CURRICULUM VITAE

SAONLI BASU

IDENTIFYING INFORMATION

Academic Rank

Professor in Division of Biostatistics,
School of Public Health, University of Minnesota

Education

Degree	Institution	Date Degree Granted
Ph.D.	University of Washington, Seattle, WA	2005
M.S.	Indian Statistical Institute, Calcutta, India	1998
B.S.	Presidency College, Calcutta, India	1996

Positions/Employment

University of Minnesota, Twin Cities Campus Professor, School of Public Health	2019-
University of Minnesota, Twin Cities Campus Director of Graduate Studies, Division of Biostatistics	2014-2018
University of Minnesota, Twin Cities Campus Associate Professor, School of Public Health	2012-present
University of Minnesota, Twin Cities Campus Assistant Professor, School of Public Health	2005-2012
University of Washington, Seattle Research Assistant, Department of Statistics	2001-2005
University of Washington, Seattle Teaching Assistant, Department of Statistics	2000-2001
Indian Statistical Institute, Calcutta, India. Research Associate, Department of Statistics	1999-2000
ORG MARG, Gujarat, India Research Associate, Market Research	1998-1999

Current Membership in Professional Organizations

American Statistical Association
International Biometric Society
International Genetic Epidemiology Society
Caucus for Women in Statistics
International Indian Statistical Association

HONORS AND AWARDS

Chair-Elect, American Statistical Association - Section on Statistics in Genomics and Genetics, 2019.
Elected Fellow, American Statistical Association, 2017.
Standing member of NIH BMRD study section, 2017-2021.
Young Investigator Award, International Indian Statistical Association, 2016.
Member of the Delta Omega Honorary Society in Public Health, 2010.
Travel Award for Rockefeller Advanced Linkage Course, 2004.
ENAR Distinguished Student Paper Award Winner, 2004.
Program in Mathematics and Molecular Biology Fellow, University of Washington 2001-05.
Best Student Award, Presidency College, 1996.

Visiting Professorships or Visiting Scholar Positions

Department of Statistics, University of Washington, Seattle, WA (Aug 2018- July 2019)
Public Health Sciences Division, Fred Hutch, Seattle, WA (Aug 2018- July 2019)

ADVISING AND MENTORING

Doctoral Dissertations Directed

Seal, Souvik (2016-2020 expected)
Arbet, Jaron (2018): ***Current Position: Faculty at University of Colorado, Denver.***
Thesis Title: Methodologies for detecting high-order interactions and improve heritability estimation.
Coombes, Brandon (2016): ***Current Position: Postdoc at Mayo Clinic***
Thesis Title: Novel Tests for detection of rare variants and gene-environment interaction in cohort and twin family studies.
Ray, Debashree (2015): ***Current Position: Assistant Professor at Johns Hopkins University***
Thesis Title: Multivariate Association Analysis of Correlated Phenotypes and Multiple Genetic Variants.

Post-doctoral fellows supervised

Mandal Abhijit (August 2014- December 2016): ***Current Position: Assistant Professor at Wayne State University.***

Master's Theses Directed

Boatman Jeff, `Modeling the Dependence Structure in Genome-wide Association Studies of Binary Phenotypes in Family Data', 2011-2013.

Guha Sharmistha, `A Powerful Parsimonious Tree based Model Averaging Approach for Detection of Multilocus Effects', 2011-2013.

Wei Feng, `Comparison of Combination Methods in Pathway-based Analysis', 2008-2010.

Tan Adrian, `Effects of Population Stratification On Logistic Regression and an Alternative to Achieving Greater Power', 2008-2010.

Schladt David, `Genetic-based association between select UGT drug metabolizing genes and plasma triglyceride and lipoprotein lowering response to fenofebric acid', 2008-2009.

He Hua, ` Power of Multifactor Dimensionality Reduction, Pair-wise Multifactor Dimensionality Reduction and Penalized Logistic Regression for Detecting Gene-Gene Interaction In a Case-Control Study', 2006-2008.

Seth, Milan, `A Logistic Regression model for QTL linkage Analysis', 2005-2007.

Doctoral Committee Served on

Liu Mengzhen, PhD in Psychology
O'Connell Michael, PhD in Biostatistics (2018)
Hu Huang, PhD in BICB (2018)
Xu Zhiyuan, PhD in Biostatistics (2017)
Majumdar Subhabrata, PhD in Statistics (2017)
Bell ELizabeth, PhD in Epidemiology (2015)
Kirkpatrick Rob, PhD in Psychology (2012)
Inoue-Choi Maki; PhD in Epidemiology (2011)
Choi Jang; PhD in Statistics (2010)
Li Meijuan; PhD in Biostatistics (2008)
Hang Jiayin; PhD in Pharmacy (2008).
Rasmussen-Torvik Laura; PhD in Epidemiology (2007).

Masters Committees Served on

Ji Yuanyuan, MS in Biostatistics (2018)
Gao, Chen,MS in Biostatistics (2014)
Zhang, Yiwen, MS in Biostatistics (2014)
Zhou, Jincheng, MS in Biostatistics (2014)
Molony Julia, MS in Statistics (2010)
Kirkpatrick, Rob, MS in Psychology (2010)
Hall, Kris; MS in Epidemiology (2010)
Alves, Brunna; MS in Biostatistics (2010)
Deyo-Svendsen, Matt MPH in Biostatistics (2009)
Afshannia, Farsad, MS in Medicine (2009)
Vallee, Mark; MS in Dentistry (2008)
Brearley, Ann; MS in Biostatistics (2008)
Hall, Taryn; MS in Epidemiology (2007)

RESEARCH, SCHOLARSHIP, AND CREATIVE WORK

Grants and Contracts

External Sources

Active

1. Investigator Status: **Principal Investigator**
   External Agency: NIH/NIDA –R21
   Project Title: Improved Heritability Estimation by Spatial Mapping of Genetic Relationships
   Dates: August 2018- July 2020
   Award: $395,860

2. Investigator Status: Member, Biostatistics and Bioinformatics Shared Resource.
   Name of PI: Douglas Yee, School of Medicine and Pharmacology
   External Agency: NIH P30-CA077598
   Project Title: Cancer Center Support Grant
   Dates: June 2016- May 2023
   Award: $2,498,943

3. Investigator Status: **Principal Investigator**
   External Agency: NIH/NIDA- R01
   Project Title: Statistical Methods for detection of genome-wide GxE interactions in longitudinal studies.
   Dates: May 2013- April 2019
   Award: $1,107,195

4. Investigator Status: Co-investigator
   Name of PI: Samir. Khariwala, School of Medicine
   External Agency: NIH - R01
   Project Title: Analytical capacity building for the study of tobacco carcinogen exposure in India
   Dates: July 2017 – June 2022
   Award: $1,560,000

5. Investigator Status: Co-investigator.
   Name of PI: James Neaton, Division of Biostatistics
   External Agency: Leidos, NIH
   Project Title: PREVAIL VI: Identification of Host Genetic Factors Underlying Ebola Virus Disease Risk, Mortality, Long-Term Sequelae, Viral RNA Persistence, Humoral Immunity, and Ebola Vaccine Response.
   Dates: July 2016-ongoing
   Award: $24,993

6. Investigator Status: Co-Investigator.
   Name of PI: Aaron Folsom, Division of Epidemiology
   External Agency: NIH/NHLBI - R01
   Project Title: Epidemiology of Venous Thrombosis and Pulmonary Embolism
   Dates: March 2013 -June 2020
   Award: $2,554,154

7. Investigator Status: Co-Investigator
   Name of PI: Steve Hecht, School of Medicine

External Agency: NIH-R01
Project Title: Clinical Trial of Watercress in Detoxification of Environmental Toxicants and
Dates: July 2018 –June 2023
Award: $2,803,506

Completed:

1. Investigator Status: Co-Investigator
   Name of PI: Pamala Lutsey, Division of Epidemiology
   External Agency: NIH/NHLBI- R01
   Project Title: Serum Vitamin D and Cardiovascular Disease Risk in Biethnic ARIC cohort
   Dates: June 2011 - March 2015.
   Award: $1,586,697

2. Investigator Status: **Principal Investigator**
   External Agency: NIH.NIDDk – R21
   Project Title: A Gene-set Approach for Pathway Analysis of Genome-wide SNP Data with Application to Type 2 Diabetes and Related Quantitative Traits.
   Dates: July 2010-June 2014.
   Award: $395,860

3. Investigator Status: Co-Investigator
   Name of PI: Weihong Tang, Division of Epidemiology
   External Agency: NIH/NHLBI - R01
   Project Title: Genetic Epidemiological Study of Venous Thromboembolism (VTE) and Hemostatic Factors.
   Dates: August 2009- May 2015
   Direct Costs: $984,164

4. Investigator Status: Co-Investigator
   Name of PI: William Iacono, Department of Psychology
   External Agency: NIH/NIDA - R01
   Project Title: Substance Abuse & Behavioral Disinhibition: Integrating Genes & Environment
   Dates: January 2009- June 2012
   Award: $8,703,875

5. Investigator Status: Co-Investigator
   Name of PI: Aaron Folsom, Division of Epidemiology
   External Agency: NIH/NHLBI - R01
   Project Title: Epidemiology of Venous Thrombosis and Pulmonary Embolism
   Dates: March 2008 -January 2012
   Award: $2,554,154

6. Investigator Status: Co-Investigator
   Name of PI: Mukta Arora, Department of Hematology
   External Agency: NIH/NIAID - R21
   Project Title: Association of Genetic Polymorphism with Graft-versus-Host Disease Post Hematopoetic Stem Cell Transplant
   Dates: July 2008 - June 2010
   Award: $352,372

7. Investigator Status: Co-Investigator
   Name of PI: Arthur Matas, Department of Surgery

External Agency: NIH/NIAID - R01
Project Title: Genomics of Kidney Transplantation
Dates: July 2006 - June 2011
Award: $8,833,736

8. Investigator Status: Co-Investigator
Name of PI: Walter Bowles, School of Dentistry
External Agency: Am Association of Endodontics Foundation
Project Title: Factors Affecting Outcomes for Single-Tooth Implant and Endodontics
Dates: July 2007- June 2008
Award: $225,087

Pending:

1. Investigator Status: **Principal Investigator**
External Agency: NIH/NIDA-R01
Project Title: Statistical methodologies to leverage latent dependency in genetic association studies.
Dates: December 2018- November 2023
Award: $2,436,631

University Sources

1. Investigator Status: **Principal Investigator**
Source: UMN Minnesota Medical Foundation
Purpose: The proposal aims to develop a statist
Project Title: A Likelihood-based Approach for Detecting Gene-Gene Interaction in a Case-Control Study
Period: July 2008- June 2009
Award: $24,966.00

2. Investigator Status: **Principal Investigator**
Source: UMN Grant-in-Aid of Research, Artistry, and Scholarship grant
Title: A Trait-model-free Approach for Linkage Detection of Continuous Trait in Pedigrees
Period: July 2006- June 2007
Award: $22,924.00

Publications

Refereed Journal Articles († indicates senior author, ‡ indicates co-first author)

1. Folsom AR, **Basu S**, Hong CP, Heckbert SR, Lutsey PL, Rosamond WD, Cushman M, Atherosclerosis Risk in Communities (ARIC) Study (2019), Reasons for Differences in the Incidence of Venous Thromboembolism in Black Versus White Americans. The American Journal of Medicine (to appear).

2. Lindstrom S, Brody JA, Turman C, Germain M, Bartz TM, Smith EN, Chen MH, Puurunen M, Chasman D, Hassler J, Pankratz N, **Basu S**, Guan W, Gyorgy B, Ibrahim M, Empana JP, Olaso R, Jackson R, Braekkan SK, McKnight B, Deleuze JF, O'Donnell CJ, Jouven X, Frazer KA, Psaty BM, Wiggins KL, Taylor K, Reiner AP, Heckbert SR, Kooper- berg C, Ridker P, Hansen J, Tang W, Johnson AD, Morange PE, Tre- gou¨e t DA, Kraft P, Smith NL, Kabrhel C; INVENT Consortium (2019), A large-scale exome array analysis of venous thromboembolism, Genet Epidemiol. (to appear)
3. Folsom AR, Tang W, **Basu S**, Misialek JR, Couper D, Heckbert SR, Cushman M. (2019), Plasma concentrations of high molecular weight kininogen and prekallikrein and venous thromboembolism incidence in the general population. Thromb Haemost: 119(5):834-843.
4. de Haan HG, Vlieg AH, Lotta LA, Gorski MM, Bucciarelli P, Martinelli I, INVENT consortium, Baglin TP, Peyvandi F, Rosendaal FR, Amouyel P, de Andrade M, **Basu S**, Berr C, Brody JA, Chasman DI, Dartigues J-F, Folsom AR, Germain M, de Haan HG , Heit J, Houwing-Duitermaat J, Kabrhel C, Kraft P, Legal G, Lindström S, Monajemi R, Morange P-E, Psaty BM, Reitsma PH, Ridker PM, Rose LM, Rosendaal FR, Saut N, Slagboom E, Smadja D, Smith NL, Suchon P, Tang W, Taylor KD, Trégouët DA, Tzourio C, de Visser MCH, Vlieg AH, Weng L-C, Wiggins KL (2018), Targeted sequencing to identify novel genetic risk factors for deep vein thrombosis: a study of 734 genes. J Thromb Haemost Vol 16(12):2432-2441.
5. Roetker NS, MacLehose RF, Hoogeveen RC, Ballantyne CM, **Basu S**, Mary Cushman M, Aaron R. Folsom AR (2018), Prospective study of endogenous hormones and incidence of venous thromboembolism: the Atherosclerosis Risk in Communities Study. Thromb and Haemost Vol 118(11):1940-1950.
6. Folsom AR, Lutsey PL, Heckbert SR, Poudel K, **Basu S**, Hoogeven RC, Cushman M, Ballantyne CM (2018), Longitudinal increase in blood biomarkers of inflammation or cardiovascular disease and the incidence of venous thromboembolism. J Thromb Haemost Vol 16(10):1964-1972.
7. Weng L-C, Guan W, Steffen LM, Pankow JS, Pankratz N, Chen M-H, Cushman M, **Basu S**, Folsom AR, Tang W (2018), Pleiotropic effects of n-6 and n-3 fatty acid-related genetic variants on circulating hemostatic variables, Thrombosis research Vol 168:53-59**.**
8. †Yi Y, **Basu S**, Spector L, Zhang L (2018), A Powerful Gene-Based GWAS Analysis of Osteosarcoma Trio Data Using the Bayesian HSVS Method. Cancer Informatics 17:1176935118775103.
9. †Coombes B, **Basu S**, McGue M (2018), Score tests for gene-environment interaction in family studies using linear mixed models. Genetic Epidemiology (to appear).
10. †Mandal A, **Basu S**, Pankow J (2018), Genome-wide Association Study Using the Additive Model, Statistics in Medicine (to appear).
11. Hong J, Hatchell KE, Bradfield JP, Bjonnes A, Chesi A, Lai C-Q, Langefeld CD, Lu L, Lu Y, Lutsey PL, Musani SK, Nalls MA, Robinson-Cohen C, Roizen JD, Saxena R, Tucker KL, Ziegler JT, Arking DE, Bis JC, Boerwinkle E, Bottinger EP, Bowden DW, Gilsanz V, Houston DK, Kalkwarf HJ, Kelly A, Lappe JM, Liu Y, Michos ED, Oberfield SE, Palmer ND, Rotter JI, Sapkota B, Shepherd JA, Wilson JG, **Basu S**, de Boer IH, Divers J, Freedman BI, Grant SF, Hakanarson H, Harris TB, Kestenbaum BR, Kritchevsky SB, Loos RJ, Norris JM, Norwood AF, Ordovas JM, Pankow JM, Psaty BM, Sanghera DK, Wagenknecht LK, Zemel BS, Meigs J, Dupuis J, Florez JC, Wang T, Liu C-T, Engelman CD, Billings LK (2017), Trans-ethnic Evaluation Identifies Novel Low Frequency Loci Associated with 25Hydroxyvitamin D Concentrations, J Clin Endocrinol Metab doi: 10.1210/jc.2017-01802.

12. Park JY, Wu C, **Basu S**, McGue M, Pan W (2017), Adaptive SNP-set Association Testing in Generalized Linear Mixed Models with Application to Family Studies. Behavior Genetics Vol: 48 (1), 55-66.

13. Fashanu OE, Heckbert SR, Aguilar D, Ballantyne CM, **Basu S**, Hoogeveen RC, Cushman M, Folsom AR (2017), Galectin-3 and Venous Thromboembolism Incidence: the Atherosclerosis Risk in Communities (ARIC) Study. Res Pract Thromb Haemost: 1-8.

14. †Arbet J, **Basu S**, Chatterjee S, McGue M (2017), Resampling-Based Tests for Lasso in Genome-Wide Association Studies. BMC Genetics Vol 18(1): 70.

15. †Ray D, **Basu** S (2017), A Novel Association Test for Multiple Secondary Phenotypes from a Case-Control GWAS. Genetic Epidemiology Vol 41(5): 413-426.

16. †Coombes B, **Basu S**, McGue M (2017), A combination test for detection of gene-environment interaction in cohort studies. Genetic Epidemiology Vol 41(5): 396-412.

17. Song C, Burgess S, Eicher JD, O'Donnell CJ, Johnson AD, Huang J, Sabater-Lleal M, Asselbergs FW, Tregouet D, Shin SY, Ding J, Baumert J, Oudot-Mellakh T, Folkersen L, Smith NL, Williams SM, Ikram MA, Kleber ME, Becker DM, Truong V, Mychaleckyj JC, Tang W, Yang Q, Sennblad B, Moore JH, Williams FMK, Dehghan A, Silbernagel G, Schrijvers EMC, Smith S, Karakas M, Tofler GH, Silveira A, Navis GJ, Lohman K, Chen MH, Peters A, Goel A, Hopewell JC, Chambers JC, Saleheen D, Lundmark P, Psaty BM, Strawbridge RJ, Boehm BO, Carter AM, Meisinger C, Peden JF, Folsom AR, **Basu S**, CHARGE Consortium Hemostatic Factor Working Group, ICBP Consortium & CHARGE Consortium Subclinical Working Group (2017), Causal effect of plasminogen activator inhibitor type 1 on coronary heart disease. Journal of the American Heart Association: ISSN: 2047-9980, Vol: 6 (6), Page: e004918.

18. Sennblad B, **Basu S**, Mazur J, Suchon P, Martinez-Perez A, van Hylckama Vileg A, Truong V, Li Y, Gådin J, Tang W, Grossman V, de Haan HG, Handin N, Silveira A, Souto JC, Franco-Cereceda A, Morange P-E, Gagnon F, Soria JM, Eriksson P, Hamsten A, Maegdefessel L, Rosendaal FR, Wild P, Folsom AR, Trégouët DA, Sabater-Lleal M (2017), Genome-wide association stud with additional genetic and post-transcriptional analyses reveals novel regulators of plasma factor XI levels. Hum Mol Genet. (doi: 10.1093/hmg/ddw401).

19. de Vries PS, Sabater-Lleal M, Chasman DI, Trompet S, Ahluwalia TS, Teumer A, Kleber ME, Chen MH, Wang JJ, Attia JR, Marioni RE, Steri M, Weng LC, Pool R, Grossmann V, Brody JA, Venturini C, Tanaka T, Rose LM, Oldmeadow C, Mazur J, **Basu S**, Frånberg M, Yang Q, Ligthart S, Hottenga JJ, Rumley A, Mulas A, de Craen AJ, Grotevendt A, Taylor KD, Delgado GE, Kiey A, Lopez LM, Berentzen TL, Mangino M, Bandinelli S, Morrison AC, Hamsten A, Tofler G, de Maat MP, Draisma HH, Lowe GD, Zoledziewska M, Sattar N, Lackner KJ, Völker U, McKnight B, Huang J, Holliday EG, McEvoy MA, Starr JM, Hysi PG, Hernandez DG, Guan W, Rivadeneira F1, McArdle WL, Slagboom PE, Zeller T, Psaty BM, Uitterlinden AG, de Geus EJ, Stott DJ, Binder H, Hofman A, Franco OH, Rotter JI, Ferrucci L, Spector TD, Deary IJ, März W, Greinacher A, Wild PS, Cucca F, Boomsma DI, Watkins H, Tang W, Ridker PM, Jukema JW, Scott RJ, Mitchell P, Hansen T, O'Donnell CJ, Smith NL, Strachan DP, Dehghan A (2017), Comparison of HapMap and 1000 Genomes reference panels in a large-scale genome-wide association study. PLoS One Vol 12(1): e0167742. doi: 10.1371/journal.pone.0167742.

20. †Ray D, Pankow, JS, **Basu S** (2016), USAT: A Unified Score-Based Association Test for Multiple Phenotype-Genotype Analysis. Genetic Epidemiology, Vol 40(1): 20-34. (*received Young Investigator Award from ASA Section on Statistics in Epidemiology (SIE), 2016 ; Best Student Paper Award, University of Minnesota, 2015*).

21. Folsom A, Tang W, Weng L-C, Roetker NS, Cushman M, **Basu S**, Pankow JS (2016), Replication of a genetic risk score for venous thromboembolism in whites but not in African Americans. J Thromb Haemost. Vol 14(1):83-88.

22. †Ho Y-Y, O'Connell M, Guan W, **Basu S** (2016), Powerful association test combining rare variant and gene expression using family data from Genetic Analysis workshop 19. BMC Proc Vol 10(Suppl 7): 251-255.

23. van Loon J, Dehghan A, Weihong T, Trompet S, McArdle WL, Asselbergs FF, Chen MH, Lopez LM, Hu_man JE, Leebeek FW, **Basu S**, Stott DJ, Rumley A, Gansevoort RT, Davies G, Wilson JJ, Witteman JC, Cao X, de Craen AJ, Bakker SJ, Psaty BM, Starr JM, Hofman A, Wouter Jukema J, Deary IJ, Hayward C, van der Harst P, Lowe GD, Folsom AR, Strachan DP, Smith N, de Maat MP, O'Donnell C. (2015). Genome-wide association studies identify genetic loci for low von Willebrand factor levels. Eur J Hum Genet. Vol 24(7): 1035-1040.

24. Bell EJ, Lutsey PL, **Basu S**, Cushman M, Heckbert SR, Lloyd-Jones DM, Folsom AR (2015). Lifetime Risk Of Venous Thromboembolism in Two Cohort Studies. Am J Med. Vol 129 (3): 339.e19-26.

25. de Vries PS, Chasman DI, Sabater-Lleal M, Chen MH, Huffman JE, Steri M, Tang W, Teumer A, Marioni RE, Grossmann V, Hottenga JJ,Trompet S, Müller-Nurasyid M, Zhao JH, Brody JA, Kleber ME, Guo X, Wang JJ, Auer PL, Attia JR, Yanek LR, Ahluwalia TS, Lahti J, Venturini C, Tanaka T, Bielak LF, Joshi PK, Rocanin-Arjo A, Kolcic I, Navarro P, Rose LM, Oldmeadow C, Riess H, Mazur J, **Basu S**, Goel A, Yang Q,Ghanbari M, Willemsen G, Rumley A, Fiorillo E, de Craen AJ, Grotevendt A, Scott R, Taylor KD, Delgado GE, Yao J, Kiey A, Kooperberg C,Qayyum R, Lopez LM, Berentzen TL, Räikkönen K, Mangino M, Bandinelli S, Peyser PA, Wild S, Trégouët DA, Wright AF, Marten J, Zemunik T, Morrison AC, Sennblad B, Tofler G, de Maat MP, de Geus EJ, Lowe GD, Zoledziewska M, Sattar N, Binder H, Völker U, Waldenberger M,Khaw KT, Mcknight B, Huang J, Jenny NS, Holliday EG, Qi L, Mcevoy MG, Becker DM, Starr JM, Sarin AP, Hysi PG, Hernandez DG, Jhun MA, Campbell H, Hamsten A, Rivadeneira F, Mcardle WL, Slagboom PE, Zeller T, Koenig W, Psaty BM, Haritunians T, Liu J, Palotie A,Uitterlinden AG, Stott DJ, Hofman A, Franco OH, Polasek O, Rudan I, Morange PE, Wilson JF, Kardia SL, Ferrucci L, Spector TD, Eriksson JG, Hansen T, Deary IJ, Becker LC, Scott RJ, Mitchell P, März W, Wareham NJ, Peters A, Greinacher A, Wild PS, Jukema JW, Boomsma DI,Hayward C, Cucca F, Tracy R, Watkins H, Reiner AP, Folsom AR, Ridker PM, O'Donnell CJ, Smith NL, Strachan DP, Dehghan A. (2015), A meta-analysis of 120 246 individuals identifies 18 new loci for fibrinogen concentration. Hum Mol Genet. Vol 25(2):358-370.

26. †Coombes B, **Basu S**, Guha S, Schork N (2015), Weighted Score Tests Implementing Model-Averaging Schemes in Detection of Rare Variants in Case-Control Studies. PLoS One Vol 10(10): e0139355.

27. †Ray D, Li X, Pan W, Pankow JS, **Basu S** (2015), A Bayesian Partitioning Model to Model Multilocus E_ects in a Case-Control Study. Human Heredity Vol 79(2):69-79.
(received student Paper Award from ASA Section on Bayesian Statistical Sciences (SBSS), 2014)

28. ‡Balabdoui F, **Basu S** (2015). Letter to the Editor: Comments on Groparu-cojocaru and Doray (2013). Communications in Statistics- Simulation and Computation; doi: 10.1080/03610918.2015.1024857.

29. Tang W, Cushman M, Green D, Rich SS, Lange LA, Yang Q, Tracy RP, Tofler GH, **Basu S**, Wilson JG, Keating BJ, Weng LC, Taylor HA, Jacobs DR Jr, Delaney JA, Palmer CD, Young T, Pankow JS, O'Donnell CJ, Smith NL, Reiner AP, Folsom AR (2015), Gene-centric approach identifies new and known loci for FVIII activity and VWF antigen levels in European Americans and African Americans. Am J Hematol. Vol 90(6):534-540.

30. Kirkpatrick RM, McGue M, Iacono WG, Miller MB, **Basu S** (2015), Results of a GWAS Plus:" General cognitive ability is substantially heritable and massively polygenic. PLoS One doi: 10.1371/journal.pone.0112390.

31. Germain M, Chasman DI, de Haan H, Tang W, Lindström, S, Weng LC, de Andrade M, de Visser MC, Wiggins KL, Suchon P, Saut N, Smadja DM, Le Gal G, van Hylckama Vlieg A, Di Narzo A, Hao K, Nelson CP, Rocanin-Arjo A, Folkersen L, Monajemi R, Rose LM, Brody JA, Slagboom E, Aïssi D, Gagnon F, Deleuze JF, Deloukas P, Tzourio C, Dartigues JF, Berr C, Taylor KD, Civelek M, Eriksson P; Cardiogenics Consortium, Psaty BM, Houwing-Duitermaat J, Goodall AH, Cambien F, Kraft P, Amouyel P, Samani NJ**, Basu S**, Ridker PM, Rosendaal FR, Kabrhel C, Folsom AR, Heit J, Reitsma PH, Trégouët DA, Smith NL, Morange PE (2015), Meta-analysis of 65,734 Individuals Identifies TSPAN15 and SLC44A2 as Two Susceptibility Loci for Venous Thromboembolism. Am J Hum Genet. Vol 96(4):532-542.

32. Weng L-C, Cushman M, Pankow JS, **Basu S**, Boerwinkle E, Folsom AR, Tang W (2015), A genetic association study of activated partial thromboplastin time in European Americans and African Americans: the ARIC Study. Hum Mol Genet. Vol 24(8):2401-2408.

33. Folsom AR, Tang W, Roetker NS, Kshirsagar AV, Derebail VK, Lutsey PL, Naik R, Pankow JS, Grove ML, **Basu S**, Key NS (2015), Cushman M. Prospective study of sickle cell trait and venous thromboembolism incidence. J Thromb Haemost. Vol 1:2-9.

34. Malone SM, Vaidyanathan U, **Basu S**, Miller MB, McGue M, IaconoWG. (2015), Heritability and molecular genetic basis of the P3 event related brain potential: A genomewide association study. Psychophysiology Vol 51(12), 1246-1258.

35. Munir MS, Weng LC, Tang W, **Basu S**, Pankow JS, Matijevic N, Cushman M, Boerwinkle E, Folsom AR.(2014), Genetic markers associated with plasma protein C level in African Americans: The atherosclerosis risk in communities (ARIC) study. Genetic Epidemiology Vol 38(8):709-713.

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70. **Basu S**, Di Y and Thompson EA (2008). Exact trait-model-free tests for linkage detection in pedigrees. Annals of Human Genetics Vol 72(5): 676-682. *Role:* Dr. Basu developed the method described in the paper, and wrote the paper.

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Non-refereed Proceedings of Conferences

1. **Basu S**, Bergemann TL, Dvorkin D, Seth M (2006). The analysis of quantitative traits correlated with rheumatoid arthritis. Proceedings of Genetic Analysis Workshop 15, Florida.

Software Development

1. R package RFGLS (https://cran.r-project.org/web/packages/RFGLS/index.html)
2. RMMLR (https://github.com/SAONLIB/RMMLR)
3. USAT (https://github.com/RayDebashree/USAT)
4. POM-PS (https://github.com/RayDebashree/POM-PS)
5. Resampling-based Tests for Lasso (https://github.com/arbet003/Resampling-Tests-for-Lasso-Supplementary-Material)

Presentations, Posters, and Exhibits

Invited Presentations at Professional Meetings, Conferences, and Seminars:

1. **Basu S**, 'Estimation of Heritability in Presence of Population Substruc- ture', Genetic Analysis Center Local meeting, University of Washington, April 2019.
2. **Basu, S**, 'Improved Heritability Estimation by Spatial Mapping of Genetic Relationships (Part 2)', PopGen Working Group, University of Washington, March 2019.
3. **Basu S**, 'Improved Heritability Estimation by Spatial Mapping of Genetic Relationships', PopGen Working Group, University of Washington, February 2019.
4. **Basu S**, 'Improved Heritability Estimation by Spatial Mapping of Genetic Relationships', Fred Hutchinson PHS working group, February 2019.
5. **Basu S**, 'A Unified Framework for Modeling Multiple Correlated Traits in Genome-wide Association Studies, Dept of Medical Genetics, University of Washington, February 2019.
6. **Basu S**, 'Estimating Variance Components in Longitudinal Family Studies with Applications to Genetic Heritability', Fred Hutchinson Cancer Center, January 2019.
7. **Basu S**, 'Multivariate Modeling of correlated Phenotypes', 4th International Conference on Mathematical and Computational Medicine, Cancun Mexico, December 2018.
8. **Basu S**, 'Searching for Missing Heritability: A Closer Look at Method- ological Issues', Department of Statistics, University of Washington, November 2018
9. **Basu S**, 'A Robust and Unified Framework for Estimating Heritability in Twin Studies using Generalized Estimating Equations', MBI workshop, Ohio State University, September 2018.
10. **Basu S**, `Statistical Methods for Testing Association to Address Outcome-Dependent Sampling', Joint Statistical Meeting, August 2018.
11. **Basu S**, `Multivariate Modeling of correlated Phenotypes', University of Washington Statistics Workshop, June 2018.
12. **Basu S,** `Searching for Missing Heritability: A Closer Look at Methodological Issues', IISA Conference, May 2018.
13. **Basu S**, `Searching for Missing Heritability: A Closer Look at Methodological Issues', Johns Hopkins University, April 2018.
14. **Basu S**, `A Unified Framework for Estimating Heritability using Generalized Estimating Equations', IISA Conference, December 2017.
15. **Basu S**, `Detection of set-based gene-environment interaction in families', Joint Statistical Meeting, August 2017.
16. **Basu S**, `USAT: A Unified Score-based Association Test for Multiple Phenotype-Genotype Analysis', Fred Hutchison Cancer Research Center, April 2017.
17. **Basu S**, `Detection of set-based gene-environment interaction in cohort studies', Department of Statistics, The Pennsylvania State University, December 2016.
18. **Basu S**, `USAT: A Unified Score-based Association Test for Multiple Phenotype-Genotype Analysis', International Indian Statistical Association (IISA), August 2016.

19. **Basu S**, `A novel test for detection of multiple gene-environment interaction in cohort studies', Eastern North American Region (ENAR) Meeting, Texas, March 2016.

20. **Basu S**, `USAT: a unified test for multivariate phenotype-genotype association analysis', Department of Statistics and probability, Michigan State University, February 2016.

21. **Basu S**, `A model-averaging approach for detection of rare variants', Triennial Calcutta Symposium, Kolkata, December 2015.

22. **Basu S**, `USAT: a unified test for multivariate phenotype-genotype association analysis', International Indian Statistical Association, December 2015.

23. **Basu S**, `USAT: a unified test for multivariate phenotype-genotype association analysis', Department of Biostatistics, University of Illinoi, Chicago, September 2015.

24. **Basu S**, `A unified test for population-based multiple correlated phenotype-genotype association analysis', Eastern North American Region (ENAR) Meeting, Florida, March 2015.

25. **Basu S**, `A rapid genome wide gene-based association analysis with multivariate traits', IASSL meeting, Sri Lanka, December 2014.

26. **Basu S**, `A powerful parsimonious tree based approach for detection of multilocus association', Ordered Data Analysis, Models and Health Research Methods: An International Conference in Honor of H.N. Nagaraja for His 60th Birthday, Richardson Texas, March 2014.

27. **Basu S**, `A Rapid Genome-wide Gene-based Association Tests with Multivariate Traits', Eastern North American Region (ENAR) Meeting, Florida, March 2013.

28. **Basu S**, `A Bayesian Partitioning Model for Multilocus Association', International Society for Bayesian Analysis (ISBA) Regional Meeting, Varanasi India, Jan 2013.

29. **Basu S**, `Statistical Tests for Disease Association with Rare Variants', Triennial Calcutta Symposium, Kolkata, Dec 2012.
30. **Basu S**, `Statistical Tests for Disease Association with Rare Variants', International Chinese Statistical Association (ICSA) Symosium, Boston, June 2012.

31. **Basu S**, `RFGLS findings on MCTFR dataset', GEDI Advisory Board Meeting, Washington DC, April 2011.

32. **Basu S**, `A dimension reduction approach for modeling multilocus interaction in case-control studies'. Division of Biostatistics, University of Minnesota, March 2011.

33. **Basu S**, `RFGLS findings on MCTFR dataset', GEDI Workshop, San Diego, February 2011.

34. **Basu S**, `Development and use of a database', School of Dentistry, University of Minnesota, January 2011.

35. **Basu S**, `Modeling multilocus interaction in case-control studies', Indian Statistical Institute, Kolkata, January 2011.

36. **Basu S**, `Geneset approaches for joint modeling multi-SNP interactions in case-control studies', GEDI analysis group meeting, Minnesota, August 2010.

37. **Basu S**, `Analytic approaches to the Minnesota Center of Twin and Family Research (MCTFR) GWAS data', National Institute of Drug Abuse (NIDA)'s Genes, Environment and Development Initiative (GEDI) Advisory Board Meeting, Washington DC, April 2010.

38. **Basu S**, `Evaluating bias and variance distortion in case-control association studies and an alternative to achieving greater power', Indian Statistical Institute, Kolkata, India, January 2010.

39. **Basu S**, `A Bayesian approach for detecting multi-SNP interaction in large scale association studies', Indian Statistical Association Joint Meeting, Visakhapatnam, Andhra Pradesh, India, January 2010.

40. **Basu S**, `A likelihood-based trait-model-free approach for linkage detection for quantitative trait in pedigrees', Indian Statistical Institute Platinum Jubilee Conference, ICSPRAR-08, 2008.

41. **Basu S**, `Allele-sharing methods for linkage detection using pedigrees', Department of Statistics, University of Minnesota, 2006.

42. **Basu S**, `Allele-sharing methods for linkage detection', Indian Statistical Institute, Kolkata, India, 2006.

43. **Basu S**, `A likelihood-based trait-model-free approach for linkage detection', Division of Statistical Genetics, University of Alabama, Birmingham, 2005.

44. **Basu S**, `A likelihood-based trait-model-free approach for linkage detection', Division of Biostatistics, University of Minnesota, 2005.

45. **Basu S**, `Allele-sharing methods in large pedigrees', Department of Statistical Genetics & Bioinformatics, North Carolina State University, 2003.

TEACHING AND CURRICULUM DEVELOPMENT

Courses Taught

Advanced Longitudinal Data Analysis Fall 2016
An elective course for Biostatistics PhD students. The course describes methods of inference for correlated outcome variables, with a special emphasis on repeated measurements in medical studies: Linear/nonlinear models with either normal or non-normal error structures; Random effects; Transitional/marginal models. *Role:* Sole Instructor

Statistics for Human Genetics and Molecular Biology Fall 2013, 2015, 2017
An elective course for Biostatistics PhD students. The course provides details on the construction and application of different mathematical and stochastic models in genetic studies: segregation analysis; multipoint linkage analysis; population-based and family-based association analysis; different aspects of population genetics such as testing Hardy-Weinberg equilibrium, likelihood estimation of allele frequencies, population structure, linkage disequilibrium, and haplotyping. Students learn both the theory and application of statistical genetics and gain hands-on experience with analyzing genetic data using available R packages or other analysis softwares. *Role:* Developed the course and sole instructor

Probability Models Fall 2008, 2009, 2010, 2011, 2012
A required course for Biostatistics PhD students. The course focuses on Conditional Expectations, Stochastic Processes, Markov Chains, Martingales, Gaussian processes, Basic stochastic differential equations with Applications.

Introduction to Biostatistics Spring 2007, 2008, 2014
Biostatistics course for public health majors. Materials include descriptive statistics. Gaussian probability models, point/interval estimation for means/proportions, hypothesis testing including t, chi-square, and nonparametric tests, simple regression/correlation, ANOVA, health science applications using output from statistical packages, especially SAS.

Modern Nonparametrics Fall 2005, 2006
An elective course for Biostatistics PhD students. Materials include Classical nonparametrics, empirical process theory, computational tools such as bootstrap and jacknife, nonparametric curve estimators and applications of these estimators in density estimation, and regression problems.

NIH T32 Training Grant Faculty

Statistical Genetics (Member of Executive Committee)	PI: Wei Pan	Sep 2013- Aug 2019
Cardiovascular Disease Epidemiology & Prevention	PI: Aaron Folsom	July 2014- June 2019

SERVICE AND PUBLIC OUTREACH

Service To The Discipline/Profession/Interdisciplinary Area(s)

Editorships/Journal Reviewer Experience

Guest Editor, PLoS Computational Biology, 2016.
Associate Editor, Sankhya, 2016-2018.
Reviews Editor, Frontiers in Genetics, 2011-2013.
Associate Editor, JASA/TAS Reviews, 2010-2012.
Reviewer for journals:
Journal of American Statistical Association, Biometrics, Biostatistics, Genetic Epidemiology, Journal of Agricultural, Biological and Environmental Statistics, Statistics in Medicine, BMC Bioinformatics, Journal of American Medical Association, Journal of Dental Research, Genetics, BMC Genomics, Journal of Genetics, Human Heredity, Nucleic Acids Research, Pharmacogenomics, PLoS One, Genetic Analysis Workshop, Annals of Human Genetics.

Committee memberships

Elected Chair for ASA Genomics and Genetics Section, 2019-2020.
ASA Biometrics Section representative for ENAR, 2016-18.
ASA Gertrude M. Cox Scholarship Committee member 2014-18.
Committee Member, ENAR Junior Researcher Workshop, 2017.
International Genetic Epidemiology Communications Committee member 2013-15.

Review panels for external funding agencies, foundations, etc.

Standing member of NIH BMRD study section, 2017-2021.
NIH BMRD study section adhoc reviewer, Summer 2016.

NIH GCAT study section adhoc reviewer, Spring 2016.
NIH KNOD study section adhoc reviewer, Spring 2016.
NIH Secondary Data study section adhoc reviewer, Spring 2016.
NSF DCL Panel 2 reviewer, August 2015.
NIH Genes, Genomes and Genetics Members Conflict Study Section reviewer, July 2015.
NIH GCAT study section adhoc reviewer, Spring 2015.
NIH IRAP study section adhoc reviewer, Fall 2013.
NIH Challenge grants reviewer, Fall 2009.
NIH/NIDDK K24 grant, Fall 2006.

Organization of conferences, workshops, panels, symposia

Chief organizer of Young Statisticians Program, International Biometric Society, July 2016.
ASA JSM session organizer and chair for the invited session `Analytical Challenges and Statistical Thinking for High-throughput `Omics' Data', August 2015.
Session chair for IBC invited session ` Advances in Spatial Latent Variable Modeling with Applications to Bio-Sciences', July 2012.

Service To The University/College/Department

University of Minnesota

Grant-in-Aid committee, 2013

Service to School of Public Health

School of Public Health Branding Committee, 2016
Co-lead of Strategic Planning Committee, School of Public Health, 2015-2016
Annual Promotion and Tenure Committee, 2013-2017
School of Public Health Salary Review Committee, 2013
Reviewer for Academic Health Center seed grants, 2007.

Division of Biostatistics Committees:
Director of Graduate Studies (2014-2018)
Curriculum Committee (2005- 2018)
Faculty Search Committee (2007, 2011, 2012, 2015)
Recruiting Committee (2005-2009)