Court File No. 98-CV-141369-CP00

ONTARIO
SUPERIOR COURT OF JUSTICE

B E T W E E N :

DIANNA LOUISE PARSONS, MICHAEL HERBERT CRUICKSHANKS, DAVID TULL, MARTIN HENRY GRIFFEN, ANNA KARDISH, ELSIE KOTYK, Executrix of the Estate of Harry Kotyk, deceased and ELSIE KOTYK, personally

Plaintiffs

and

THE CANADIAN RED CROSS SOCIETY, HER MAJESTY THE QUEEN IN RIGHT OF ONTARIO and THE ATTORNEY GENERAL OF CANADA

Defendants

and

HER MAJESTY THE QUEEN IN THE RIGHT OF THE PROVINCE OF ALBERTA
HER MAJESTY THE QUEEN IN THE RIGHT OF THE PROVINCE OF SASKATCHEWAN,
HER MAJESTY THE QUEEN IN THE RIGHT OF THE PROVINCE OF MANITOBA,
HER MAJESTY THE QUEEN IN THE RIGHT OF THE PROVINCE OF NEW BRUNSWICK
HER MAJESTY THE QUEEN IN THE RIGHT OF THE PROVINCE OF PRINCE EDWARD ISLAND,
HER MAJESTY THE QUEEN IN THE RIGHT OF THE PROVINCE OF NOVA SCOTIA
HER MAJESTY THE QUEEN IN THE RIGHT OF THE PROVINCE OF NEWFOUNDLAND,
THE GOVERNMENT OF THE NORTHWEST TERRITORIES,
THE GOVERNMENT OF NUNAVUT and THE GOVERNMENT OF THE YUKON TERRITORY

Intervenors

Proceeding under the Class Proceedings Act, 1992

Court File No. 98-CV-146405

B E T W E E N:

JAMES KREPPNER, BARRY ISAAC, NORMAN LANDRY, as Executor of the Estate of the late SERGE LANDRY, PETER FELSING, DONALD MILLIGAN, ALLAN GRUHLKE, JIM LOVE and PAULINE FOURNIER as Executrix of the Estate of the late PIERRE FOURNIER

Plaintiffs

and

THE CANADIAN RED CROSS SOCIETY, THE ATTORNEY GENERAL OF CANADA and HER MAJESTY THE QUEEN IN RIGHT OF ONTARIO

Defendants

and

HER MAJESTY THE QUEEN IN THE RIGHT OF THE PROVINCE OF ALBERTA, HER MAJESTY THE QUEEN IN THE RIGHT OF THE PROVINCE OF SASKATCHEWAN, HER MAJESTY THE QUEEN IN THE RIGHT OF THE PROVINCE OF MANITOBA,
HER MAJESTY THE QUEEN IN THE RIGHT OF THE PROVINCE OF NEW BRUNSWICK, HER MAJESTY THE QUEEN IN THE RIGHT OF THE PROVINCE OF PRINCE EDWARD ISLAND HER MAJESTY THE QUEEN IN THE RIGHT OF THE PROVINCE OF NOVA SCOTIA
HER MAJESTY THE QUEEN IN THE RIGHT OF THE PROVINCE OF NEWFOUNDLAND,
THE GOVERNMENT OF THE NORTHWEST TERRITORIES,
THE GOVERNMENT OF NUNAVUT AND THE GOVERNMENT OF THE YUKON TERRITORY

Intervenors

Proceeding under the Class Proceedings Act, 1992

This is the 2nd Affidavit
of Dr. Samuel S. Lee in this case
and was made on April 20, 2016

No. C965349
Vancouver Registry

In the Supreme Court of British Columbia

Between:

Anita Endean, as representative plaintiff

Plaintiff

and:

**The Canadian Red Cross Society
Her Majesty the Queen in Right of the Province of
British Columbia, and The Attorney General of Canada**

Defendants

and:

Prince George Regional Hospital, Dr. William Galliford, Dr. Robert Hart Dykes, Dr. Peter Houghton, Dr. John Doe, Her Majesty the Queen in Right of Canada, and Her Majesty the Queen in Right of the Province of British Columbia

Third Partie

Proceeding under the Class Proceedings Act, R.S.B.C. 1996, C. 50

CANADA

PROVINCE OF QUÉBEC

DISTRICT OF MONTRÉAL

NO : 500-06-000016-960

DOMINIQUE HONHON

SUPERIOR COURT

Class action

Plaintiff

-vs-

THE ATTORNEY GENERAL OF CANADA
THE ATTORNEY GENERAL OF QUÉBEC
THE CANADIAN RED CROSS SOCIETY

Defendants

-and-

MICHEL SAVONITTO, in the capacity of the Joint Committee member for the province of Québec

PETITIONER

-and-

FONDS D'AIDE AUX RECOURS COLLECTIFS

-and-

LE CURATEUR PUBLIC DU QUÉBEC

Mis-en-cause

CANADA

PROVINCE OF QUÉBEC

DISTRICT OF MONTRÉAL

NO : 500-06-000068-987

PAGE

SUPERIOR COURT

Class action

DAVID

Plaintiff

-vs-

THE ATTORNEY GENERAL OF CANADA
THE ATTORNEY GENERAL OF QUÉBEC
THE CANADIAN RED CROSS SOCIETY

Defendants

-and-

FONDS D'AIDE AUX RECOURS COLLECTIFS

-and-

LE CURATEUR PUBLIC DU QUÉBEC

Mis-en-cause

AFFIDAVIT OF SAMUEL S. LEE
(affirmed April 20, 2016)

I, DR. SAMUEL S. LEE, of the City of Calgary in the Province of Alberta, physician and professor of medicine, **AFFIRM AND SAY**:

1. The Attorney General of Canada has engaged my services in this matter. For reasons discussed in my affidavit sworn January 26, 2016, I have been generally aware of the FPT Governments 1986-1990 Hepatitis C Settlement Agreement (**"Agreement"**) from the time it was created, and understand that the Agreement compensates persons who received blood or blood products contaminated with hepatitis C virus (**"HCV"**) during the 4 ½ year period preceding the introduction of direct viral testing for HCV in the Canadian blood system.

2. I understand from materials provided by counsel for the Attorney General of Canada that the courts have declared a part of the funds comprising the trust capital within the FPT Governments 1986-1990 Hepatitis C Settlement Trust Fund (**"Trust"**) to be unallocated assets within the Trust that will not have to be called on when honouring all current and forthcoming financial commitments made under the Agreement. In connection with these judicial declarations I have been asked to provide medical opinion evidence to assist the courts in reaching their decision on an appropriate allocation of the actuarially and judicially declared unallocated assets within the Trust as at December 31, 2013. I understand that the Attorney General of Canada, as the representative of the federal government in this matter, has a financial interest in the funds forming the capital of the Trust.

Duty to the Court and Expert Qualifications

3. Although I am offering my expert evidence pursuant to my engagement by Canada, I understand and affirm that the evidence to be provided by me herein must be fair, objective and non-partisan, and that my duty to tender evidence in accordance with these principles prevails over any obligations I may owe to the Attorney General of Canada ("**Canada**") under the terms of my engagement. I also understand that the evidence I am offering must relate only to areas within the scope of my professional expertise. In the event that the courts find they require additional assistance from me in determining this matter, I am ready, willing and able to offer such assistance.

4. My qualifications to offer evidence requiring expertise in the field of viral hepatitis and specifically HCV are extensive and reflect many decades of work in the field. I am a licensed physician specializing in gastroenterology and hepatology. I have been Board-certified by the American Board of Internal Medicine in internal medicine since 1981 and in gastroenterology since 1983. I have been a Fellow of the Royal College of Physicians of Canada in Internal Medicine since 1982, and a member of the Alberta College of Physicians and Surgeons since 1988. In my clinical practice I have been a member of the active staff in Internal Medicine at Foothills Hospital, Calgary, Alberta, from 1988 to the present. I also have been a courtesy member of the consulting staff in the Department of Medicine at Peter Lougheed Hospital and Rockyview Hospital in Calgary from 1988 to the present. In the course of my clinical practice over the past 27 years, I have seen at least 3,000 patients infected with hepatitis C.

5. In my academic career, my present appointment as a full professor in the Department of Medicine within the Faculty of Medicine at University of Calgary was made in 2000. I previously had served as an assistant professor specializing in

gastroenterology in the Faculty's Department of Medicine from 1988 to 1993, and as an associate professor in its Department of Medicine from 1993 to 2000. Prior to accepting my academic appointment at University of Calgary in 1988, I had held a research fellowship in hepatology and portal hypertension at the University of Paris in France from 1984 to 1987, and had taken advanced training in internal medicine and gastroenterology at University of Toronto from 1978 to 1984. I received my M.D. degree from Memorial University of Newfoundland in 1978. Attached hereto as **Exhibit "A"** to this my affidavit is a copy of my *curriculum vitae* updated to January 1, 2016.

6. In addition to my clinical practice and my teaching responsibilities, I have conducted medical research, published and lectured extensively in the field of viral hepatitis and specifically HCV infection and its treatment. For many years my responsibilities have included the review and oversight of work performed by other professionals in my field, both scholars pursuing advanced degrees in my area of expertise and other viral-hepatitis specialists seeking publication of their research in peer-reviewed professional journals.

Answers to Cross-examination

7. At the request of counsel for Canada, I swore an affidavit on January 26, 2016 which provided expert advice regarding three aspects of the clinical management and treatment of HCV infections: (a) the impact of new drug therapies in eliminating HCV from all infected persons, including their effectiveness in eradicating genotypes that have been resistant to previous drug regimens; (b) the duration of the natural history of HCV disease from the date of infection to cirrhosis, end-stage liver disease and

death; and (c) the HCV disease stages when infected persons are fully symptomatic and under the care of a physician.

8. I have been advised by counsel for Canada that I am now required to provide written answers to cross-examination questions which arise from my affidavit of January 26, 2016. Attached as **Exhibit "B"** to this my affidavit are the cross-examination questions which I have been asked to answer, together with my answers.

9. For the reasons outlined in the paragraphs above, and in my affidavit of January 26, 2016, I have knowledge of the matters to which I offer answers in the attached "Exhibit B", save for those matters deposed on information and belief. Where I have referred to information obtained from specific sources, I believe that information to be true. Where I have referred to information without expressly disclosing the source, the information was derived either from my first-hand knowledge or as a result of my many years of experience and study as an academic and doctor in the field of hepatology.

AFFIRMED before me at the City of Calgary in the Province of Alberta on this 20th day of April, 2016.

Commissioner for Taking Affidavits and Notary Public in the Province of Alberta

Shane P. Martin
Barrister & Solicitor

SAMUEL S. LEE

CURRICULUM VITAE

Current to 1/1/2016

I. BIOGRAPHICAL DATA:

Name: Samuel S. Lee
Address: 3330 Hospital Dr NW
Calgary, AB, T2N 4N1
Canada
Telephone: (403) 220-8457
Fax: (403) 270-0995
Email: samlee@ucalgary.ca

Present Rank: Professor
Department: Medicine
Faculty: Medicine
Institution: University of Calgary

This is Exhibit "A" referred to in the Affidavit of Samuel S. Lee
Sworn before me this 20th day of April A.D., 2016
A Commissioner for Oaths in and for the Province of Alberta
Marlene P. Martin
Barrister & Solicitor

II. ACADEMIC RECORD

Final Degree: M.D.
Date Completed: 1978
Institution/City/Country Memorial University of Newfoundland, St. John's, NL, Canada

I. **Undergraduate:** Memorial University, 1972-74, premedical studies

ii. **Graduate and postdoctoral:**

Internship and Residency:

Internship (RI) Medicine, Sunnybrook Hospital, University of Toronto, 1978 - 79
RII medicine, Sunnybrook Hospital, 1979 - 80.
RIII medicine, Wellesley Hospital, Toronto 1980 - 81.
RIV gastroenterology, Toronto Western Hospital 1981 - 82.
RV gastroenterology, Toronto General Hospital 1982 - 83.

Research Fellowship:
Research fellow, Hepatic Hemodynamics Lab, Unité de Recherches de Physiopathologie Hépatique (INSERM U 481), Hospital Beaujon, Clichy, France, January 1984 - August 1987 (supported by Canadian Liver Foundation and Medical Research Council).

Visiting lecturer, Department of Pharmacology, Technion Faculty of Medicine, Haifa, Israel, September 1987 - December 1987.

iii. **Licensure and boards:**

LMCC 1980
ABIM (Internal Medicine) 1981
FRCPC (Internal Medicine) 1982
ABIM (Gastroenterology) 1983
Alberta College of Physicians & Surgeons, 1988-present: licence # 9548

III AWARDS AND DISTINCTIONS:

Newfoundland Government Centenary Scholarships, 1971,1972 and 1973
Memorial University Mathematics Competition, Second Prize, 1973
Faculty of Medicine Lange Book Prize, 1977
Faculty of Medicine Lange Book Prize, 1978
Canadian Liver Foundation Fellowship, 1984 - 1985
Medical Research Council Fellowship, 1986 - 1987
Royal College of Physicians and Surgeons of Canada H.K. Detweiler Travel Award, 1986
Faculty of Medicine "Gold Star" teaching awards, 1994,1998, 1999, 2000, 2003, 2004
CMSA Letter of Excellence for teaching, 2002, 2005, 2006
Encana Alberta Stars of Distinction award (Science category), 2002
Queen Elizabeth II Golden Jubilee Medal, 2002
Best Clinical Teacher Award, voted by fellows and trainees in GI division, 2003
Mizne Lectureship in Gastroenterology, Jewish General Hospital, McGill University, 2003
Graduate Students Society Golden Apple Teaching Award, 2003, 2006
Canadian Liver Foundation Tribute Gala 'Roast', Oct 26, 2007
St Louis University International Visiting Speaker, SLU Division of Gastroenterology, St Louis, USA, Dec 2011

IV ACADEMIC APPOINTMENTS:

- Active staff, Internal Medicine, Foothills Hospital, Calgary, Alberta, 1988 - present.
- Courtesy Consulting staff, Department of Medicine, Peter Lougheed Hospital and Rockyview Hospital, Calgary 1988 - present.
- Alberta Heritage Foundation for Medical Research, Clinical Investigator, 1988 - 1994, AHFMR Scholar, 1995 - 2000, Senior Scholar 2000 - 2006.
- Assistant Professor, Department of Medicine (Gastroenterology), University of Calgary, Calgary, Alberta, 1988 - 1993.
- Associate Professor, Department of Medicine, University of Calgary, 1993 - 2000.
- Professor, Department of Medicine, University of Calgary, 2000 - present

V EDUCATIONAL ACTIVITIES:

Coordinator, GI course (432), 2nd year curriculum (2000-03)
Supervisor for MSc studies: J.M. Pak, 1994; D.N. Jaue, 1996; J. Wong, 1997; T. Glenn, 2008; N. Alhassan (leave of absence to finish surgical residency; expected 2017)
Supervisor for Ph.D. studies: Z. Ma, 1996; D. Song, 2003; S.A. Gaskari 2009.

External examiner: M. Belanger, PhD, Univ Montreal 2006; K. Moncrief, MSc, Univ Alberta 2006; Venessa Petullo, PhD, Univ New South Wales, Australia, 2013

VI ADMINISTRATIVE RESPONSIBILITIES:

Chairman, University of Calgary Gastroenterology Research Group, 1997-99
Member, GI fellowship program committee, 1993-2005
Director of Research, GI Division, 2004-2007
Dept of Medicine representative, UCMG Management Committee, 2006-08
GI divisional representative, Alternate Reimbursement Plan (ARP) Committee, 2006-11
Head, Division of Gastroenterology, 11/2007 – 3/2009
Member, Faculty of Medicine Academic Review Committee (promotions etc) 2013- present

VII PROFESSIONAL ACTIVITIES:

Canadian Association for Study of Liver, President, 1998-2000
Canadian Liver Foundation, member, Summer Studentship Committees
Canadian Association of Gastroenterology
Canadian Society for Clinical Investigation
American Association for Study of Liver Disease; member, Ethics committee 2003-06, and abstract review committee (Experimental Portal Hypertension) 2005-08
European Association for Study of Liver
Health Canada Hepatitis C Initiative, Program Advisory Group (steering committee)
World Congress of Gastroenterology, Montreal-2005, member scientific program organizing committee, and chairman, hepatology organizing committee
International Ascites Club; member, Scientific Executive Committee, 2004-07, Chairman and Secretary-Treasurer, 2007-2010
International Association for Study of Liver, Councillor, 2012 – 2016; President, 1/2016-1/2018

ii. Reviewer for:

Granting and scientific agencies:
Medical Research Council of Canada (member, Experimental Medicine committee, 1997-00)
Heart & Stroke Foundation
Canadian Institutes of Health Research
Canadian Liver Foundation
Ontario PSI Foundation
Bayer Blood Services Research Foundation
Manitoba Health Science Centre Foundation
Saskatchewan Health Research Foundation
Israel Science Foundation
Wellcome Trust
US Food and Drug Agency (invited reviewer for lamivudine NDA meeting 1998)
US Veterans Affairs Department

Journals:

Am J Cardiol, Am J Gastroenterol, Am J Pathol, Am J Physiol, Brit J Pharmacol, Brit Med J, Can J Cardiol, Can J Gastroenterol (editorial board 2004-2009), Can J Physiol Pharmacol, Chest, Clin Invest Med, Clin Sci, Digestion, Digest Dis Sci, Digest Liver Dis, Eur J Clin Invest, Eur J Gastro Hepatol, Gastroenterology, Gut, Hepatology, Hepatol Int (editorial board 2007-present) Hepatogastroenterology, J Clin Invest, J Gastroenterol Hepatol, J Hepatol, J Ped Gastro Nutr, J Physiol (Lond), J Viral Hep, Kidney Int, Kor J Hepatol (editorial board 2010-present), Kor J Int Med (editorial board 2008-present), Life Sci, Liver Transpl, Microcirculation, Ped Res, World J Gastroenterol (editorial board 2004-present)
-Editor-in-chief of *Liver International*, 01/2008 – 01/2013

Consultant for (past 5 years):
Abbott, Boehringer-Ingelheim, Bristol Myers Squibb, CV Therapeutics, Genentech, Gilead, Healix, Human Genome Sciences, Idenix, Janssen, Microgenix, Merck, Novartis, Innervision, Pharmasset, Roche, Sequana, Transition Therapeutics, Vertex

VII RESEARCH SUPPORT:

AHFMR Establishment grant: "Pathophysiology of Portal Hypertension", 1988-90, $72,500/yr. "Top-up" award 1997, $12,000.

CLF Supplementary establishment grant: "Mesenteric Veins in Cirrhosis - Human Study", 1990-92, $10,000/yr
Bridging operating grant: "Hyperkinetic circulation in cirrhosis", 1993-94, $60,000/yr.
Operating grant: "Mechanisms of negative inotropic effects of IFN", 2005-07, $60,000/yr
Operating grant: "Myosin heavy chain isoforms in cirrhotic cardiomyopathy", 2011-13, $60,000/yr

MRC/ Operating grant: "Spanchnic capacitance in cirrhosis", 1990-93, $56,000/yr.
CIHR Operating grant: "Cardiac membranes in cirrhosis", 1994-97, $52,000/yr.
Operating grant: "Membrane mechanisms of cirrhotic cardiomyopathy, 1997-2002, $63,000/yr.
Operating grant: "Cirrhotic cardiomyopathy: causes and consequences" 2002-07, $112,000/yr.
Operating grant (co-PI with R.J. Hilsden): "Treatment of active injection drug users infected with HCV with pegylated interferon, 2003-07, $134,000/yr.

Pharmaceutical industry (Amgen Canada, Cytel Corp., Agouron, Gilead, GlaxoSmithkline, Schering-Plough, Serono, Hoffman-LaRoche, Idenix, Leo, Bristol Myers Squibb, Wyeth Ayerst, Genentech, Johnson&Johnson, Intermune), Phase II and III clinical studies of antiviral agents in chronic viral hepatitis, ascites, hepatocellular carcinoma, autoimmune hepatitis and primary biliary cirrhosis 1992-present, (variable funding per study).

IX INVITED NATIONAL AND INTERNATIONAL ADDRESSES PAST 20 YEARS:

1. Japanese Association of Hepatology annual congress, Fukuoka, Japan, June 1995: "Mechanisms of cirrhotic cardiomyopathy"

2. Sapporo Medical College, Sapporo, Japan - March 1996: "Review of cirrhotic cardiomyopathy"

3. Kagawa Medical School, Kagawa, Japan - March 1996: "Cirrhotic cardiomyopathy"

4. Kurume Medical University, Kurume, Japan - March 1996: "Cirrhotic cardiomyopathy mechanisms"

5. 3rd International Korean Scientists Triennial Conference, Seoul, Korea - June 1996: "Pathogenic mechanisms of cirrhotic cardiomyopathy"

6. Chinese University of Hong Kong, Hong Kong - July 1996: 1) "Mechanisms of cirrhotic cardiomyopathy" 2) "Viral hepatitis: the Canadian Perspective'"

7. National Yang-Min University, Taipei, Taiwan - July 1996: "Cirrhotic cardiomyopathy"

8. Canadian Digestive Disease Week annual congress, Banff - March 1997: "Cardiovascular effects of bile salts" and "Hepatitis C treatment"

8. Japanese Portal Hypertension Society Annual Meeting, Fukuoka, Japan - September 1997: "Update on cirrhotic cardiomyopathy" (Keynote address)

9. First Canadian Association for Study of Liver (CASL) Single Topic Conference: "Hepatocellular carcinoma", co-organizer and cochair of congress, Niagara-on-the-Lake, ON, June 1998.

10. CASL Special Topic Conference: Natural History of chronic HCV, an expert panel consensus. Co-organizer, cochair and panelist. Toronto, ON, Sept 1998.

11. Association Française de l'étude du Foie (AFEF) Annual Congress, Portal Hypertension Symposium, Paris, France - October 1998: "Mechanisms of cirrhotic cardiomyopathy" (Keynote address)

12. Laboratory Centre for Disease Control 2nd Public Health symposium on Hepatitis C, Ottawa - Oct 1998: "Treatment of HCV patients"

13. Sunnybrook Gut Club, Toronto - October 1998: "Update hepatitis C"

14. MRC - Health Canada special conference, Defining an agenda for hepatitis C in Canada, Ottawa - Jan 1999: "Viral hepatitis network centres of excellence - where do we go from here"

15. Hepatitis B: Treatment Strategies for the New Millenium, conference chairman and principal organizer, Quebec City, QC, Jan 1999.

16. Hospital Medica Sur, 2nd Annual Liver Day (with teleconferencing to 12 other Mexican

hospitals), Mexico City - February 1999: "Treatment of hepatitis C with IFN and ribavirin"

17. New Brunswick Association of Gastroenterology Annual Meeting, Moncton - April, 1999: "Update viral hepatitis" and "Hepatic complications of IBD"

18. Canadian Association for Study of Liver Viral Hepatitis Consensus Conference, Montreal - March 1999: "Epidemiology of hepatitis B in Canada"

19. Vancouver Gut Club, Vancouver - June 1999: "Treatment of hepatitis B"

20. Gastro99 Pan-American Gastroenterology biannual meeting, Vancouver - Sept, 1999: "Cirrhotic cardiomyopathy"

21. Second annual CASL Single Topic Congress, "Hepatic Fibrosis", chairman and organizer of congress, Kananaskis, AB, Oct 1999.

22. American Association for Study of Liver Disease (AASLD) Annual Meeting, International Liver Transplant Society Pre-meeting Symposium, Dallas, Texas - November 1999: "Cirrhotic cardiomyopathy and liver transplantation", and co-moderator, workshop: "Are hyperdynamic conditions necessary for successful transplantation"

23. Fourth Annual Update Liver Disease and IBD, Cancun, Mexico - Feb 2000: panelist, interesting cases, and workshop moderator, "Management of borderline patients"

24. Pegylated Interferon (Pegasys) Investigators' meeting, Mar 2000, Athens, Greece: "Histological results of the Pegasys 95 study"

25. Management of hepatitis C at the turn of the new millenium, Acapulco, Mexico, Mar 2000, workshop moderator, "Patterns of response to treatment"

26. International Congress of Infectious Disease, 9th annual meeing, satellite symposium on "New approaches to the difficult HCV patient", Buenos Aires, Argentina, Apr 2000: "Pegylated interferon treatment of cirrhotic HCV patients".

27. Interscience Congress of Antimicrobial Agents and Chemotherapy (ICAAC) 40th annual meeting, symposium on "New directions in treating hepatitis C", Toronto, Sept 2000: "Quality of life in patients with chronic hepatitis C"

28. 5th Annual Update in Liver Disease and Inflammatory Bowel Disease, Tucson, AZ, Feb 2001: workshop leader, "Portal hypertension"

29. Canadian Digestive Disease Week, symposium organizer and chairman, "Management of hepatitis B: new strategies for an old disease", Banff, Alberta, Feb 2001

30. Mexican Association of Hepatology Annual meeting, Hepatitis symposium, "Role of liver biopsy in hepatitis C" and "Pegylated IFN therapy for chronic hepatitis C", Guadalajara, Mexico,

Oct 2001.

31. Correctional Service of Canada annual healthcare congress, "Management of hepatitis C", Ottawa, Feb 2002

32. Canadian Society of Hematology, hemophilia symposium, "Bleeding disorders in liver disease patients", Banff, Alberta, Mar 2002

33. 6th Annual Update in Liver and Inflammatory Bowel Disease, "Interesting Cases" organizer and chairman, Nassau, Bahamas, Mar 2002

34. Lebanese Society of Gastroenterology 1st Annual Congress, "La regulation centrale de la circulation sanguine au cours de l'hypertension portale", Beirut, Lebanon, Apr 2002

35. American Association for Study of Liver Disease, Symposium on Clinical Research in Portal Hypertension, luncheon workshop leader, "Heart in portal hypertension", San Francisco, May 2002

36. Canadian Association of Pathologists, 53rd Annual meeting, "Update in hepatitis C" Calgary, May 2002

37. European Association for Study of Liver monothematic conference on Vascular Mechanisms in Liver Disease, "Cirrhotic cardiomyopathy: definition and basic mechanisms", London, UK, July 2002

38. University of London tri-hospital (St. Mary's, St. Thomas, Chelsea-Westminister) Infectious Disease rounds, "Chronic hepatitis C: a Canadian perspective", London, UK, July 2002

39. Hepatitis C forum: Foundations for Cure, "Early predictability of pegylated IFN alfa-2a therapy in chronic hepatitis C", Rhodes, Greece, Sept 2002

40. Annual Western Canadian Update in Medicine for Psychiatrists course, "ABC's of viral hepatitis", Banff, Alberta, Sept 2002

41. GI Grand Rounds, University Alabama-Birmingham, "Cirrhotic cardiomyopathy: clinical and basic aspects" Birmingham, AL, USA, Nov 2002

42. Western Canadian Peginterferon alfa-2b Update, "Review of peginterferon HCV studies", Edmonton, AB, Dec 2002

43. 7th annual Update Liver and Inflammatory Bowel Disease, "Interesting cases" organizer and co-chairman, San Juan, Puerto Rico, Jan 2003

44. African Association for Study of Liver Disease 6th annual congress, "Liver biopsy in hepatitis C", "Peginterferon: early predictability and individualized treatment of hepatitis C patients", "Risks/Benefits of treating cirrhotic HCV patients" Cairo, Egypt, Mar 2003.

45. Canadian Viral Hepatitis Consensus Conference, "Treatment of HCV relapsers and nonresponders to previous antiviral therapy, and role of maintenance treatment", Ottawa, Nov 2003.

46. McGill University – Jewish General Hospital Mizne Lectureship Award, "The heart in cirrhosis", Montreal, Nov 2003.

47. Queen's University Division of Gastroenterology Rounds, "Cirrhotic cardiomyopathy: what it means to the clinician and researcher", Kingston, ON, Mar 2004

48. Australian Hepatitis C Symposium: Make the difference a cure, "Treating patients with HCV cirrhosis", and "Treatment of HCV genotypes 2 and 3", Sydney, Australia, Mar 2004

49. International Ascites Club EASL pre-meeting symposium on Cirrhotic Cardiomyopathy: "Evidence for cirrhotic cardiomyopathy: animal models", Berlin, Germany, Apr 2004

50. LatinoAmerican HCV symposium, "Treating the cirrhotic patient", "HCV: interesting cases" and breakfast workshop, La Romana, Dominican Republic, Jul 2004

51. Chosun University Hospital International Symposium, "Cardiovascular complications of cirrhosis", Kwangju, Korea, Sept 2004

52. Kyunghee University Hospital, Dept of Medicine Grand Rounds, "Cirrhotic cardiomyopathy", Seoul, Korea, Sept 2004

53. Mexican Society of Internal Medicine, annual congress, "Treatment of chronic HCV" and "Interesting hepatitis cases", Veracruz, Mexico, Nov 2004

54. Asian Pacific Association for Study of Liver (APASL) 14th annual meeting, "Cirrhotic cardiomyopathy", and "Animal models of portal hypertension", "Animal models of cardiovascular dysfunction in liver disease" New Delhi, India, Dec 2004

55. Canadian Association for Study of Liver (CASL) First Winter Meeting, "What is so good about being an academic hepatologist?"; symposium organizer and cochairman, "Treating chronic Hepatitis C: the new reality", Banff, AB, Mar 2005

56. AGA Clinical Symposium: "Cirrhosis: more than a liver disease", 56th Annual DDW meeting, "the heart in cirrhosis", Chicago, USA, May 2005

57. Ecos Internacionales, 17th annual meeting of Mexican Society of Gastroenterology, symposium on Treating Difficult HCV: "Treatment of HCV cirrhosis", and "HCV interesting cases", Puebla, Mexico, Aug 2005

58. Isfahan University Faculty of Medicine GI seminar series, "Management of hepatitis C", Isfahan, Iran, Sept 2005

59. Iranian Society of Physiology and Pharmacology, 17th biennial congress, "Mechanisms of cirrhotic cardiomyopathy" (one of 8 keynote addresses) Kerman, Iran, Oct, 2005

60. Tehran University of Medical Sciences, Faculty of Pharmacology Grand Rounds, "Cardiovascular complications of cirrhosis: new insights", Tehran, Iran, Oct 2005

61. Tehran University, Shariati Hospital GI Rounds, "Cirrhotic cardiomyopathy", and "Treatment of chronic hepatitis C", Tehran, Oct 2005

62. Memorial University of Newfoundland - St. Clare's Hospital Medical Grand Rounds, "Hepatitis C: 2005 update", St. John's, NL, Oct 2005

63. AASLD 56th Annual Meeting, "Presentation of AASLD Distinguished Achievement Award to Dr. Jenny Heathcote" (introduction of awardee), San Francisco, CA, Nov 2005

64. Peruvian Society of Gastroenterology, 25th annual congress, "Cardiovascular complications of liver disease", "cirrhotic cardiomyopathy", "treating the HCV patient with normal transaminases", "treatment of HCV cirrhosis", Lima, Peru, Nov 2005

65. Blood Ties Four Directions congress "HIV and HCV: Bringing Expertise to the North", "Hepatitis C: from Shakespeare to the 21st century" (keynote address), Whitehorse, Yukon, Feb, 2006

66. Whitehorse General Hospital, Grand Rounds, "Update Hepatitis C 2006", Whitehorse, YK, Feb, 2006

67. Chronic Liver Disease Foundation Speakers Bureau symposium, "Management of hepatocellular carcinoma", Las Vegas, NV, Feb 2006

68. CASL 2nd annual Winter Meeting, "Treating hepatitis C: the Canadian EAP experience", Toronto, ON, Apr 2006

69. Canadian EAP/RAP Investigators meeting, debate: "borderline-compensated patients with HCV cirrhosis should be treated" (con), Scottsdale, AZ, Apr 2006

70. University of Alberta, Dept of Physiology, "Cardiovascular abnormalities in portal hypertension: new paradigms", Edmonton, AB, Apr 2006

71. New treatment concepts of chronic hepatitis C, "Chronic HCV: early or late treatment?", "Tailoring treatment duration in chronic hepatitis C", Dubai, UAE, Jun 2006

72. 15th Annual Post-DDW Review Course, "Review of liver abstracts: nonviral", Lake Louise, AB, Jun 2006

73. International Association for Study of Liver (IASL) / African Association for Study of Liver

Disease (AfASLD) 2006 Congress, "Cirrhotic cardiomyopathy", "Pharmacokinetics of peginterferons" "Helicobacter in cirrhosis", Cairo, Egypt, Sept 2006

74. AASLD 57th annual meeting, breakfast workshop moderator "Experimental portal hypertension", Boston, MA, Oct 2006

75. 4th Canadian Consensus Meeting for Viral Hepatitis, "Natural history of chronic hepatitis B", Toronto, Jan 2007

76. University of British Columbia Dept of Medicine Grand Rounds, "New paradigms in HCV management", Vancouver, BC, Feb 2007

77. Asian-Pacific Association for Study of Liver (APASL) 17th annual meeting, "Optimizing Hepatitis C treatment duration", Kyoto, Japan, Mar 2007

78. Virginia Commonwealth University Division of Gastroenterology Grand rounds, "Cirrhotic cardiomyopathy", Richmond, VA, USA, Apr 2007

79. 2nd Symposium on Coagulopathy in Liver Disease, "Endothelial function in cirrhosis", Charlottesville, VA, Apr 2007

80. Korean Association for Study of Liver (KASL) annual meeting, "New paradigms in portal hypertension", "How to publish in English-language journals" (both keynote lectures) Busan, Korea, May 2007

81. PROPHESYS Investigators' Meeting, "Optimizing treatment outcomes in chronic hepatitis C", Oslo, Norway, June 2007

82. Barcelona Liver Unit 7th International Symposium on Treatment in Liver Disease, "Cardiac dysfunction in cirrhosis", Barcelona, Spain, Sept 2007

83. Iranian Gastroenterology Hepatology Society, 7th annual congress, "Optimizing antiviral treatment in hepatitis C", and "Treatment of hepatitis C in endstage renal failure", Tehran, Iran, Nov 2007

84. APASL 18th annual meeting: "Portal hypertension: new concepts", Seoul, Korea, Mar 2008

85. Japanese Gastroenterology Society annual congress, "Real world experience in treating chronic hepatitis C", Fukuoka, Japan, May 2008

86. Hong Kong International Liver Congress 2008: "Optimizing hepatitis C treatment", Hong Kong, Jun 2008

87. AASLD Single Topic Conference (Circulatory and renal complications of cirrhosis): "Cardiac dysfunction in cirrhosis", Atlanta, USA, Sept 2008

88. ALEH (Latin American Assoc Study of Liver) annual congress, "new concepts in portal hypertension", "Cirrhotic cardiomyopathy", Isla Margarita, Venezuela, Sept 2008

89. Japanese Portal Hypertension Society, 7th Annual Single Topic Congress, "Cardiovascular complications of portal hypertension: new paradigms in pathogenesis", Fukuoka, Japan, Nov 2008

90. 2nd Ditan International Symposium on Infectious Diseases, "Optimizing hepatitis C treatment duration", "Cardiovascular complications of endstage liver failure", Beijing, China, Nov 2008

91. Paris Hepatitis Congress 2009, "Treatment of hepatitis B with nucleos(t)ide analogues", Paris, France, Jan 2009

92. Intl Ascites Club (IAC) – Norwegian Society of Gastroenterology joint CME symposium: 'Complications of chronic liver failure' (co-organizer), "Circulatory changes in cirrhosis: new paradigms", Lillehamer, Norway, Feb 2009

93. APASL 19th annual meeting, "Cardiac complications of endstage liver disease", "How to write a clinical research paper", Hong Kong, Feb 2009

94. Colombian-Venezuelan Liver Society annual meeting, "Cirrhotic cardiomyopathy", "How to write and publish a paper", Bogota, Colombia, Mar 2009

95. EASL annual congress, pre-meeting IAC symposium, "Bacterial infections and ascites" (symposium organizer and chairman), Copenhagen, Denmark, April 2009

96. Asian-Pacific Digestive Week, "Cirrhotic cardiomyopathy: bench to bedside", Taipei Sept 2009

97. AASLD 60th annual meeting Postgraduate course on "Complications of endstage liver failure": "cirrhotic cardiomyopathy: clinical significance and outcomes", Boston, Oct, 2009

98. Iranian Society of Physiology and Pharmacology, 19th biennial congress, "Cardiovascular complications of liver failure", Tehran, Iran, Nov 2009

99. Iranian Society of Gastroenterology annual congress, "Management of Hepatitis C", Tehran, Nov 2009

100. Indian Society of Gastroenterology Congress: "The heart in cirrhosis: from ignorance to consequence", Kolkata, India, Dec 2009

101. Ontario Association of Gastroenterology winter meeting: "Update in hepatitis C: 2010", Collingwood, Ontario, Jan 2010

102. AASLD/EASL Single Topic Conference on Acute on Chronic Liver Failure, "Management of cardiovascular complications in CLF", Atlanta, Mar 2010

103. APASL 20th annual meeting, IAC Symposium, 'Renal dysfunction in liver failure' (symposium co-chair), "Treatment of hepatitis C: global data", Beijing, Mar 2010

104. Hospital Medica Sur / Instituto de Nutricion 2nd annual international congress, "Hepatopulmonary syndrome", "Cardiovascular complications post-liver transplantation", Mexico City, July 2010

105. Falk Symposium 174: Gut and Liver, "Cardiac dysfunction in cirrhosis", Beijing, Aug, 2010

106. First Shanghai International Symposium on Liver Diseases, "How to write a paper", Hangzhou, China, Sept 2010

107. Intl Association of Surgery, Gastroenterology, Oncology (IASGO) course on Liver Transplantation, "Cirrhotic cardiomyopathy: what it means to the transplant unit", Essen, Germany, Sept 2010

108. Beijing Youan Hospital, and Sino-Japanese Friendship Hospital, visiting lectures: "How to write a paper for English-language journals". Beijing, Nov 2010

109. 2nd International Congress of the Liver Cirrhosis Clinical Research Center, "Cardiovascular changes in cirrhosis: new paradigms" Seoul, Korea, Jan 2011

110. Yonsei University Severance Hospital GI division rounds, "How to write a paper", Severance Hospital, Seoul, Jan, 2011

111. 4th Paris Hepatitis Congress 2011, workshop moderator, "Using quantitative HBsAg and HBV-DNA in management of HBV", Paris, Jan 2011

112. EASL annual congress, pre-meeting symposium on 'the Heart in Liver Disease', 'Cirrhotic cardiomyopathy: pathogenic mechanisms', Berlin, Apr 2011

113. 4th International Coagulopathy in Liver Disease Meeting, "Endothelial dysfunction, coagulopathy and liver disease", London, UK, Sept 2011

114. AASLD 61st annual meeting, lunch workshop: "Cardiovascular assessment of the transplant patient" San Francisco, Nov 2011.

115. Beijing Youan Hospital, Special Symposium on 'How to do clinical research and write up the results' (course organizer and main lecturer). Beijing, Dec 2011

116. 5th Paris Hepatitis Congress 2012, workshop speaker, "Managing complications of DAA triple-therapy in HCV."; session chairman, 'Treating special populations of HCV patients', Paris, Jan 2012

117. Canadian Digestive Disease Week annual congress, "Management of HCC" workshop

leader, Montreal, Mar 2012

118. 22nd APASL annual congress, "Heart in cirrhosis: clinical consequences and pathogenic mechanisms", Taipei, Taiwan, Feb 2012

119. EASL Monothematic congress: Vascular Liver Disease. "Hepatic venous outflow obstruction due to cardiac and pericardial disease", Tallinn, Estonia, Jun 2012

120. International Ascites Club Special Consensus Development meeting, 'New definitions of AKI and HRS', "Cardiac dysfunction in cirrhosis: basic mechanisms and pathophysiology", Padova, Italy, Dec 2012

121. 6th Paris Hepatitis Congress 2013, "Optimizing therapy in HCV genotype 1 patients: management of side effects", Paris, Jan 2013

122. King Saud University Liver Unit congress, 'Building International Bridges', "The joys and pains of doing research: 3 decades of experience", "How to write a paper" (keynote lecture), "Cardiovascular complications of cirrhosis: why it matters", Riyadh, Saudia Arabia, Feb 2013

123. Canadian Digestive Disease Week (CDDW) annual congress, Portal Hypertension symposium, debate: Early TIPS vs rescue TIPS for treatment of variceal bleeding (pro debator); workshop leader, "Management of hepatorenal syndrome", Victoria, BC, Mar 2013

124. 23rd APASL annual congress, "HCV and renal disease", "Managing side effects of HCV antiviral therapy", "Dual therapy in the new DAA age: is there still a place?"; "Treating HCV-HIV coinfected patients"; workshop moderator, "Difficult HCV". Singapore, Jun 2013

125. Middle Eastern KOL HCV symposium: "HCV treatment with new DAAs", "HCV genotype 1: current management and real life data", Dubai, UAE, Oct 2013

126. 5th Coagulopathy of Liver Disease congress: chairman, session on Basic mechanisms of coagulopathy in cirrhosis. Padua, Italy, Sept 2013

127. LCCDC Biennial International congress: "New paradigms in cardiovascular disturbances of cirrhosis", Seoul, Korea, Oct 2013

128. Peking Union Medical College Hospital: "How to write and submit a paper for international journals", PUMC Hospital, Beijing, Oct 2013

129. Capital Medical University – Youan Hospital: 'How to do clinical research and write the papers' symposium organizer and lecturer. Beijing, Oct 2013

130. 63rd annual AASLD congress, Postgraduate Course: "Prophylaxis of variceal bleeding: screening and management", Washington DC, Nov 2013

131. 7th Paris Hepatitis Congress: chairman session on 'Hard-to-treat HCV', Paris, Jan 2014

132. CDDW annual congress, 'Management of HCV' Symposium: "Which patients should be treated now?", Toronto, Mar 2014

133. India speaking tour: "How to treat genotype 1 and 3 HCV in the DAA age", lectures delivered in Chandigahr, Kolkata, Hyderabad, Mumbai, New Delhi, Mar 2014

134. Digestive Disease Week, AASLD symposium on new advances in liver disease. "Coagulopathy and bleeding in cirrhosis: should we be worried?", Chicago, May 2014

135. Chinese Society of Hepatology – IASL co-sponsored symposium: Hepatology review for clinicians: "How to organize and conduct clinical research", "How to present at scientific meetings", Beijing, Sept 2014

136. United European Gastroenterology Week, "Antiviral treatment of the HCV cirrhotic patient", Vienna, Oct 2014

137. 5th Kolkata Liver Society congress: New Advances in Portal Hypertension, "New paradigms in cardiovascular abnormalities of cirrhosis: insights from animal models", "Extrahepatic complications of portal hypertension", Kolkata, Dec 2014

X PUBLICATIONS:

i Peer-reviewed Publications:

1. **Lee SS**, Girod C, Valla D, Geoffroy P, Lebrec D: Effects of pentobarbital sodium on the splanchnic hemodynamics of normal and portal hypertensive rats. *Am J Physiol* 1985; 249: G528 - 532.

2. Valla D, **Lee SS**, Moreau R, Hadengue A, Sayegh R, Lebrec D: Effets de la glypressine sur les circulations splanchnique et systemique des malades atteints de cirrhose. *Gastroenterol Clin Biol* 1985; 9: 877 - 880.

3. **Lee SS**, Braillon A, Girod C, Geoffroy P, Lebrec D: Haemodynamic rebound phenomena after abrupt cessation of popranolol therapy in portal hypertensive rats. *J Hepatol* 1986; 3: 38 - 41.

4. **Lee SS**, Girod C, Braillon A, Hadengue A, Lebrec D: Hemodynamic characterization of the chronic bile duct - ligated rat: effect of pentobarbital sodium. *Am J Physiol* 1986; 251: G176 - 180.

5. Braillon A, Capron-Chivrac D, Valla D, **Lee SS** Capron JP, Lebrec D: Domperidone-induced increase in lower esophageal sphincter pressure does not affect azygous blood flow in patients with cirrhosis. *Scand J Gastroenterol* 1986; 21: 1080 - 1082.

6. Braillon A, Lee SS, Girod C, Valla D, Peignoux-Martinot M, Lebrec D: The role of portasystemic shunts on the hyperkinetic circulation of the portal hypertensive rat. *J Lab Clin Med* 1986; 108: 543-548.

7. Valla D, Gaudin C, Geoffroy P, Braillon A, Lee SS, Lebrec D: Reversal of adrenaline-induced increase in azygous blood flow in patients with cirrhosis receiving popranolol. *J Hepatol* 1986; 4: 86 - 92.

8. Moreau R, Lee SS, Hadengue A, Braillon A, Lebrec D: Hemodynamic effects of clonidine-induced decrease in sympathetic tone in patients with cirrhosis. *Hepatology* 1987; 7: 149- 154.

9. Lee SS, Hadengue A, Girod C, Braillon A, Lebrec D: Reduction of intrahepatic vascular space in the pathogenesis of portal hypertension. In vitro and in vivo studes in the rat. *Gastroenterology* 1987; 93: 157 - 161.

10. Hadengue A, Lee SS, Moreau R, Braillon A, Lebrec D: Beneficial hemodynamic effects of ketanserin in patients with cirrhosis: evidence for serotonergic mechanisms in portal hypertension. *Hepatology* 1987; 7: 644 - 647.

11. Koshy A, Hadengue A, Lee SS, Jiron MI, Lebrec D: Possible deleterious hemodynamic effects of nifedipine on portal hypertension in patients with cirrhosis. *Clin Pharm Ther* 1987; 42: 295 - 298.

12. Hadengue A, Lee SS, Moreau R, Lebrec D: Content of oxygen and bile salts in the azygous venous blood: clues to the azygous derivation in patients with portal hypertension. *J Hepatol* 1987; 7: 98 - 101.

13. Lee SS, Hadengue A, Moreau R, Girod C, Jiron MI, Lebrec D: Naloxone does not alter haemodynamics in cirrhosis. Studies in humans and rats. *J Hepatol* 1987; 5: 149 - 153.

14. Cerini R, Lee SS, Hadengue A, Koshy A, Girod C, Lebrec D: Circulatory effects of somatostatin analogue in two conscious rat models of portal hypertension. *Gastroenterology* 1988; 94: 703 - 708.

15. Valla D, Girod C, Lee SS, Braillon A, Lebrec D: Lack of vasopressin action during bleeding. A study in conscious portal hypertensive rats. *Hepatology* 1988; 8: 10 - 15.

16. Hadengue A, Moreau R, Lee SS, Gaudin C, Rueff B, Lebrec D: Liver hypermetabolism during alcohol withdrawal: role of sympathetic overactivity. *Gastroenterology* 1988; 94: 1047 - 1052.

17. Jiron MI, Lee SS, Cerini R, Pugliese D, Hadengue A, Lebrec D: Effects of nitroglycerin on forearm hemodynamics in patients with cirrhosis. *Clin Sci* 1988; 74: 433 - 436.

18. Hadengue A, Lee SS, Koshy A, Girod C, Lebrec D: Regional blood flows by the microsphere method: validity in portal hypertensive rats and influence of a portal vein catheter. *Proc Soc Exp Biol Med* 1988; 187: 461 - 468.

19. Pugliese D, Lee SS, Koshy A, Cerini R, Ozier Y, Lebrec D: Hemodynamic effects of intravenous hypertonic glucose in patients with cirrhosis. *Hepatology* 1988; 8: 643 - 646.

20. Lee SS, Hadengue A, Moreau R, Sayegh R, Hillon P, Lebrec D: Postprandial hemodynamic responses in patient with cirrhosis. *Hepatology* 1988; 8: 647 - 651.

21. Braillon A, Lee SS, Valla D, Geoffroy P, Lebrec D: Comparative hemodynamic effects of betaxolol and popranolol in patients with cirrhosis. *Scand J Gastroenterol* 1988; 23:691-695.

22. Moreau R, Lee SS, Soupison T, Roche-Sicot J, Sicot C: Abnormal tissue oxygenatin in patients with cirrhosis and liver failure. *J Hepatol* 1988; 7: 98 - 105.

23. Lee SS, Moreau R, Hadengue A, Cerini R, Koshy A, Lebrec D: Glucagon selectively increases splanchnic blood flow in patients with well-compensated cirrhosis. *Hepatology* 1988; 8: 1501 - 1505.

24. Braillon A, Koshy A, Lee SS, Girod C, Lebrec D: Effet du developpement des shunts porta-systemiques dans le maintien de l'hypertension portale chez le rat. *Gastroenterol Clin Biol* 1988; 12: 641 - 645.

25. Lee SS: Alcohol infusion to measure hepatic blood flow: vanquishing the bete noire? *Hepatology* 1989; 10: 1021 - 1022 (commentary).

26. Hadengue A, Moreau R, Cerini R, Koshy A, Lee SS, Lebrec D: Combination of ketanserin and verapamil or popranolol in patients with alcoholic cirrhosis: search for an additive effect. *Hepatology* 1989; 9: 83 - 87.

27. Moreau R, Lee SS, Hadengue A, Ozier Y, Sicot C, Lebrec D: Relation between oxygen transport and consumption during vasoactive drug administration in patients with cirrhosis. *Hepatology* 1989; 9: 427 - 432.

28. Koshy A, Girod C, Lee SS, Hadengue A, Cerini R, Lebrec D: Discrepancy between systemic and splanchnic hemodynamic changes after incremental doses of popranolol in awake portal-hypertensive rats. *Hepatology* 1989; 9: 269 - 273.

29. Cerini R, Koshy A, Hadengue A, Lee SS, Garnier P, Lebrec D: Effects of glucagon on systemic and splanchnic circulation in conscious rats with biliary cirrhosis. *J Hepatol* 1989; 9: 69 - 74.

30. Cerini R, Braillon A, Hadengue A, Koshy A, Lee SS, Lebrec D: Somatostatin analogue improves survival in conscious cirrhotic rats subjected to gastrointestinal bleeding. *Clin Sci* 1989; 77: 7 - 9.

31. Lee SS: Cardiac abnormalities in liver cirrhosis. *West J Med* 1989; 151: 530 - 535.

32. Lee SS, Koshy A, Hadengue A, Lebrec D: Heterogeneous hepatic venous pressures in patients with liver cancer. *J Clin Gastroenterol* 1990; 12: 53 - 56.

33. MacColl C, MacCannell KL, Baylis B, **Lee SS**: Treatment of acute colonic pseudo-obstruction (Ogilvie's syndrome) with cisapride. *Gastroenterology* 1990; 98: 773 - 776.

34. Kong, K, Kelly JK, **Lee SS**: Pseudotumor appearance in chronic hepatitis. *J Clin Gastroenterol* 1990; 12: 437 - 440.

35. **Lee SS**, Marty J, Mantz J, Samain E, Braillon A, Lebrec D: Desensitization of myocardial beta-adrenergic receptors in cirrhotic rats. *Hepatology* 1990; 12: 481 - 485.

36. **Lee SS**, Hadengue A, Braillon A, Lebrec D: A pitfall in azygous vein cannulation in cirrhotic patients: mistaken cannulation of the mammary vein. *Angiology* 1990; 41: 942 - 945.

37. Johansen KH, Girod C, **Lee SS**, Lebrec D: Mesenteric venous stenosis reduces hyperammonemia in the portocaval shunted rat. *Eur Surg Res* 1990; 22: 170 - 174.

38. **Lee SS**, Hadengue A, Girod C, Braillon A, Lebrec D: Divergent circulatory effects of betaxolol in conscious and anesthetized normal and portal hypertensive rats. *J Hepatol* 1991; 12: 157 - 161.

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40. Vons, C Hadengue A, **Lee SS**, Smadja C, Franco D, Lebrec D: Splanchnic and systemic hemodynamics in cirrhotic patients with refractory ascites. Effects of peritoneovenous shunting. *HPB Surgery* 1991; 3: 259 - 269.

41. Fraser KA, **Lee SS**: Autonomic regulation of splanchnic circulation. *Can J Gastroenterol* 1991; 5: 147 - 153.

42. Jacob G, Bishara B, **Lee SS**, Hilzenart N, Bomzon A: Cardiovascular responses to serotonin in experimental liver disease. *Hepatology* 1991; 14: 1235 - 1247.

43. **Lee SS**, Johansen K, Lebrec D: Circulatory changes induced by portal venous diversion and mesenteric hypertension in rats. *Hepatology* 1992; 15: 117 - 121.

44. **Lee SS**, Chilton EL, Pak JM: Adenosine receptor blockade reduces splanchnic hyperemia in cirrhotic rats. *Hepatology* 1992; 15: 1107 - 1111.

45. Beck PL, **Lee SS**, McKnight GW, Wallace JL: Characterization of spontaneous and ethanol-induced gastric mucosal damage in cirrhotic rats. *Gastroenterology* 1992; 103: 1048 - 1055.

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47. **Lee SS**: To B or not to B: how is hepatitis B spread and what can be done? *Can J*

Gastroenterol 1993; 7: 9 - 10 (editorial).

48. Beck PL, Bridges RJ, Demetrick DJ, Kelly JK, Lee SS: Chronic active hepatitis associated with trazodone therapy. *Ann Int Med* 1993; 118: 791 - 792.

49. Lee SS, Sharkey KA: Capsaicin treatment blocks the development of hyperkinetic circulation in portal hypertensive and cirrhotic rats. *Am J Physiol* 1993; 264: G868 - G873.

50. Beck PL, McKnight W, Lee SS, Wallace JL: Prostaglandin modulation of gastric blood flow and mucosal integrity in cirrhotic rats. *Am J Physiol* 1993; 265: G453 - 458.

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54. Pak JM, Lee SS: Glucagon in portal hypertension. *J Hepatol* 1994; 20: 825 - 832.

55. Ma Z, Meddings JB, Lee SS: Membrane physical properties determine cardiac β-adrenergic receptor function in cirrhotic rats. *Am J Physiol* 1994; 267: G87 - G93.

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57. Beck PL, Lee SS: Vitamin K1 improves survival in bile duct-ligated cirrhotic rats. *J Hepatol* 1995; 23: 235. (letter)

58. Sadowski D, Lee SS, Wanless IR, Kelly JK, Heathcote J: Progressive type of focal nodular hyperplasia characterized by multiple tumors and recurrence. *Hepatology* 1995; 21: 970 - 975.

59. Ma Z, Meddings JB, Lee SS. Cardiac plasma membrane physical properties and β-adrenergic receptor function are unaltered in portal-hypertensive rats. *Hepatology* 1995;22: 188 - 193.

60. Lee SS, Pak JM, Medlicott SM, Bomzon A. Vasodilatory responses of isolated arteries of cirrhotic rats. *Clin Sci* 1995; 89: 227 - 232.

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effects and mesenteric arterial receptor characteristics. *Hepatology* 1996; 23: 1174 - 1180.

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64. Jalink D, Urbanski SJ, **Lee SS**. Bilioenteric anastomosis reverses hyperkinetic circulation in bile duct-ligated cirrhotic rats. *J Hepatol* 1996; 25: 924 - 931.

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66. Wong J, Zhang Y, **Lee SS**. Effects of portocaval shunting on hyperdynamic circulation in bile duct-ligated cirrhotic rats. *J Hepatol* 1997; 26: 369 - 375.

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100. Li Y, Song D, Zhang Y, **Lee SS.** Effect of neonatal capsaicin treatment on haemodynamics and renal function in cirrhotic rats. *Gut* 2003; 52: 293-299

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transfusion recipients, 1986-1990. *Can J Publ Health* 2003; 94: 130-134.

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ii **Non-Peer Reviewed Book Chapters, Reviews, Letters, Editorials**

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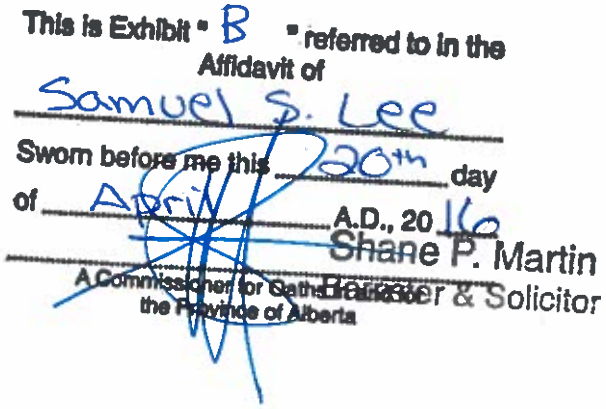

ANSWERS TO CROSS EXAMINATION QUESTIONS

BY DR. SAMUEL S. LEE

Prepared by: Dr. Samuel S. Lee

Prepared: April 5, 2016

Cross Examination Answers by Dr. Samuel S. Lee
On Affidavit Sworn January 26, 2016

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1. *With regard to paragraph 13 of your affidavit affirmed January 26, 2016 (the "January 26, 2016 affidavit"), discussing the Fourth Revision and the Fifth Revision of the medical models prepared by the Medical Model Working Group ("MMWG"), what aspects of the Fourth Revision and Fifth Revision did you review prior to preparing your affidavit? Break your answers down by the Fourth Revision and the Fifth Revision and the following components of each revision:*

   a. *medical model in its electronic state;*

   b. *the report pertaining to the medical model in whole or, alternatively the sections reviewed; and*

   c. *the appendices to the report pertaining to the medical model.*

Answer:

A) No, I did not see the medical model in its electronic state for either the Fourth or Fifth Revisions.

B) Yes. I reviewed the reports pertaining to both the Fourth and Fifth Revisions of the medical model generally, but not in detail.

c) Yes. I reviewed the appendices to both the Fourth and Fifth Revisions of the reports generally, but not in detail.

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2. *With regard to paragraph 13 of the January 26, 2016 affidavit discussing the Fourth Revision and Fifth Revision of the medical models prepared by the MMWG, and in particular the statement that the "[Fifth Revision's] mode of presentation focuses on the percentage of patients progressing to cirrhosis rather than the average time required for patients to progress through the disease stages from infection to cirrhosis":*

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   a. *did you understand at the time you affirmed your affidavit that while the narrative in the Fifth Revision includes statements of percentage of progression to cirrhosis, the Fifth Revision model itself and the tables which contain its output, allow the user of the model to calculate percentage of patients who progress through each disease stage and allow the user of the model to determine the time that the average patient will take to progress through the disease phases?*

Answer: yes.

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b. *did you understand at the time you affirmed your affidavit that the medical model's structure and the nature of the output it is capable of producing did not change from the Fourth Revision to the Fifth Revision?*

Answer: yes.

3. *With regard to paragraph 21 of the January 26, 2016 affidavit, do you agree that Telaprevir was approved by Health Canada for treatment of persons with compensated chronic HCV genotype 1 in August 2011?*

Answer: yes.

4. *With regard to paragraph 21 of the January 26, 2016 affidavit, do you agree that Boceprevir was approved by Health Canada for treatment of persons with chronic HCV genotype 1 in August 2011?*

Answer: yes.

5. *Do you agree that Telaprevir and Boceprevir were the first direct acting anti-viral drugs (DAA) to be approved by Health Canada for the treatment of chronic HCV?*

Answer: yes.

6. *With regard to paragraph 27 of the January 26, 2016 affidavit, do you agree that the estimate of persons in Canada infected with HCV from all sources includes persons you describe as "4,000 living persons who are known to have been infected by HCV-contaminated blood between 1986 and 1990", as well as:*

a. *hemophiliac persons known to have been infected by HCV who received blood products between 1986 and 1990;*

Answer: Yes.

b. *persons infected by HCV-contaminated blood between 1986 and 1990 and hemophiliac persons who received blood products between 1986 and 1990 who do not yet know they have been infected with HCV;*

Answer: Yes

c. *persons infected by HCV-contaminated blood between 1986 and 1990 and hemophiliac persons who received blood products between 1986 and 1990 who know they have been infected with HCV but did not know about the Settlement Agreement before the June 30, 2010 first claims deadline and so are not included in the cohort described as "4,000 living persons who are known to have been infected by HCV-contaminated blood between 1986 and 1990"; and*

Answer: yes

d. *persons infected by HCV-contaminated blood between 1986 and 1990 and hemophiliac persons who received blood products between 1986 and 1990 who know they have been infected with HCV but did not apply to the Settlement Agreement before the June 30, 2010 first claims deadline and so are not included in the cohort described as "4,000 living persons who are known to have been infected by HCV-contaminated blood between 1986 and 1990"?*

Answer: yes

7. *With regard to paragraphs 54 and 55 of the January 26, 2016 affidavit, did you understand when you affirmed your affidavit that the Fifth Revision of the medical mode prepared by the MMWG provides the equivalent analysis of disease-stage transition rates and provides that the current uncalibrated estimates of years to progress from infection to cirrhosis is 52.2 years while the calibrated estimate is 41.5 years [see section 2.2.4 and table 7]?*

Answer: yes

8. *With regard to paragraph 58 of the January 26, 2016 affidavit, did you understand when you affirmed your affidavit that the Fifth Revision of the medical model prepared by the MMWG takes into account approved DAA drugs up to and including those approved in 2014?*

Answer: Yes. My comments in paragraph 58 concern the Fourth revision.

9. *With regard to paragraph 58 of the January 26, 2016 affidavit, did you understand when you affirmed your affidavit that the Fifth Revision of the medical model prepared by the MMWG predicts lower percentages of persons alive in 2013 who will advance to cirrhosis or who will die of liver disease than predicted in the Fourth Revision?*

Answer: No. My comments in paragraph 58 concern the Fourth Revision.

10. *With regard to paragraph 58 of the January 26, 2016 affidavit, did you understand when you affirmed your affidavit that the Fifth Revision predicts [see table 13.2]:*

   a. *16.4% of non-hemophiliac patients alive in 2013 will progress to cirrhosis by 2060 and 16.5% by 2070;*

   b. *11.3% of non-hemophiliac patients alive in 2013 will die of liver related causes by 2060 and 11.6% by 2070;*

   c. *31.2% of hemophiliac patients alive in 2013 will progress to cirrhosis by 2060 and 31.2% by 2070; and*

   d. *24.5% of hemophiliac patients alive in 2013 will die of liver related causes by 2060 and 24.9% by 2070?*

Answer: My comments in paragraph 58 only concern the Fourth Revision.

11. *With regard to paragraph 59 of the January 26, 2016 affidavit:*

   a. *when you affirmed your affidavit, did you review or rely upon any statistics or peer reviewed literature in expressing the opinion that two-thirds to three-quarters of patients at the cirrhotic stage of HCV infection likely have sought medical attention and been diagnosed?*

   b. *If you reviewed or relied on any statistics or peer-reviewed literature, identify and produce it.*

Answer: No, that is my educated expert estimate based on 28 years of clinical practice and accumulated expertise. There is no available medical literature or statistics to answer this question.

12. *With regard to paragraph 57 of the January 26, 2016 affidavit:*

   a. *did you review any data pertaining to the 1986-1990 Hepatitis C cohort before affirming in your affidavit that that "a significant number of the 4000 claimants have had their HCV cured by antiviral therapy in the past 2 decades"?*

   b. *if you reviewed any data before affirming the statement quoted above, identify it and produce it.*

Answer: That estimate is based on the assumption that almost all the 4000 claimants have been assessed by a specialist physician, and the majority given antiviral treatment. As older interferon-based therapy cures approximately half the patients, and newer therapies available from 2011-the present time have incrementally cured ever-larger percentage to the current >90% cure rates, my estimate is based on these underlying assumptions.

B) no data was used in making these assumptions.

13. *With regard to paragraph 57 of the January 26, 2016 affidavit, and the statement that "a significant number of the 4000 claimants have had their HCV cured by antiviral therapy in the past 2 decades", prior to affirming your affidavit, what number of claimants did you determine have had their HCV cured by antiviral therapy in the past 2 decades?*

Answer: I do not know the exact number.

14. *With regard to paragraphs 59 and 61 of the January 26, 2016 affidavit, provide a number or percentage breakdown of your practice according to the following category of patients:*

a. persons infected through blood transfusions between 1986 and 1990;

b. hemophiliac persons infected with HCV who received infusions of blood products between 1986 and 1990; and

c. persons who do not fall into (a) or (b).

Answer: Currently, the approximate percentages of these patients in my practice are:

A) 0.5%

B) 0.1%

C) 99.4%

15. *With regard to paragraph 61 of the January 26, 2016 affidavit;*

a. did you refer to any data or peer reviewed literature or any other material when you affirmed your affidavit and estimated the "distribution pattern in terms of the Settlement compensation levels"?

b. If the answer to question 16(a) is yes, identify and produce the data or peer reviewed literature.

c. at what specific date you were estimating the "distribution pattern in terms of the Settlement compensation levels" when you affirmed the affidavit;

d. if the answer to 16(d) was that the estimate was not made as of a specific date, confirm that.

Answer: a) no

c) January 2016

16. *With regard to paragraph 61 of the January 26, 2016 affidavit, at the time you affirmed your affidavit, did you understand that the 2013 medical model demonstrates that the persons who have applied for compensation under the 1986-1990 Hepatitis C Settlement Agreement were distributed as follows at December 31, 2013 (see tables 4.2 and 4.1 of the report on the Fifth Revision):*

   a. *non-hemophiliac 17.5%, hemophiliac 15.8% at Metavir F0, RNA – (disease level 1);*

   b. *non-hemophiliac 33.%, hemophiliac 20.3% at Metavir F0, RNA + (disease level 2);*

   c. *non-hemophiliac 26.9%, hemophiliac 17.8% at Metavir F1/F2 (disease level 3);*

   d. *non-hemophiliac 10.7%; hemophiliac 23.3% at Metavir F3 (disease level 4);*

   e. *non-hemophiliac 8.6%; hemophiliac 18.1% at Metavir F4, compensated cirrhosis (disease level 5);*

   f. *non-hemophiliac 1.7%; hemophiliac 2.9% at Metavir F4, decompensated cirrhosis (disease level 6);*

   g. *non-hemophiliac 0.5%; hemophiliac 1.3% with hepatocellular cancer (disease level 6); and*

   h. *non-hemophiliac 0.7%; hemophiliac 0.6% post liver transplant (disease level 6)?*

Answer: Yes

17. *With regard to paragraph 61 of the January 26, 2016 affidavit, in your experience does disease progression and disease stage distribution differ between hemophiliac HCV infected persons infected with HCV who received blood products between 1986 and 1990 and non-hemophiliac persons who were infected with HCV through blood transfusions between 1986 and 1990?*

Answer: In my experience, all-cause mortality is higher in hemophiliacs compared to nonhemophiliac transfused HCV cohorts. Liver fibrosis progression rates do not significantly differ between the two groups.

18. *With regard to paragraph 62 of the January 26, 2016 affidavit:*

a. *did you review any statistics or peer reviewed literature before or at the time you expressed the opinions that:*

i. *70-85% of persons having Level 5 HCV –derived disease will have presented as patients and been diagnosed;*

ii. *90-95% of persons having Level 6 HCV-derived disease will have presented as patients and been diagnosed; and*

iii. *99% of persons at ELSF will have presented as patients and been diagnosed?*

b. *If you relied upon any statistics or peer-reviewed literature in forming the opinions expressed identify and produce it.*

Answer: No, there is no literature to answer this question. The reason for the apparent discrepancies in these percentages compared to my paragraph 59, as raised in the affidavit of Dr V. Bain is that these are two different cohorts of cirrhotic patients. The cohort in my paragraph 59 is the entire group of those with cirrhosis amongst the approximately 300,000 HCV-infected patients in Canada. As many patients with mild cirrhosis have no symptoms, the percentages who have presented to medical attention and are thus aware of their cirrhosis diagnosis will be less than the group represented in my paragraph 62, which is those cirrhotics who have been transfused between 1986-90 and who have claimed or are eligible to claim for compensation. As they have already presented to medical attention during the period 1986-90 and are mostly aware of their transfused status and thus more likely to be aware of their HCV-positivity compared to the entire HCV cohort, they will be much more likely to have presented to medical attention and be aware of their cirrhosis, especially those with more advanced liver failure, and thus significant symptoms and signs such as jaundice, ascites (fluid distension in the belly), encephalopathy (confusion and abnormal mental function), severe weakness and fatigue.
