



Lalit Kaurani

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Current Status

(November 2015 till present)

Senior Research Scientist at the German Center for Neurodegenerative Diseases (DZNE) in University of Göttingen with **Prof. Dr. Andre Fischer**, Aging and Cognitive diseases Lab, Dept. Epigenetic Mechanisms of Neurodegenerative Diseases

EDUCATION

Ph.D., Biotechnology

CSIR-Institute of Genomics and Integrative Biology, Delhi, India

2009- 2015

RESEARCH EXPERIENCE

German Center for Neurodegenerative Diseases (DZNE) – Göttingen

Postdoc Research

Project 1: Psycourse study: This project aims on identifying clinical, neurobiological, and molecular genetic signatures of the longitudinal course of major psychiatric disorders. I have generated and analyzing data for psycourse study. In this multi lab study program I am generating and analyzing smallRNAome and transcriptomics data (<http://www.psycourse.de/wp1-en.html>)

Project 2: Innate immune memory in the brain (**Study published in Nature, 2018**)

Project 3: Circulating microRNAs as marker and therapy for early cognitive deficits (**Manuscript in Review, Shared First Author**)

Project 4: Effect of early life stress on smallRNAome in patients with Schizophrenia (**Manuscript in preparation, First Author**)

Project: Role of DNA Copy Number Variation in Glaucomatous Neurodegeneration

- **Results:** Able to find out *FOXE3* association in glaucoma using high throughput genotyping and showed DNA binding motif of *FOXE3* and its putative targets via ChIP-Seq.
- Also showed large deletions are enriched in gene rich regions and unique to patients.

PUBLICATIONS

- 1) Reduced level of miRNA 99b-5p in Schizophrenia patients exposed to early life stress
Lalit Kaurani, Md. Rezaul Islam, Gaurav Jain, M. Sadman Sakib, Tonatiuh Pena, Susanne Burkhardt, Nicole Cleve, Monika Budde, Cemil Kerimoglu, Urs Heilbronner, Andrea Schmit, Thomas G. Schulze, Peter Falkai, Farahnaz Sananbenesi, Andre Fischer[#]
(Manuscript in preparation)
- 2) Circulating microRNAs as marker and therapy for early cognitive deficits
Md. Rezaul Islam^{1§}, **L. Kaurani**^{1§}, T. Berulava, M. Navarro, Urs Heilbronner, Monika Budde, K. Niamkovich, V. Elerdashvili, T.P. Centeno, M Sadman Sakib, E. Benito, P. Rao, C. Kerimoglu, M. Boroomandi, G. Jain, Fanny Senner, Janos Kalman, J. S. Burkhardt, B. Malchow, H. Bickeboeller, T. Schulze^{3*}, P. Falkai^{4*}, F. Sananbenesi^{6*} A. Fischer^{1,2*,#} **(Shared First Author) (Manuscript in review)**
- 3) Fusion transcripts in normal human cortex increase with age and show distinct genomic features for single cells and tissues
Mehani B, Narta K, Paul D, Raj A, Kumar D, Sharma A, **Kaurani L**, Nayak S, Dash D, Suri A, Sarkar C, Mukhopadhyay A
Scientific Reports (2020)
- 4) A combined miRNA-piRNA signature to detect Alzheimer's disease
Jain G, Stuendl A, Rao P, Berulava T, Pena Centeno T, **Kaurani L**, Burkhardt S, Delalle I, Kornhuber J, Hüll M, Maier W, Peters O, Esselmann H, Schulte C, Deuschle C, Synofzik M, Wiltfang J, Mollenhauer B, Maetzler W, Schneider A, Fischer A
Translational Psychiatry (2019)

- 5) Childhood Trauma in Schizophrenia: Current Findings and Research Perspectives.
Popovic D, Schmitt A, **Kaurani L**, Senner F, Papiol S, Malchow B, Fischer A, Schulze TG, Koutsouleris N, Falkai P
Front Neurosci (2019)
- 6) Innate immune memory in the brain shapes neurological disease hallmarks
Wendeln AC, Degenhardt K, **Kaurani L**, Gertig M, Ulas T, Jain G, Wagner J, Häsler LM, Wild K, Skodras A, Blank T, Staszewski O, Datta M, Centeno TP, Capece V, Islam MR, Kerimoglu C, Staufienbiel M, Schultze JL, Beyer M, Prinz M, Jucker M, Fischer A, Neher JJ
Nature (2018)
- 7) The diphenylpyrazole compound anle138b blocks A β channels and rescues disease phenotypes in a mouse model for amyloid pathology
Martinez Hernandez A, Urbanke H, Gillman AL, Lee J, Ryazanov S, Agbemenyah HY, Benito E, Jain G, **Kaurani L**, Grigorian G, Leonov A, Rezaei-Ghaleh N, Wilken P, Arce FT, Wagner J, Fuhrmann M, Caruana M, Camilleri A, Vassallo N, Zweckstetter M, Benz R, Giese A, Schneider A, Korte M, Lal R, Griesinger C, Eichele G, Fischer A
EMBO Mol Med. (2018)
- 8) KMT2A and KMT2B Mediate Memory Function by Affecting Distinct Genomic Regions
Kerimoglu C, Sakib MS, Jain G, Benito E, Burkhardt S, Capece V, **Kaurani L**, Halder R, Agís-Balboa RC, Stilling R, Urbanke H, Kranz A, Stewart AF, Fischer A
Cell Rep. (2017)
- 9) HDAC1 links early life stress to schizophrenia-like phenotypes
Bahari-Javan S, Varbanov H, Halder R, Benito E, **Kaurani L**, Burkhardt S, Anderson-Schmidt H, Anghelescu I, Budde M, Stilling RM, Costa J, Medina J, Dietrich DE, Figge C, Folkerts H, Gade K, Heilbronner U, Koller M, Konrad C, Nussbeck SY, Scherk H, Spitzer C, Stierl S, Stöckel J, Thiel A, von Hagen M, Zimmermann J, Zitzelsberger A, Schulz S, Schmitt A, Delalle I, Falkai P, Schulze TG, Dityatev A, Sananbenesi F, Fischer A
Proc Natl Acad Sci U S A. (2017)
- 10) TBK1 duplication is found in normal tension and not in high tension glaucoma patients of Indian origin
Kaurani L, Vishal M, Ray J, Sen A, Ray K, Mukhopadhyay A
J Genet. (2016)

- 11) Genetic association and stress mediated down-regulation in trabecular meshwork implicates MPP7 as a novel candidate gene in primary open angle glaucoma
 Vishal M, Sharma A, **Kaurani L**, Alfano G, Mookherjee S, Narta K, Agrawal J, Bhattacharya I, Roychoudhury S, Ray J, Waseem NH, Bhattacharya SS, Basu A, Sen A, Ray K, Mukhopadhyay A
BMC Med Genomics. (2016)
- 12) Evaluation of genetic association of the INK4 locus with primary open angle glaucoma in East Indian population
 Vishal M, Sharma A, **Kaurani L**, Chakraborty S, Ray J, Sen A, Mukhopadhyay A, Ray K
Sci Rep. (2014)
- 13) Gene-rich large deletions are overrepresented in POAG patients of Indian and Caucasian origins
Kaurani L, Vishal M, Kumar D, Sharma A, Mehani B, Sharma C, Chakraborty S, Jha P, Ray J, Sen A, Dash D, Ray K, Mukhopadhyay A
Invest Ophthalmol Vis Sci. (2014)

Peer Review Activities

1. Reviewed research articles for **European Archives of Psychiatry and Clinical Neuroscience**
2. Reviewed research article for **Fortschritte der Neurologie**
3. Reviewed research article for **Cell Journal (Yakhteh)**
4. Reviewed articles for Journal of **Environmental Research and Public Health (IJERPH)**
5. Reviewed research articles for **Journal of Clinical Medicine (JCM)**
6. Reviewed research articles for **Journal of Translational Medicine**

AWARDS AND HONOURS

- Review board member of **HealthCare journal**
- Review board member of **Journal of Environmental Research and Public Health (IJERPH)**
- CSIR-Senior Research Fellowship in graduate program **2011-2014**
- CSIR-Junior Research Fellowship in graduate program **2009-2011**
- Department of Biotechnology Junior Research Fellowship **2008**

STUDENTS SUPERVISED

January 2011- June 2011

Joydeep Mukherjee: MSc student

Current position: Assistant Teacher (Biology) at Delhi Public School Newtown, Kolkata, India

January 2011- June 2011

Soumyaparna Das: MSc student

Current Position: PhD student in Institute for Ophthalmic Research University of Tübingen, Germany

January 2012- March 2012

Kunal Aggarwal: BSc Student

Current position: Ph.D. Student, Department of Computational and Systems Biology, University of Pittsburgh School of Medicine

May 2016- June 2016 & January 2017 – March 2017

Heba Ali: MSc student

Current position: PhD student in Max-Planck Institute for Experimental Medicine, Department of Molecular Neurobiology, Göttingen, Germany

June 2019 (2 weeks)

Daniel Castaneda-Ortiz

Current Position: Medical student, Germany

January 2019; ongoing

Jiayin Zhou: PhD student

Current position: PhD student in Prof. Fischer lab, working with me

TECHNICAL SKILLS

- **Working Platforms:** Linux (Red Hat Enterprises Linux 5), Microsoft Windows, MacOS
- **Programming Language:** R (Statistical Computing)

Computational Biology

- **ChIP-Seq data analysis:** Sequencing reads alignment (Maq, Bowtie), Peak calling (MACS), Motif detection (MEME suite , RSA tools: peak motif)
- **Exome sequencing data analysis:** Sequencing reads alignment (BWA), Variation calling (GATK), Visualization of data (Integrated Genome Viewer)
- **High throughput genotyping analysis:** CNV association analysis (PennCNV), SNP association analysis (Plink)

- **Microarray Analysis:** Data analysis (Affymatrix , Illumina platform), R packages (Limma, lumi)
- **RNA-Seq Analysis:** Sequencing reads alignment (Bowtie, Tophat), Transcript assembly (Cufflinks & Cuffmerge), Differential expression (Cuffdiff, DESeq2)
- **SmallRNA seq Analysis:** smallRNA mapping (MiRDeep2), Differential expression (DESeq2)

Experimental Biology

- Animal cell culture (experience with ReNcell VM human neural progenitor cell line, Retinal Ganglion cell line, HEK293T cell line and Human Trabecular Meshwork cell line)
- Primary neuronal culture from mouse
- Mouse behavior experiments
- High throughput genotyping experiment & Small RNA and Bulk RNA Sequencing
- Single cell RNA sequencing (smart-seq and 10X Genomics)
- Molecular cloning, Bacterial Culture & Gateway cloning experiment
- Sanger Sequencing
- SDS-PAGE, Western blotting, Taqman assay and qPCR

CONFERENCES, WORKSHOP AND SYMPOSIA

- 1) **International Conference on Human Genetics and 39th Annual Meeting of the Indian Society of Human Genetics, India**, 22nd - 25th January, 2014, Ahmedabad Management Association, Ahmedabad, India
- 2) **Asia-ARVO-2013**, 28th - 31st October, 2013, Ashok International Convention & Exhibition Centre, New Delhi, India
- 3) **Genomeet**, 30th December 2011- 01 January 2012, CSIR-IGIB, Delhi, India
- 4) **Fifth Workshop on Genetic Epidemiological Methods for Dissection of Complex Human Traits**, 17th - 24th February, 2010, TCG-ISI Centre for Population Genomics, Kolkata, India
- 5) **International Symposium on Genetic and Epigenetic Basis of Complex Diseases**, 5th - 7th December, 2009, Centre for Cellular and Molecular Biology, Uppal Road, Hyderabad, India

POSTER PRESENTATION

1. **Large Genomic Copy Number Variations in Glaucomatous Neurodegeneration**, Asia-ARVO-2013, 28th - 31st October, 2013, Ashok International Convention & Exhibition Centre, New Delhi, India
2. **Genome-wide Analysis Identifies Common CNVs Associated with Primary Open Angle Glaucoma**, International Conference on Human Genetics and 39th Annual Meeting of the Indian Society of Human Genetics, India, 22nd - 25th January, 2014, Ahmadabad Management Association, Ahmadabad, India
3. **Reduced level of miRNA 99b-5p in Schizophrenia patients exposed to early life stress**, FENS Regional meeting, 11th – 13th July, 2019, Belgrade, Serbia

PERSONAL INFORMATION

Date of Birth: 18 March 1983
Gender: Male
Marital Status: Married
Nationality: Indian
Current Place: Germany (Permanent residence (Niederlassungserlaubnis))
Languages: Hindi, English, German (A1 level)

REFERENCES

Prof. Dr. Andre Fischer, Professor, Dep. for Psychiatry and Psychotherapy, University Medical Center, German Center for Neurodegenerative Diseases (DZNE) Göttingen, Germany
E-mail: A.Fischer@eni-g.de

Dr. Jonas Neher, Group leader, German Center for Neurodegenerative Diseases (DZNE) Tübingen, Germany
E-mail: jonas.neher@dzne.de

Dr. Urs Heilbronner, Scientist, Institute of Psychiatric Phenomics and Genomics (IPPG), University Hospital, LMU Munich
Email: urs.heilbronner@med.uni-muenchen.de

Dr. Farahnaz Sananbenesi, Research co-ordinator, German Center for Neurodegenerative Diseases (DZNE) Göttingen, Germany
E-mail: fsananb@gwdg.de

Declaration

I hereby declare that all the above information supplied is true in all aspects.

Date: 8th August 2020
Place: Göttingen

Lalit Kaurani