| 2012 | Peer Reviewed Medical Research Program (PRMRP), US Army Medical Research and Materiel Command (USAMRMC) |
| 2012 | Grand Challenges Explorations, Phase II Proposal Review Committee, Bill & Melinda Gates Foundation, Seattle |
| 2012 | IIB Prog Grants, Infections and Immunity Board, Medical Research Council (MRC), UK |

- 2012 DFID health research competition for the development of new technologies to impact on diseases of poverty. Department for International Development, UK
- 2012 U.S. – Indo Vaccine Action Program (VAP) Initiative on Tuberculosis, CRDF Global, U.S. National Institutes of Health’s (NIH), Government of India’s Department of Biotechnology (DBT), the Indian Council of Medical Research (ICMR)
- 2012 Member, Peer review committee for the Stars in Global Health program by the Grand Challenges Canada (GCC) and the Canadian Institutes of Health Research (CIHR)
- 2013 Leaders Opportunity Fund (LOF) review panel, Canada Foundation for Innovation (CFI).
- 2013 Simple and Affordable Molecular Testing for Tuberculosis Program for China, Bill & Melinda Gates Foundation, Seattle
- 2013 External reviewer, Stars in Global Health Canada Direct Entry to Phase II – Round 2 Investment Committee, Grand Challenges Canada (GCC) and the Canadian Institutes of Health Research (CIHR)
- 2013 External reviewer, “Clinical trials (and systematic reviews) with a high relevance for patient care”, Federal Ministry of Education and Research, Germany
- 2014 Internal peer reviewer, CIHR March 2014 open grant competition, Research Institute of the McGill University Health Centre
- 2014 External reviewer, R&D Pump-Priming & Small Initiatives Fund (PPSIF), Public Health England, UK
- 2014 External grant reviewer, UBS Optimus Foundation, Zurich, Switzerland
- 2014 McGill University Health Centre Research Institute Studentship Awards
- 2015 External reviewer for Tier 1 CRC nomination, Canada Research Chairs Program, CIHR
- 2015 Reviewer, McGill Faculty of Medicine, Internal Grant Review
- 2015 External reviewer, Stars in Global Health Canada Direct Entry to Phase II – Round 2 Investment Committee, Grand Challenges Canada (GCC) and the Canadian Institutes of Health Research (CIHR)
- 2015 Reviewer, Wellcome Trust Innovations, Affordable Healthcare in India Awards Program
- 2016 Reviewer, IC-IMPACTS Centres of Excellence, Canada

Review Committees

- 2011 – 2013 Canadian Institutes of Health Research (CIHR), Public, Community and Population Health (PH1/2) Peer Review Committee
- 2012 – 2016 Canadian Institutes of Health Research (CIHR) & Grand Challenges Canada. Stars in Global Health Program Peer Review Committee
- 2013 – Present Canadian Institutes of Health Research (CIHR). Fellowships (post-PhD) Peer Review Committee
- 2016 – 2017 Fonds de recherche du Québec - Santé. Salary Awards Peer Review Committee

F3. Administrative Responsibilities, McGill University

2006 – 2007	Coordinator, Weekly Departmental Seminar Series, Department of Epidemiology, Biostatistics and Occupational Health, McGill University
2009 – 2010	PhD Program Advisor, Department of Epidemiology, Biostatistics and Occupational Health, McGill University
2013 – 2014	PhD Program Director, Department of Epidemiology, Biostatistics and Occupational Health, McGill University
2014 – Present	Director, McGill Global Health Programs, McGill University

F4. Committees

McGill University

2006 – 2008	Member, PhD Admissions Committee, Department of Epidemiology, Biostatistics and Occupational Health
2006 – 2008	Member, PhD Committee, Department of Epidemiology, Biostatistics and Occupational Health
2009 – 2010	Member, Epidemiology Programs Committee, Department of Epidemiology, Biostatistics and Occupational Health
2010 – 2014	Member, Epidemiology Curriculum Committee, Department of Epidemiology, Biostatistics and Occupational Health
2011 – Present	Member, Appointments/Reappointments/Promotions Committee, Department of Epidemiology, Biostatistics and Occupational Health
2011 – 2015	Member, PhD Admissions Committee, Department of Epidemiology, Biostatistics and Occupational Health
2011 – 2014	Member, MScPH (MPH) Admissions Committee, Department of Epidemiology, Biostatistics and Occupational Health
2011 – 2014	Member, Departmental Tenure Committee, Department of Epidemiology, Biostatistics and Occupational Health
2012 – Present	Member, Dean's Task Force on Global Health, Faculty of Medicine, McGill University
2014 – Present	Member, Faculty Leadership Council, Faculty of Medicine, McGill University
2015 – 2018	Member, Departmental Tenure Committee, Department of Epidemiology, Biostatistics and Occupational Health
2015 – Present	Member, Advisory Board, Steinberg Simulation Centre, McGill University

External Committees, Panels & Expert Groups

2005 – 2006	Member, Steering Committee, International Standard for Tuberculosis Care, American Thoracic Society & World Health Organization (WHO)
2005 – 2006	Member, 2 nd Scientific Working Group on Tuberculosis, WHO Special Programme for Research and Training in Tropical Diseases (TDR)
2006 – Present	American Thoracic Society representative on the Stop TB Partnership's New Diagnostics Working Group

2006 – 2007	Member, Steering Committee, Tuberculosis and Smoking, International Union Against Tuberculosis & Lung Disease & WHO, Geneva
2007 – 2008	Member, Diagnostics Expert Evaluation Panel (DEEP), WHO Special Programme for Research and Training in Tropical Diseases (TDR)
2007 – 2008	Temporary Advisor, TB Infection Control Global Consultation, World Health Organization, Geneva
2006 – 2007	Expert Member, Working Group for Canadian TB Committee Advisory Committee Statement on Interferon-gamma release assays, Public Health Agency of Canada
2007 – 2008	Chair, Working Group for Updated 2008 Canadian TB Committee Advisory Committee Statement on Interferon-gamma release assays, Public Health Agency of Canada
2009 – 2010	Expert Member, Working Group for Updated 2010 Canadian TB Committee Advisory Committee Statement on Interferon-gamma release assays, Public Health Agency of Canada
2008 – Present	Member, TDR Scientific Advisory Committee for TB/HIV research, WHO Special Programme for Research and Training in Tropical Diseases (TDR), Geneva
2008 – 2010	Tuberculosis X Prize Advisory Board, X Prize Foundation, USA
2008 – 2009	Member, American Thoracic Society, Assembly for Microbiology, Tuberculosis and Pulmonary Infections (MTPI) Program Committee
2008 – 2009	Member Guideline Development Group (TDG) for TB treatment guidelines, World Health Organization, Geneva
2008 – 2009	Core group member, TB-IC operational research project for outcome and impact indicators of TB infection control interventions, KNCV Tuberculosis Foundation, The Hague
2009 – 2010	Member, WHO Expert Group on Approaches to Improve Smear Microscopy for Tuberculosis Diagnosis & Non-commercial Culture Methods for MDR-TB, WHO, Geneva
2009 – 2010	Member, Update of Global Plan to Stop TB, Stop TB Partnership & World Health Organization, Geneva
2009 – 2011	Co-chair, Stop TB Partnership's New Diagnostics Working Group, WHO, Geneva
2009 – 2011	Member, Stop TB Partnership Coordinating Board, Stop TB Partnership & WHO, Geneva
2009 – 2011	Member, Disease Reference Group (DRG) on TB, leprosy and buruli ulcer, WHO Special Programme for Research and Training in Tropical Diseases (TDR), Geneva
2009 – 2011	Chair, TB Research Movement Task Force, Stop TB Partnership & World Health Organization, Geneva
2007 – 2011	Member, ATS/CDC/IDSA Committee, Diagnostic Standards and Classification of Tuberculosis in Adults and Children, American Thoracic Society
2010 – 2011	Member, World Bank TB India Joint Monitoring Mission, World Bank, India
2010 – 2011	Member, WHO Expert Group on interferon-gamma release assays and commercial serodiagnostics for TB, WHO, Geneva
2010 – Present	Member, Canadian Thoracic Society Tuberculosis Committee

2011 – Present	Member, Scientific Advisory Committee, Workshop on TB and HIV Diagnostics in Adult and Pediatric Populations, Molecular Diagnostics Working Group of the US Federal TB Taskforce, NIH, USA
2011 – 2013	Associate Editor, Canadian TB Standards, 7 th Edition, Canadian Thoracic Society
2012 – Present	Member, Government of India & World Health Organization Joint Monitoring Mission
2013 – 2014	Member, Board of Advisors, Tuberculosis Epidemiologic Studies Consortium II (TBESC), US Centers for Disease Control and Prevention, Atlanta, USA
2013 – Present	Member, Steering Committee, International Standards of Tuberculosis Care, 3 rd Edition. American Thoracic Society & World Health Organization, USA
2013 – Present	Chair, Scientific Advisory Group, Center for Biodesign and Diagnostics, Translational Health Science and Technology Institute, Ministry of Science & Technology, Government of India
2014 – Present	Core group member, Subgroup on Public–Private Mix for TB Care and Control (PPM Subgroup), DOTS Expansion Working Group (DEWG) of the Stop TB Partnership.
2014 – Present	Member, Scientific Advisory Committee, Foundation for Innovative New Diagnostics, Geneva, Switzerland
2014 – Present	Member, Expert Group on Tuberculosis Prevention and Control, Global Coalition Against Tuberculosis (GCAT)
2015 – Present	Member, Access Advisory Committee, Global Alliance for TB Drug Development, New York, USA
2015 – Present	Member, WHO Strategic and Technical Advisory Group for Tuberculosis (STAG-TB), World Health Organization, Geneva
2016 – Present	Member, Program Steering Group, TB REACH, Stop TB Partnership, Geneva
2016 – Present	Member, International Scientific Advisory Group (ISAG), India TB Research and Development Corporation (ITRDC), New Delhi, India
2017 – Present	Member, WHO Strategic Advisory Committee on in Vitro Diagnostics (SAGE IVD), World Health Organization, Geneva
2017 – Present	Chair, Working Group on Public Private Mix, Stop TB Partnership, Geneva
2017 – Present	Commissioner, The Lancet Commission on Tuberculosis

F5. Contributions as Examiner

Internal – McGill University

2006	Olivia Oxlade, Examiner for PhD Protocol Defence
2007	Maala Bhatt, Internal Examiner for MSc thesis
2009	Mathieu Giroux, Internal Examiner for MSc thesis
2009	Ann Burchell, Internal Member, PhD Oral Defense Committee
2011	Data Teltsch, Internal Member, PhD Oral Defense Committee

- 2011 Brian Hutton, Internal Member, PhD Oral Defense Committee
- 2011 Hiroshi Mamiya, Internal Examiner for MSc thesis
- 2012 Michelle Roseman, External Examiner for MSc thesis
- 2015 Emilio Dirlikov, External Member, PhD thesis defense, Anthropology
- 2016 Deshayne Fell, Internal Examiner, PhD thesis defense, Epidemiology

External

- 2011 External examiner, PhD thesis, National School of Public Health at the University of Antioquia, Colombia
- 2014 External examiner, PhD thesis in Health Research Methodology, McMaster University, Hamilton, Canada

F6. Professional and/or Learned Societies

- 2004 – Present Member, American College of Epidemiology, USA
- 2004 – Present Member, Society for Epidemiologic Research, USA
- 2005 – Present Member, American Thoracic Society, USA
- 2005 – Present Member, International Union Against Tuberculosis & Lung Disease
- 2007 – Present Member, Canadian Thoracic Society, Canada
- 2014 – Present Member, Royal Society of Canada

F7. Other Professional and Scientific Contributions

Consulting

- 2006 – 2010 Consultant, Foundation for Innovative New Diagnostics (FIND), Geneva
- 2010 – Present Consultant, Bill & Melinda Gates Foundation, Seattle, USA

Tenure/Promotion Reviews at Other Universities

- 2012 Evaluation of a candidate for appointment to Associate Professor of Medicine with Tenure at the School of Medicine, Duke University, NC.
- 2013 Evaluation of a candidate for appointment to Professor at the London School of Hygiene and Tropical Medicine, London, UK.
- 2013 Evaluation of a candidate for Merit Award and Promotion at the University of Cape Town, South Africa.
- 2014 Evaluation of a candidate for promotion to the rank of Professor at the Keck Graduate Institute of Applied Life Sciences, Claremont, California, USA.
- 2014 Evaluation of a candidate for promotion to the rank of Associate Professor in Residence at the University of California, San Francisco, California, USA.
- 2014 Evaluation of a candidate for re-appointment at the Lady Davis Institute, Jewish General Hospital, Montreal.

2014	Evaluation of a candidate for promotion to the rank of Associate Professor at McMaster University, Hamilton, Canada.
2014	Evaluation of a candidate for promotion to the rank of Assistant Professor at the Department of Global Health and Social Medicine, Harvard Medical School, Boston
2015	Evaluation of a candidate for promotion to the rank of Associate Professor at the Department of Epidemiology of Microbial Diseases, Yale University School of Medicine & Yale School of Public Health, New Haven, USA
2015	Evaluation of a candidate for appointment to the rank of Professor with Tenure at the Department of Medicine, Stony Brook University, New York, USA
2016	Evaluation of a candidate for appointment to the rank of Associate Professor at the Department of Medicine, Johns Hopkins University, Baltimore, USA
2016	Evaluation of a candidate for appointment to the rank of Associate Professor at the Department of Medicine, University of Cape Town, South Africa
2017	Evaluation of a candidate for tenure at International Studies Department at Macalester College, St Paul, Minnesota, USA

G. Research

G1. Research Activities

My general interests include infectious diseases epidemiology, global health research, evidence based medicine, diagnostic research methodology, knowledge synthesis and knowledge transfer (systematic reviews, meta-analyses, and guideline development). My specific research program is on TB, focused on:

- 1) Evaluation of novel diagnostic tools and biomarkers for TB
- 2) Nosocomial TB and TB infection control in developing countries
- 3) Knowledge Synthesis: Evidence-based TB diagnosis
- 4) Knowledge Translation: Development of evidence-based standards for TB care and control
- 5) Measurement and improvement of quality of TB care

1) Evaluation of novel diagnostic tools and biomarkers for TB

Research on LTBI diagnostics: Detection and treatment of latent TB infection (LTBI) is an important component of TB control. Currently, diagnosis of LTBI relies on the tuberculin skin test (TST), a century-old test with several limitations. A breakthrough in recent years has been the development of interferon- γ release assays (IGRAs) for LTBI. From a clinical and public health perspective, it is important to determine if IGRAs should replace the TST, and to assess their role and relevance in high burden countries. By conducting field evaluations of IGRAs, our work has generated interesting and useful information on how these tests perform in high-risk populations such as healthcare workers (Pai M et al. *JAMA* 2005; Zwerling A et al. *PLoS ONE* 2013), children (Dogra S et al. *J Infect* 2007; Ling D et al. *Ped Infect Dis J* 2012), and TB patients with HIV co-infection (Pai M et al. *Infection* 2007; Ling et al. *ERJ* 2011). Our data has informed evidence-based guidelines on how IGRAs should be used in clinical practice – they have been used as the evidence-base in the 7th Edition of the Canadian TB Standards (2013).

Research on active TB diagnostics: We have evaluated novel diagnostics for TB various settings - Montreal, India and S Africa. In these projects, we are evaluating tests such as MODS (Sarojini JM et al. *IJTL* 2010), optimized sputum microscopy (Daley P et al. *PLoS One* 2009), urinary antigen detection [LAM] (Daley P et al. *IJTL* 2009; Dheda K et al. *PLoS One* 2010), LED microscopy (Shenai S et al. *IJTL* 2010; Minion J et al. *J Clin Micro* 2011; Minion J et al. *PLoS One* 2011), and Xpert MTB/RIF (Sohn H et al. *CID* 2014; Alvarez GG et al. *Chest* 2015). We have also published mathematical models on the impact of new diagnostics (Sun A et al. *Am J Epid* 2013; Salje H et al. *PLoS Med* 2014; Moses et al. *Sci Reports* 2016; Murray et al, *BMJ Global Health* 2016).

2) Nosocomial TB and TB infection control in resource-limited settings

TB is a significant but neglected occupational problem among healthcare workers (HCWs) in poor countries. With the emergence of extensively drug-resistant TB (XDR-TB), there is growing concern about a real need to protect HCWs and HIV infected patients from TB. To inform policies and guidelines on TB infection control in developing countries, it is important to conduct research on dynamics of nosocomial transmission in high burden settings, and determine the effectiveness and feasibility of simple and low-cost interventions that may work in resource limited settings.

Our research in India and South Africa has shown that TB is an important problem among HCWs (Pai et al. *Emerg Infect Dis* 2006; Joshi R et al. *PLoS Med* 2006; Joshi et al. *PLoS One* 2007; Christopher et al. *PLoS One* 2010), and the annual risk of TB infection is high, even among young medical and nursing trainees (Christopher et al. *PLoS One* 2011) who are frequently exposed to TB (Pai M et al. *J Occup Med* 2006). Our work in India, for the first time, showed that interpretation of serial testing with novel T-cell based assays is complicated because of non-specific variations, conversions and reversions (Pai et al. *AJRCCM* 2006; 174 349-355). This led to our work on evaluating the reproducibility of T-cell-based assays in HCWs in India and S Africa (Veerapathran et al. *PLoS One* 2008 & van-Zyl Smit. *AJRCCM* 2009). Using data from India, we used Bayesian latent class analysis and mixture models to improve our estimates of TB prevalence in HCWs (Pai M et al. *IJTL* 2008).

3) Knowledge Synthesis: Evidence-based TB diagnostics

Knowledge synthesis and knowledge translation are increasingly important for evidence-based clinical practice and evidence-based public health. High quality diagnostic studies are critical to evaluate new tools, to develop evidence-based policies on TB diagnostics, and, ultimately, for effective control of the global TB epidemic. Systematic reviews and meta-analyses provide the best synthesis of current evidence and have the potential to impact policy. I have conducted and supervised over 50 meta-analyses on various TB diagnostics. In addition to informing the field of evidence-based TB diagnosis (Pai M et al. *PLoS Med* 2008), and the development of the International Standards for TB Care (Hopewell et al. *Lancet Infect Dis* 2006), these reviews have been helpful in making policy decisions and in identifying key knowledge gaps and unresolved questions. For example, our review on yield of serial sputum smear examination (*IJTL* 2007;11(5):484-95) influenced WHO's policy decision to reduce the number of sputum smears from three to two. Our meta-analyses on line-probe assays (Ling D et al. *ERJ* 2008), serological assays (Steingart KR et al. *PLoS Med* 2011), Xpert MTB/RIF (Steingart K et al. *Cochrane Library* 2014; Denkinger CM et al. *ERJ* 2014) and IGRAs (Pai M et al. *Annals Int Med* 2008; Cattamanchi A et al. *JAIDS* 2011; Rangaka M et al. *Lancet Infect Dis* 2012) have all been used by WHO for policy recommendations on TB

diagnostics. Our systematic reviews on IGRAs have also informed policy recommendations in Canada (Canadian TB Standards) and US Centers for Disease Control (MMWR 2010).

4) Knowledge translation: Development of evidence-based standards for TB care and control

In order to control the TB epidemic, we need to ensure that our standards of TB care are based on rigorous scientific evidence, are clear and well understood, and are accessible to and applied by all types of health care providers -- public, private, certified, and non-traditional -- in all corners of the world. I participated in the development of the “*International Standards for Tuberculosis Care (ISTC)*,” an initiative to develop evidence-based standard of care guidelines for TB, aimed primarily at the private healthcare sector. My role was to compile evidence-based guidelines on TB care, and co-author the standards. The ISTC report was published in 2006 (*Lancet Infect Dis* 2006;6:710-25). The ISTC is now an integral part of the new Global Stop TB Strategy. Also, I participated in developing the Canadian TB Committee’s Advisory Committee Statements on Interferon-γ assays for TB infection (*Can Commun Dis Rep* 2007; CCDR 2008; CCDR 2010). I served as the Associate Editor for the 7th Edition of the Canadian TB Standards (2013). I have also contributed to WHO guidelines on TB treatment (WHO, 2010), TB infection control (WHO 2009), and several WHO policies on TB diagnostics (previous section).

I am internationally recognized for my work which led to a historic negative WHO policy against inaccurate TB antibody blood tests (published in 2011), which was then take up by the Government of India, which banned the use, sale and import of these blood tests in the year 2012. Subsequently, I partnered with the Clinton Foundation to create the “Initiative for Promoting Affordable and Quality TB Tests” (IPAQT) to make WHO-approved TB tests more affordable, so they could replace the banned, inaccurate tests. This unique market-shaping initiative has been featured in the Wall Street Journal, *British Medical Journal*, and WHO Global TB Report, among others.

5) Measurement and improvement of quality of TB care

Poor quality TB care can result in patient morbidity and mortality, and can also generate drug-resistance. India accounts for 25% of the global TB burden, and quality of care in the private sector is known to be highly variable and often suboptimal. We developed a new method for measuring quality of TB care using standardized patients [SP] (“mystery clients”) who present typical TB case scenarios to health care providers. In a pilot study in Delhi, we demonstrated the feasibility and validity of this approach (Das J et al. *Lancet Infect Dis* 2015). The pilot study showed poor quality of TB care and a big gap between what providers knew about TB and what they actually did in practice. Subsequently, we have rolled out this methodology across 3 cities in India, with over 7000 simulated patient interactions. To provide some examples, insights from this work helped uncover that private providers underutilize TB tests, even when simulated patients present with typical TB symptoms; and pharmacists do not dispense any TB drugs over the counter (Satyanarayana S et al. *Lancet Infect Dis* 2016), but rarely refer persons with TB symptoms. This simulated patient method for TB is now being used in Kenya, China, and South Africa, inspired by our work in India.

G2. Personal Salary Awards

2015 – 2022	Canada Research Chair (Tier 1) Canada Research Chairs Program & CIHR	\$1,400,000
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2014 – 2017	FRQS Chercheur Boursier – Senior Fonds de recherche du Québec – Santé (FRQS) Rating (score): 93/100 Rank within the committee: 1	\$211,962
2012 – 2014	FRQS Chercheur Boursier – Junior 2 Fonds de recherche du Québec – Santé (FRQS) Rating (score): 95/100 Rank within the committee: 2	\$128,472
2007 – 2012	CIHR New Investigator Award Canadian Institutes of Health Research (CIHR) Rating (score): 4.36/5.00 Rank within the committee: 4	\$300,000
2007 – 2011	FRSQ Chercheur Boursier – Junior 1 Fonds de la recherche en santé du Québec (FRSQ) Rating (score): 96/100 Rank within the committee: 1	Declined
2007 – 2010	Établissement de jeunes chercheurs Fonds de la recherche en santé du Québec (FRSQ) Rating (score): 96/100 Rank within the committee: 1	\$45,000

G3. Research Grants

Current Grants

As Principal Investigator (PI):

STBP/TBREACH/GSA/2016-05	Pai, M (PI)	15 Sept. 2016 – 1 June 2021
UNOPS – Stop TB Partnership – TB REACH <i>Knowledge Management Support for TB REACH 2016-2020/21</i> Role: PI Amount: \$1,000,000 Rank within the committee: Not provided		
OPP1172634	Daftary, A (Nominated PI)	9 Aug. 2017 – 31 Jan. 2020
Bill & Melinda Gates Foundation (BMGF) <i>Standardized patients: An approach to understanding the realities of South Africa's TB care cascade</i> This project will use standardized patients to evaluate quality of TB and TB-HIV care in the private sector in two provinces of South Africa. Role: Co-PI [with Daftary A] Amount: \$538,638 US Rating and rank: Not provided		
OPP1091843	Pai, M (Nominated PI)	4 Nov. 2013 – 30 June 2019

Bill & Melinda Gates Foundation (BMGF)

Quality of tuberculosis care in urban India

This project will use standardized patients to evaluate quality of tuberculosis care in urban India.

Role: Co-PI [with Das J]

Amount: \$2,351,021 US

Rating and rank: Not provided

R-ST-POC-1706-03538

Pai, M (PI)

31 March 2017 – 30 Sept. 2018

Grand Challenges Canada (GCC)

Stars in Global Health grants

Improving the diagnosis of childhood tuberculosis in high burden settings

Role: PI

Amount: \$100,000

Rating and rank: Not provided

Pai, M (Nominated PI)

1 June 2015 – 31 March 2018

IC-IMPACTS Centres of Excellence

Engaging Community Pharmacists in India to Enhance Early Detection of Tuberculosis

This project is focused on improving tuberculosis detection in India, by engaging community-based pharmacists and use mobile technologies to facilitate referral and linkages.

Role: Co-PI [with Jha N]

Amount: \$252,500

Rank within the committee: Not provided

Pai, M (PI)

1 Oct. 2015 – 30 Sept. 2017

Foundation for Innovative New Diagnostics (FIND)

Infectious disease diagnostics in high burden countries and in particular Tuberculosis diagnostics in conjunction with development of new regimens to fight Tuberculosis and resistant Tuberculosis

Role: PI

Amount: \$259,045.71 US

Rating and rank: Not provided

MOP-325986 Dendukuri, N (Nominated PI)

1 Oct. 2014 – 30 Sept. 2017

Canadian Institutes of Health Research (CIHR)

Statistical methods to support diagnosis of pediatric tuberculosis in the absence of a gold standard reference.

This project is focused on the development of methods for evaluation of diagnostics with no reference standard.

Role: Co-PI [with Dendukuri N]

Amount: \$256,932

Rating (score): 4.65/5.00

Rank within the committee: 1

Pai, M (PI)

1 Sept. 2016 – 31 Aug. 2017

Merck, Sharpe & Dohme Corporation Funds – Translational Research

Improving the Diagnosis of Childhood Tuberculosis in High Burden Settings

Role: PI
Amount: \$44,000
Rating and rank: Not provided

As Co-Investigator:

(TBD) Menzies, R (PI) 1 July 2015 – 30 June 2022
Canadian Institutes of Health Research (CIHR) – Foundation Scheme
Tackling the two greatest obstacles to Tuberculosis elimination: Treatment of latent infection and drug resistant disease
This is a seven-year research program focusing on treatment of latent TB infection and drug resistance.
Role: Named program expert
Amount: \$7,899,734
Consolidated ranking (score, stage 2): 62.9%
Rank (stage 2): 145/445

Completed Grants

As Principal Investigator (PI):

Pai, M (PI) 1 Feb. 2014 – 31 Dec. 2016
Capital for Good (CfG) Advocacy Initiative
Innovative approaches to TB diagnostics: engaging policy makers from low-income countries
Role: PI
Amount: \$195,500 US
Rating and rank: Not provided

MOP-130330 Pai, M (PI) 1 Oct. 2013 – 30 Sept. 2015
Canadian Institutes of Health Research (CIHR)
Modeling the reproducibility of blood assays for TB infection
This study will model the reproducibility of interferon-gamma release assays for latent TB infection.
Role: PI
Amount: \$235,157
Rating (score): 4.23/5.00
Rank within the committee: 7

MOP-123291 Pai, M (Nominated PI) 1 Oct. 2012 – 30 Sept. 2015
Canadian Institutes of Health Research (CIHR)
Modeling the public health impact of TB and HIV diagnostics
This study will model the public health impact and cost-effectiveness of rapid diagnostics for TB and HIV in Canada and India.
Role: Co-PI [with Dowdy D]
Amount: \$274,351
Rating (score): 4.50/5.00
Rank within the committee: 2

OPP1061487 Pai, M (Nominated PI) 1 Aug. 2012 – 31 July 2015
Bill & Melinda Gates Foundation (BMGF)

Target product profiles for point-of-care TB testing

This project will develop target product profiles (TPPs) for point-of-care (POC) TB testing, to accelerate further development and validation work in this area.

Role: Co-PI [with Pai NP]

Amount: \$1,190,749 US

Rating and rank: Not provided

Pai, M (PI) 1 Oct. 2013 – 31 March 2015
Grand Challenges Canada (GCC)

Stars in Global Health grants

Mystery clients to assess and improve quality of TB care in India

Role: PI

Amount: \$113,000

Rating and rank: Not provided

MOP-89857 Dendukuri, N (Nominated PI) 1 Oct. 2011 – 30 Sept. 2014
Canadian Institutes of Health Research (CIHR)

Development of statistical methods for meta-analysis of tuberculosis diagnostic studies.

This project is focused on the development of new tools to improve meta-analyses of tuberculosis diagnostic studies.

Role: Co-PI [with Dendukuri N]

Amount: \$282,798

Rating (score): 4.24/5.00

Rank within the committee: 1

MOP-89918 Pai, M (Nominated PI) 1 Oct. 2011 – 30 Sept. 2014
Canadian Institutes of Health Research (CIHR)

Improving tuberculosis diagnosis in vulnerable populations: impact and cost-effectiveness of a novel, rapid molecular assay.

This study evaluates a new rapid point-of-care molecular assay for the diagnosis of TB in Montreal and Iqaluit.

Role: Co-PI [with Alvarez G]

Amount: \$355,730

Rating (score): 4.13/5.00

Rank within the committee: 4

Pai, M (PI) 1 July 2011 – 30 June 2013
Grand Challenges Canada (GCC)
Canadian Rising Stars in Global Health grants

A low-cost, multiplexed, point-of-care test for extra-pulmonary tuberculosis.

Role: PI

Amount: \$113,000

Rating and rank: Not provided

MOP-81362 Pai, M (PI) 1 Oct. 2009 – 30 Sept. 2012

Canadian Institutes of Health Research (CIHR)

Tuberculosis screening of health care workers: do novel blood tests have a role?

This study is continuation of a cohort study of new in-vitro tests for the diagnosis of latent TB infection among healthcare workers in Montreal and India.

Role: PI

Amount: \$336,725

Rating (score): 4.26/5.00

Rank within the committee: 1

MOP-89918 Pai, M (PI) 1 Oct. 2008 – 30 Sept. 2011

Canadian Institutes of Health Research (CIHR)

Innovative approaches for diagnosing tuberculosis in the era of HIV.

This study is a 3-year study of new tests for the diagnosis of TB in Canada, India and S Africa.

Role: PI

Amount: \$319,198

Rating (score): 4.18/5.00

Rank within the committee: 2

MOP-89857 Dendukuri, N (Nominated PI) 1 Oct. 2008 – 30 Sept. 2011

Canadian Institutes of Health Research (CIHR)

Novel statistical methods for tuberculosis diagnostic studies.

This is a 3-year study of new statistical approaches for evaluating tests for the diagnosis of TB.

Role: Co-PI [with Dendukuri N]

Amount: \$182,976

Rating (score): 4.13/5.00

Rank within the committee: 3

MOP-81362 Pai, M (PI) 1 Oct. 2006 – 30 Sept. 2009

Canadian Institutes of Health Research (CIHR)

Validation of interferon-gamma assay for the diagnosis of tuberculosis infection in health care workers.

This study was a 3-year cohort study of new in-vitro tests for the diagnosis of latent TB infection among healthcare workers in Montreal and India.

Role: PI

Amount: \$249,285

Rating (score): 4.23/5.00

Rank within the committee: 4

MUHC-RI Pai, M (PI) 15 May 2007 – 14 May 2009

McGill University Health Centre - Research Institute

Tuberculosis contact investigation in Montreal: comparison of T cell based interferon-g assays with the tuberculin test.

This was a pilot project for evaluation of a new diagnostic test for TB.

Role: PI

Amount: \$20,000

Rating and rank: Not provided

As Co-Investigator:

MOP-114967 Menzies, R (PI) 1 Sept. 2011 – 31 March 2015
Canadian Institutes of Health Research (CIHR)
Evaluation of potential biomarkers of successful treatment of latent tuberculosis.
This project will evaluate a number of candidate biomarkers during latent TB infection treatment and correlate changes in these biomarkers with the efficacy of 9INH and 4RIF.
Role: Co-investigator
Amount: \$525,564
Rating (score): 4.10/5.00

Rank within the committee: 5

1 R21 AI101152-01 Dowdy, D (PI)

6 July 2012 – 30 June 2014

National Institutes of Health (NIH)

A User-Friendly Epidemic-Economic Model of Diagnostic Tests for Tuberculosis.

The goal of the project is to create, evaluate, and disseminate a combined epidemic-economic model of TB diagnosis for use by TB experts and public-health decision-makers.

Role: Co-investigator

Amount: \$445,500

Impact/priority score: 11

283776 Behr, M (PI)

1 Oct. 2012 – 30 Sept. 2013

Canadian Institutes of Health Research (CIHR)

Tuberculosis: what does the future hold?

CIHR Café Scientifique program

Role: Co-investigator

Amount: \$3000

Rating (score): 4.35/5.00

Rank within the committee: 18

TB-NEAT Dheda, K (PI)

12 July 2010 – 30 June 2013

European & Development Countries Clinical Trial Partnership ("EDCTP")

Evaluation of multiple novel and emerging technologies for TB diagnostics, in smear-negative and HIV-infected persons, in high burden countries.

This is a multi-country grant for evaluating new diagnostics for TB.

Role: Co-investigator

Amount: € 150,000

Rating and rank: Not provided

RRD-153877 Menzies, R (PI)

1 April 2006 – 31 March 2011

Canadian Institutes of Health Research (CIHR) - Team Grant (Research Resource Grant)

Understanding the keys to TB: exposure to infection, and infection to disease.

This study is a cohort study of TB transmission among household contacts of TB cases in Montreal.

Role: Co-investigator

Amount: \$ 919,550

Rating (score): 4.6/5.00

Rank within the committee: Not provided

KRS-102067 Pai, NP (PI)

1 Jan. 2010 – 31 March 2011

Canadian Institutes of Health Research (CIHR)

Diagnostic performance of rapid tests for HIV and related coinfections in vulnerable populations.

This is a knowledge synthesis grant.

Role: Co-investigator

Amount: \$55,395

Rating and rank: Not provided

TBSusgent Dheda, K (PI) 1 Feb. 2009 – 31 Jan. 2011
European Commission (EU-FP7)

Sustaining research momentum over the coming decades: mentoring the next generation of researchers for tuberculosis.

This is a multi-country training grant for mentoring new researchers in TB.

Role: Co-investigator

Amount: € 60,600

Rating and rank: Not provided

GGH-84625 Vissandjee, B (PI) 1 July 2007 – 30 June 2009
Canadian Institutes of Health Research (CIHR)

Integrating gender sensitivity in TB programs in India: Building international partnerships and models for equitable access.

This was a CIHR seed grant for gender and health research.

Role: Co-investigator

Amount: \$74,984

Rating (score): 4.13/5.00

Rank within the committee: 4

MELS-MRI-MDEIE Vissandjee, B (PI) 1 April 2007 – 31 March 2009
Gouvernement du Québec, Initiative Inde 2007

Préoccupations liées aux rapports sociaux de genre dans les programmes de prévention et de traitement contre la tuberculose en Inde: Vers une construction de partenariats internationaux et approches pour un accès équitable.

This was a seed grant for collaborative research in India.

Role: Co-investigator

Amount: \$20,000

Rating and rank: Not provided

G4. Publications

G4a. Peer Reviewed Articles: Original Research Contributions

1. Rao S, Pai M, Iyanar A, Joseph A. Sanitation for rural communities: first win the people's support. *World Health Forum* 1997, Vol 18:262-265.
2. Pai M, Zachariah A, Rose W, Satyajit S, Verghese S, Joseph A. Malaria and migrant labourers: socio-epidemiological inquiry. *Economic and Political Weekly*, Vol XXXII, No 16, 1997.
3. Pai M, Kang G, Ramakrishna BS, Venkataraman A, Muliylil JP. An epidemic of diarrhoea in south India caused by enteroaggregative *Escherichia coli*. *Indian J Med Res* 1997;106:7-12.
4. Abraham M, Pai M, Kang G, Asokan GV, Magesh SR, Bhattacharji S, Ramakrishna BS. An outbreak of food poisoning in Tamil Nadu associated with *Yersinia enterocolitica*. *Indian J Med Res* 1997;106:465-468.
5. Pai M, Sundaram P, Radhakrishnan KK, Thomas K, Muliylil JP. Hepatitis B immunization coverage and awareness in middle and upper class population in Chennai City. *Indian Pediatrics* 1998;

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G4b. Peer Reviewed Articles: Meta-Analyses and Systematic Reviews

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G4c. Peer Reviewed Articles: Narrative Reviews

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G4f. Books, Monographs and Book Chapters

Book (as Associate Editor)

Tuberculosis: A Comprehensive Clinical Reference. H. Simon Schaaf & Alimuddin I. Zumla [Editors], John Grange, Mario Raviglione, Wing Wai-Yew, Peter Donald, Madhukar Pai, and Jeffrey Starke [Associate Editors], 2009. London, UK: WB Saunders Elsevier, ISBN 9781416039884 (hardback) and ISBN 9788131221518 (international edition).

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G4i. Media citations, op-eds, and expert interviews

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