

Date of Preparation of CV

Jan 1, 2016

Personal Data

Name: Prakash Gorroochurn, PhD

Birth date: Mar 29, 1971

Birthplace: Mauritius

Citizenship: Mauritian

Academic Training

Monash University (Australia), BSc (Hons) (First Class) 1994 Mathematics and Statistics

Monash University (Australia), PhD 1999 (Population Genetics in Subdivided Populations, Supervisor: Dr R C Griffiths)

Academic Appointments

Jan 1999-Jan 2003 Lecturer, University Of Mauritius,

2003: Senior Lecturer, University of Mauritius

2003-2013: Assistant Professor, Columbia University, Mailman School of Public Health, Department of Biostatistics.

2013 to present: Associate Professor, Columbia University, Mailman School of Public Health, Department of Biostatistics.

Academic Leadership

2014 to present: Statistical Genetics Track Director

Honors

- My book "Classic Problems of Probability" is the winner of the 2012 PROSE Award for Mathematics from The American Publishers Awards for Professional and Scholarly Excellence.
- Calderone Research Prize for Junior Faculty (2005-2006)

Editorial Board

2010 to present: Associate Editor, BMC Genetics

2014 to present: Associate Editor, American Statistician

PhD Supervision

- Alex Smolak (2013): Multilevel Factors Associated with Uptake of Biomedical HIV Prevention Strategies in the Muslim World: A Study of Central Asia, India, and Mali

Grant Support

PAST

- R01AA013654-02 (Contract) PI: Gorroochurn 05/01/2004-08/31/2006 1.2 calendar/months

New York State Foundation for Medical Hygiene

“Alcohol in Israel: Genetic and Environmental Effects”

The aim of this grant is to investigate the genetic basis and environmental effects of the consumption of alcohol in Israel.

- PI: Papapanou 07/01/2004-07/01/2007 1.2 calendar months

National Institute of Dental and Cranofacial research

“Gene Expression Structures in Chronic and Aggressive Periondonditis”

The aim of this grant is to investigate the use of microarray gene expression techniques for the identification of chronic and aggressive periodontitis.

- MH071430-03 PI: Caton 9/30/05-6/30/10 1.2 calendar months

NIMH

“Columbia Center for Homelessness Prevention Studies”

This goal of this project is to create a multidisciplinary research center focused on the prevention of chronic homelessness among people with severe mental illnesses.

Role: Statistical consultant (5%)

- MH-48858 PI: Hodge 9/1/2006-8/31/2008 1.2 calendar months

NIMH

“Psychiatric genetics and family studies: robust methods”

The aim of this grant is the exploration of robust statistical methods for linkage studies.

- CW12989 PI: Levine 1/1/2010-12/31/2011 1.2 calendar months

NIAAA \$500,000/yr
 “Columbia Shoulder Study”

A Multicenter Study of the Bigliani/Flatow Complete Shoulder Solution

CURRENT

5U19MH095718-04 (Susser) 07/01/2011 – 08/31/2016 .6 calender
 NIH/NIMH \$521,080

Regional Network for Mental Health Research in Latin America

The overriding objective of our Hub for Latin America (HLA) is to improve the condition of this vulnerable group through an integrated system of primary care and secondary mental health service tailored to the distinctive context of the urban areas of Latin America.

5R01DA031477-03 (Schinke) 09/15/2012 – 08/31/2016 1.80 calender
 National Institute on Drug Abuse/NIH/DHH \$666,395

Preventing Drug Abuse among Hispanic Adolescents

This study will longitudinally test a computerized drug abuse prevention program for Hispanic adolescents. The culturally-tailored prevention program aims to strengthen and sustain protective factors while equipping youths with the necessary information and skills to reduce risk factors associated with cigarettes, alcohol, marijuana, and other harmful drug use.

5P50HG007257-02 (Appelbaum) 05/03/2013 – 05/31/2016 1.20 calendar
 National Human Genome Research Institute \$716,651

Center for Research on Ethical, Legal and Social Implications of Psychiatric, Neurologic and Behavioral Genetics

Exciting advances in PNB genetics have improved understanding of the genetic bases for many psychiatric, neurodevelopmental, and neurodegenerative disorders. Rapid development of techniques for accessing this information, including non-invasive prenatal sequencing, promises to make PNB genetic data much more widely available. Hence, consideration of the ethical, legal and social impact of these data and identification of better means of dealing with them are of critical and urgent importance to public health and well-being.

Teaching Experience and Responsibilities

- Microeconomic Theory (2000)
- Real Analysis (2001)
- Probability and Statistics (2000-2002)
- Stochastic Processes (2000-2002)
- Mathematical Finance (2000)
- Applied Probability (2000-2002)
- Probability (2003-current)

- Statistical Aspects of Human Population Genetics (2007)

Consulting Experience

- Statistical consultant at the School of Social Work, Columbia University (40%), 2006-current

Conferences and Invited Talks

- **Effect of population stratification on case-control association studies: false-positive rates and their limiting behavior as number of subpopulations increases.** American Society of Human Genetics Annual Meeting (2004)
- **A new method to correct for population stratification in genetic case-control association studies: centralizing the non-central chi-square.** American Society of Human Genetics Annual Meeting (2005)
- **Non-Replication in Scientific Research: 'pseudo-failures' to replicate?** University of Mauritius (2007)
- **Non-Replication in Scientific Research: 'pseudo-failures' to replicate?** Columbia University School of Social Work (2007)
- **Non-replication in association studies: 'pseudo-failures' to replicate?** Rutgers University (2007)

Abstracts

- S.E. Hodge, **P. Gorroochurn** (2004) Estimating allele frequencies and inbreeding coefficients in K-allele models. *American Society of Human Genetics Annual Meeting*
- **K. N. Anderson, J. Jacobson, H. Li, D. Hershman, P. Gorroochurn and V. Grann (2004)** Prevalence of CAM in a cohort of breast cancer patients and controls. *Journal of Clinical Oncology*, 2004 ASCO Annual Meeting Proceedings. Vol 22, No 14S (July 15 Supplement): 8131
- **P. Gorroochurn, G.A. Heiman, S.E. Hodge, D.A. Greenberg** (2006) Quantifying, testing and correcting for population stratification in association studies: a unified approach. *American Society of Human Genetics Annual Meeting*
- C.L.M. Caton, R.E. Drake, **P. Gorroochurn, D.S. Hasin, E. Gouzoulis-Mayfrank, T.Schnell, K. Heekeren, M. Keshavan, S. Bangalore, K. Prasad, V. Diwadkar, D. Linszen** (2007) Dual diagnosis schizophrenia and drug abuse. *Biological Psychiatry*. Vol 61(8), 92S-92S.
- A. Zweben, H. Pettinati, R. Weiss, M. Mattson, C. Cox, M. Youngblood, **P. Gorroochurn, D. Ciraulo** (2008) AA attendance in a combined medication and behavioral treatment trial. *Alcoholism-Clinical and Experimental Research*. Vol 32(6), 187A-187A Suppl. 1.
- JL Capodice, **P Gorroochurn, AS Cammack, E Goluboff, JM McKeiernan, MC Benson, BA Stone, AE Katz** (2008) Results of a Prospective, Open-Label Clinical Trial of a Novel Herbal Amalgam, Zyflamend, in Men With Prostatic Intraepithelial Neoplasia. *Society of Integrative Oncology*

- B Laferrere , S Arias, **P Gorroochurn**, M Bose, J Teixeira, B Bawa, N Swerdlow, RD Stevens, BR Wenner, JR Bain, MJ Muehlbauer , CB Newgard (2010) Decrease of Circulating Branched Chain Amino Acids After Surgical But Not Diet-Induced Weight Loss in Diabetes. *Obesity*. Vol 18, Supp. 2, S50-S50

Publications

A. Books:

- Gorroochurn P. (2012) *Classic Problems of Probability*. Wiley, NJ. (Winner of the 2012 PROSE Award for Mathematics from The American Publishers Awards for Professional and Scholarly Excellence.)
- Gorroochurn P. (*To Appear in 2016*) *Classic Topics on the History of Modern Mathematical Statistics: From Laplace to More Recent Times*. Wiley, NJ.

B. Book Chapter:

Errors of Probability in Historical Context. In 'The Best Writings on Mathematics 2013,' edited by M. Pitici, Princeton University Press (2014).

C. Original, Peer Reviewed Articles

1*. Gorroochurn, P (2001) Post-Data Inference of Coalescence Times and Segregating-Site Distribution in a Two-Island Model with Symmetric Migration. *Advances in Applied Probability* 33(3): 600-616.

2*. Gorroochurn, P (2001) Genetic Differentiation and Mean Coalescence Times in Two Colonies with Asymmetric Migration. *University of Mauritius Research Journal* 8: 103-118.

3*. Gorroochurn, P (2003) A Note on the Stationary Distribution of an Infinitesimal Matrix. *The Journal of nature* 15(1): 39-45.

4. Komenaka IK, Ditkoff BA, Joseph KA, Russo D, **Gorroochurn P**, Ward M, Horowitz E, El-Tamer MB, Schnabel FR (2004) The Development of Interval Breast Malignancies in Patients with BRCA Mutations. *Cancer* 100(10): 2079-83.

Note: I made major contributions in this paper with respect to the design, analysis and intellectual content. Cancer is the official journal of the American Cancer Society and has an impact factor of 5.2

5*. Heiman GA, Hodge SE, **Gorroochurn P**, J Zhang, Greenberg DA (2004) Effect of population stratification on case-control association studies. I: Elevation in the false positive rates and comparisons to confounding risk ratios (a simulation study). *Hum Hered* 58: 30-39.

Note: I made substantial contributions to this paper with respect both the genetics and mathematical concepts. The paper has a second part in which I am the first author. Human Heredity is an important journal in the genetics field with an impact factor of 3.81.

6*. **Gorroochurn P**, Hodge SE, Heiman GA, Greenberg DA (2004) Effect of population stratification on case-control association studies. II: False-positive rates and their limiting behavior as number of subpopulations increases. *Hum Hered* 58: 40-48.

Note: Human Heredity is an important journal in the genetics field with an impact factor of 3.81.

7*. Heiman, GA, **Gorroochurn P**, Hodge SE, Greenberg DA (2005) Robustness of case-controls studies. *Cancer Epidemiol Biomarkers Prev* 14(6).

I made substantive contributions to this paper primarily with respect to its direction and content. This is a major medical journal with an impact factor of 4.2

8*. **Gorroochurn P**, Hodge SE (2006) Estimating allele frequencies and inbreeding coefficients in k -allele models. *Math Pop Studies*, 13: 83-103.

9*. **Gorroochurn P**, Heiman GA, Hodge SE, Greenberg DA (2006) Centralizing the non-central chi-square: A new method to correct for population stratification in genetic case-control association studies. *Genet Epidemiol*, 30: 277-289.

Note: Genetic Epidemiology is a peer reviewed scientific journal for research on the genetic causes of the distribution of human traits in families and populations. This methodological important journal has a relatively high impact factor of 4.0

10*. Bemis DL, Capodice JL, **Gorroochurn P**, Katz AE, and Buttyan R (2006) Anti-prostate cancer activity of a beta-carboline alkaloid enriched extract from *Rauwolfia vomitoria*. *Int. J Oncol.* 29 (5):1065-1073.

Note: I made major contributions in this paper right from the start, from the design and conception to the analysis and subsequent interpretation. The journal has an impact factor of 2.6

11*. Durner M, **Gorroochurn P**, Marini C, and Guerrini R (2006) Editorial Commentary: Can We Increase the Likelihood of Success for Future Association Studies in Epilepsy? *Epilepsia* 47 (10):1617-1621.

Note: This is the paper where I first introduced the term of "pseudo-replication" in genetic association studies. This term is now used by several researchers in the field. Epilepsia is an important journal with an impact factor of 4.0.

12. Fine R L, Shah S S, Moulton TA, Yu IR, Fogelman DR, Richardson M, Burris HA, Samuels BL, Assanasen C, **Gorroochurn P**, Hibshoosh H, Orjuela M, Garvin J, Goldman FD, Dubovsky D, Walterhouse D, Halligan G (2007) Androgen and c-Kit receptors in desmoplastic small round cell tumors resistant to chemotherapy: novel targets for therapy. *Cancer Chemother. Pharmacol.* 59 (4):429-437.

Note: I made important contributions in this paper right from its conceptual stage, and then again in the subsequent phase of the analysis. The journal has an impact factor of 2.76.

13*. **Gorroochurn P**, Hodge SE, Heiman GA and Greenberg DA (2007) Invited Article: A unified approach for quantifying, testing and correcting population stratification in case-control association studies. *Hum Hered* 64: 149-159.

Note: Human Heredity is an important journal in the genetics field with an impact factor of 3.81.

14*. **Gorroochurn P**, Hodge SE, Heiman GA, Durner M, Greenberg DA (2007). Commentary: Non-replication in association studies: 'pseudo-failures' to replicate? *Genetics in Medicine* 9(6): 325-331.

Note: This paper has a very high impact factor of 5.280. It ranks 21/156 in Genetics/Heredity.

15. Heiman GA, Ogburn E, **Gorroochurn P**, Keyes KM, and Hasin D (2008) Evidence for a two-stage model of dependence using the NESARC and its implications for genetic association studies. *Drug Alcohol Depend.* 92 (1-3):258-266.

Note: I made important contributions to this paper mainly in its intellectual content. The journal has an impact factor of 3.4

16*. Zweben A, Pettinati HM, Weiss RD, Youngblood M, Cox CE, Mattson ME, **Gorroochurn P**, Ciraulo D. (2008) Relationship between Medication Adherence and Treatment Outcomes: THE COMBINE STUDY. *Alcoholism: Clinical and Experimental Research* 32(9):1661-9.

Note: I made substantial contributions in this paper with respect to the statistical analysis, the conception, and the interpretation of the main results. The journal has an impact factor of 3.5.

17*. Yaeger R, vila-Bront A, Abdul K, Nolan PC, Grann VR, Birchette MG, Choudhry S, Burchard EG, Beckman KB, **Gorroochurn P**, Ziv E, Consedine NS, Joe AK (2008) Comparing genetic ancestry and self-described race in african americans born in the United States and in Africa. *Cancer Epidemiol Biomarkers Prev* 17:1329-1338.

Note: I made substantial contributions in thus paper both with respect to its genetics and statistical content. This is a major medical journal with an impact factor of 4.2

18*. **Gorroochurn P** (2008) Perils in the Use of Linkage Disequilibrium for Fine Gene Mapping: Simple Insights from Population Genetics. *Cancer Epidemiol Biomarkers Prev* 17: 3292-329.

Note: This is a major medical journal devoted to research in the field of cancer epidemiology. It has an impact factor of 4.2

19*. **Gorroochurn P**, Hodge SE, Heiman GA and Greenberg DA (2009) Comments on: Review and Evaluation of Methods Correcting for Population Stratification with a Focus on Underlying Statistical Principles *Hum Hered.* 67:145–146.

Note: Human Heredity is an important journal in the genetics field with an impact factor of 3.81.

20. Petukhova L, Shimomura Y, Wajid M, **Gorroochurn P**, Hodge SE, Christiano AM (2009) The effect of inbreeding on the distribution of compound heterozygotes: a lesson from lipase H mutations in autosomal recessive woolly hair. *Hum Hered.* 68: 117-130.

Note: The main author of this paper reached out to me because she thought my population genetics expertise was essential for the proper execution of this paper. In additional to my population genetics contribution, I helped with the overall tone and intellectual content. Human Heredity is an important journal in the genetics field with an impact factor of 3.81.

21*. Capodice JL, **Gorroochurn P**, Cammack AS, Eric G, McKiernan JM, Benson MC, Stone BA, Katz AE (2009) Zyflamend in men with high-grade prostatic intraepithelial neoplasia: results of a phase I clinical trial. *J Soc Integr Oncol.* 7(2):43-51.

22*. Pinto RM, Yu, G, Spector AY, **Gorroochurn P**, McCarthy D (2010). Substance abuse treatment providers' involvement in research is associated with willingness to use findings in practice. *Journal of Substance Abuse Treatment* 39: 188–194.

Note: I am important contributions to this paper with respect to its conception, design, analysis and intellectual content. The journal has an impact factor of 2.8

23*. **Gorroochurn P**, Hodge SE, Heiman GA and Greenberg DA (2010). Comments on 'Delta-Centralization Fails to Control for Population Stratification in Genetic Association

Studies. *Hum Hered.* 69:295.

Note: Human Heredity is an important journal in the genetics field with an impact factor of 3.81.

24. Wright JD, St. Clair CM, Deutsch I, Burke WM, **Gorroochurn P**; Sun X, Herzog TJ (2010) Pelvic Radiotherapy and the Risk of Secondary Leukemia and Multiple Myeloma. *Cancer* 116(10): 2486-2492.

25*. Alam ML, Van der Schueren BJ, Ahren B, Wang GC, Swerdlow NJ, Arias S, Bose M, **Gorroochurn P**, Teixeira J, McGinty J, Laferrère B (2011) Gastric bypass surgery, but not caloric restriction, decreases dipeptidyl peptidase-4 activity in obese patients with type 2 diabetes. *Diabetes Obes Metab.* 13(4): 378-381

Note: My main contribution in this paper was with respect to the conception, design and analysis. The journal has an impact factor of 3.4

26*. Drake, R E, Caton C, Xie H, Hsu E, **Gorroochurn P**, Samet S, Hasin D (2011). A Prospective 2-year Study of Emergency Department Patients with Early-phase Primary Psychoses or Substance-induced Psychoses. *The American Journal of Psychiatry.* 168(2): 742-748.

Note: This is a major journal with an impact factor of 12.8. It's the official journal of the American Psychiatric Association. I contributed in a major way in this journal by helping with the conception, design and analysis using GEE models.

27*. Herman D, Conover S, **Gorroochurn P**, Hinterland K, Hoepner L, Susser E (2011). A Randomized Trial of Critical Time Intervention to Prevent Homelessness in Persons with Severe Mental Illness following Institutional Discharge. *Psychiatr Serv.* 62(7):713-9.

Note: I made substantial contributions in this paper in terms of the conception and analysis. This paper gave me the opportunity to learn and apply the instrumental variable technique for the analysis of observational studies. Psychiatric Services has an impact factor of 2.81.

28*. Pinto RM, Campbell ANC, Hien D, Yu G, **Gorroochurn P** (2011). Retention in the NIDA Clinical Trials Network Women and Trauma Study: Implications for Post-trial Implementation. *American Journal of Orthopsychiatry.* 81(2): 210-216.

Note: I made important contributions to this paper right from the stage of preparation and conception. I helped with the design and subsequent analysis. The impact factor of the journal is 1.872.

29*. **Gorroochurn P**, Hodge SE, Heiman GA, Greenberg DA (2011). "An Improved Delta-Centralization Method for Population Stratification". *Human Heredity.* 71(3): 180-185.

Note: Human Heredity is an important journal in the genetics field with an impact factor of 3.81.

30*. **Gorroochurn, P** (2011) Use the Correlation Coefficient to Summarize Regression Performance?" *Teaching Statistics.* 33: 81-82.

31. Laferrère B, Reilly D, Arias S, Swerdlow N, **Gorroochurn P**, Bose M, Bawa B, Teixeira J, Stevens RD, Wenner BR, Bain JR, et al. (2011). Differential Metabolic Impact of Gastric Bypass

Surgery Versus Dietary Intervention in Obese Diabetic Subjects Despite Identical Weight Loss. *Sci. Transl. Med.* 3, 80re2.

Note: This journal covers basic, translational, and clinical research on human diseases. It has an impact factor of 3.5. I made major contributions in this paper with respect to conception, design, analysis and intellectual content.

32. Van der Schueren B, Green N, **Gorroochurn P**, Teixeira J, Altiner S, Laferrère B (2011) Low Vitamin D in Candidates for Bariatric Surgery: Are the Americans Better Off than the French? *Obesity Surgery.* 21(7): 948-949.

Note: I made substantial contributions in this paper concerning its conception, the type of analysis to do and its intellectual content. Obesity Surgery has an impact factor of 3.08

33*. **Gorroochurn P** (2011). Errors of Probability in Historical Context. *American Statistician.* 65(4): 246-254. (Also to appear in 'The Best Writings on Mathematics 2013,' edited by M. Pitici, Princeton University Press)

Note: This was my first paper on the history of probability and statistics, and was selected as one of the best writings in mathematics for the year 2013.

34. Shah SH, Crosslin DR, Haynes CS, Nelson S, Turer CB, Stevens RD, Muehlbauer MJ, Wenner BR, Bain JR, Laferrère B, **Gorroochurn P**, Teixeira J, Brantley PJ, Stevens VJ, Hollis JF, Appel LJ, Lien LF, Batch B, Newgard CB, Svetkey LP. (2012). Branched-chain amino acid levels are associated with improvement in insulin resistance with weight loss. *Diabetologia.* 55(2):321-30.

Note: I made substantive contributions in this paper in terms of its conception and the statistical analysis. Diabetologia has a high impact factor of 6.973.

35*. **Gorroochurn, P.** (2012) Some Laws and Problems of Classical Probability and How Cardano Anticipated Them. *Chance* 25.4: 13-20.

36. Smolak A, **Gorroochurn P**, Kamarulzaman A, Janjua N (2012) Asian public concern over the ethics of scientists: Predictors and implications for research ethics. *Accountability in Research* 19: 370-382.

37. Edge M.D., **Gorroochurn P.**, Rosenberg, N. A. (2013) Windfalls and pitfalls: Applications of population genetics to the search for disease genes. *Evolution, Medicine, and Public Health* 2013 (1): 254-272.

38*. **Gorroochurn, P.**, Levin, B. (2013) On Two Historical Aspects of Buffon's Needle Problem. *Electronic Journal for History of Probability and Statistics* 9, pp. 40.

39*. McQuiston H.L., **Gorroochurn P.**, Hsu E., Caton C. L. M. (2014) Risk Factors Associated with Recurrent Homelessness After a First Homeless Episode. *Community Mental Health Journal* 50 (5): 505-513.

40. Yin B., Levy D., Meadows M., Moen T., **Gorroochurn P.**, Cadet E. R., Levine W. N., Ahmad C.S. (2014) How Does External Rotation Bracing Influence Motion and Functional Scores After Arthroscopic Shoulder Stabilization? *Clinical Orthopaedics and Related Research* 472(8): 2389-96.
- 41*. **Gorroochurn, P.** (2014) Thirteen Correct Solutions to the "Problem of Points" and their Histories. *The Mathematical Intelligencer* 36(3): 56-64.
42. Cadet E.R., Babatunde O.M., **Gorroochurn P.**, Chan A. K., Stancato A., Brown M., Johnson S., Kaiser P.B., Gardner T., Ayeni O.R. (2014) Inter- and intra-observer agreement of femoroacetabular impingement (FAI) parameters comparing plain radiographs and advanced, 3D computed tomographic (CT)-generated hip models in a surgical patient cohort. *Knee Surg Sports Traumatol Arthrosc.* In press.
43. Burnes D., Rizzo V.M., **Gorroochurn P.**, Pollack M., & Lachs M.S. (2014). Understanding Service Utilization in Cases of Elder Abuse to Inform Best Practices. *Journal of Applied Gerontology.* In Press.
44. Makhni E.C., Lee R.W., Morrow Z.S., Gualtieri A.P., **Gorroochurn P.**, Ahmad C.S. (2015) Performance, Return to Competition, and Reinjury After Tommy John Surgery in Major League Baseball Pitchers: A Review of 147 Cases. *The American Journal of Sports Medicine* 42(6): 1323-1332.
45. **Gorroochurn P.** (2015) On Galton's Change from 'Reversion' to 'Regression'. *American Statistician.* In Press.
46. Bobman J.T., Danoff J.R., Babatunde O.M., Zhu K., Peyser K., Geller J.F., **Gorroochurn P.**, Macaulay W. (2015) Total Hip Arthroplasty Functional Outcomes are Independent of Acetabular Component Orientation when a Polyethylene Liner is Employed. *The Journal of Arthroplasty.* In Press.
47. Danoff J.R., Bobman J.T., Cunn G., Murtaugh T., **Gorroochurn P.**, Geller J.F., Macaulay W. (2015) Redefining the Acetabular Component Safe Zone for Posterior Approach Total Hip Arthroplasty. *The Journal of Arthroplasty.* In Press.
48. Chen F.-P., Samet S., **Gorroochurn P.**, O'Hara K.M. (2015) Characterizing Factors of Employment Status in Persons with Major Depressive Disorder. *Evaluation & the Health Profession.* In Press