# SANDEEP KUMAR SINGH, PHD

As a genetic epidemiologist and data scientist, I study genetic variants underlying complex diseases, focusing on psychiatric genomics, cancer genetics, and immune disorders. My expertise in GWAS, statistical genetics, and bioinformatics helps uncover gene-environment interactions and modifiers like age, sex, and ancestry. By integrating machine learning and functional annotation, I aim to advance precision medicine and translate genetic insights into clinical applications.

## ☐ WORK EXPERIENCE

Present | 2024

#### Freelancer

Lucknow

Lucknow, UP, India

- 1 2024 (Sep)
- · Training working professionals in data sciene and bioinformatics field
- · Creating pipe lines to perform post-GWAS approaches

2024 (July) | 2023

(Aug)

#### Postdoctoral Fellow

**Aarhus University** 

• Aarhus, Denmark

- Conducted large
  - Conducted large-scale cross-disorder GWAS using iPSYCH samples to investigate shared genetic architecture between ASD and depression.
  - Developed and optimized bioinformatics pipelines for GWAS, functional annotation, heritability estimation, genetic correlation and polygenic risk score analyses
  - · Mentored medical students in medical genetics through study cafe sessions.

2023 (July) | 2021 (Aug)

#### Associate Product Manager (Faculty)

OdinSchool

♥ Hyderabad, TL, India

- Trained professionals in data science, machine learning, and bioinformatics, teaching Python, R, statistics, EDA, Plotly DASH, Git, and GitHub.
- Developed curriculum, projects, and assessments, integrating real-world datasets.
- Conducted live coding sessions and hands-on workshops, mentoring students in statistical and computational techniques.

2021 (July) | 2018 (June)

#### **Research Scientist**

GenTox Research and Development

- Lucknow, UP, India
- Applied computational approaches to assess the functional relevance of diseaseassociated genetic markers in cervical cancer and rheumatoid arthritis.
- Supervised medical research theses, focusing on statistical analysis in clinical studies
- Taught Bioinformatics, Immunology, Genetics, Statistics, and R, integrating research-driven insights into education.



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#### **CONTACT**

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### LANGUAGE SKILLS

SKILLS	
R	
RMarkdown	
R Shiny	
Python	
UNIX	
Git	
Plotly DASH	
AWK	

2018 Postdoctoral Researcher (April) Oclumbus, OH, USA The Ohio State University 2017 · Conducted a survival GWAS on leukemia patients post blood and marrow (May) transplantation, identifying genetic variants influencing treatment outcomes. · Led multiple projects, including MHC region GWAS, analysis of soluble ST2 levels in acute graft-versus-host disease. · Established a protocol for X chromosome to conduct survival GWAS 2016 Postdoctoral Associate (Dec) Miami, FL, USA Florida International University 2015 · Conducted functional genomics analysis of HLA region polymorphisms (May) associated with disease susceptibility as a volunteer on OPT. · Performed both wet and dry lab research, including cell culture, RNA extraction, and gene expression analysis. • Functionally annotated ~283,000 polymorphisms in the HLA region using R, ANNOVAR, and HaploReg. 2014 **Graduate Assistant** (July) Miami, FL, USA Florida International University 2010 · Led a PhD research project investigating gender- and age-specific risk factors for (Aug) childhood acute lymphoblastic leukemia (ALL) using a case-only study design. · Conducted genetic association studies on lung and breast cancer, focusing on the HLA region through a candidate gene approach. **EDUCATION** PhD, Public Health 2015 Miami, FL, USA Florida International University 2010 · Dissertation: A Case-only Genome-wide Association Study of Gender- and Age-Specific Risk Markers for Childhood Leukemia (View Thesis) 2009 MPH, Powling Green, KY, USA Western Kentucky University 2007 MSc, Biotechnology 2005 Sam Higginbottom University of Agriculture, Technology and Science 2003 Allahabad, UP, India

Lucknow Christian College, Affiliated by University of Lucknow

BSc, Biology

2003

2000

Genomic Data Analysis: GWAS, RNA-Seq, ChIPseq

Tools and Software:
PLINK, RICOPILI, LDSC,
GCTA, ASSET, LDAK,
MiXer, MAGMA, FUMA,
bcftools, samtools,
bedtools, GATK, VEP,
ANNOVAR, IGV, Enrichr,
Github, etc.

Bioinformatics/Biostatistics

Hypothesis Testing, Correlation, Linear and Logistic Regression, Survival Analysis, Cluster Analysis, Multivariate Analysis, Linear Mixed Models, Exploratory Data Analysis, Machine Learning, Deep Learning, GenAl (Basics), Epidemiology

Lucknow, UP, India

### **PUBLICATIONS**

2012

Singh SK. The analysis of a subset of HLA region associations in type 1 diabetes and multiple sclerosis suggests the involvement mechanisms other than antigen presentation in the pathogenesis

Informatics in Medicine Unlocked (LINK)

Dixit A, Singh AV, Singh CV, Yadav R, **Singh SK**. Knowledge and Attitude towards COVID-19 among Healthcare Workers of A Tertiary Care Hospital in India International Journal of Pharmaceuticals Sciences Review and Research (LINK)

Singh CV, Gautam AK, Dixit A, Singh AV, Singh SK. A randomized prospective study to compare the efficacy and safety of budesonide plus formoterol and tiotropium plus formoterol in patients having mild to moderate chronic obstructive pulmonary disease
 International Journal of Basic & Clinical Pharmacology (LINK)

 Singh SK and Singh S. Breast Cancer: Current Knowledge and Future Perspective (Short Communication)
 Acta Scientific Womens Health (LINK)

Singh SK and Dorak MT. Cancer Immunoprevention and Public Health
Front Public Health (LINK)

Singh SK, Lupo PJ, Scheurer ME, et.al. A childhood acute lymphoblastic leukemia genome-wide association study identifies novel sex-specific risk variants

Medicine (Baltimore) (LINK)

 Singh SK. Re: Association of polymorphism in cytochrome P450 2C9 with susceptibility to head and neck cancer and treatment outcome; Pragmatic use of Hardy-Weinberg equilibrium and statistical interaction analysis
 Applied & Translational Genomics (LINK)

 Kennedy AE, Singh SK, Dorak MT. Re: Genome-wide association study of classical Hodgkin lymphoma and Epstein - Barr virus status-defined subgroups (Scientific correspondence)
 Journal of National Cancer Institue (LINK)

• Singh SK, Singh Schidanand, Singh Atul. Post GWAS approaches: Making sense of statistical associations.

Working paper

Github Notes/projects

Genomics

**GWAS** protocol

Statistics

Mendelian Randomization

T1D-MS project



I am passionate about education and believe that no topic is too complex when taught with empathy and innovative approaches. An effective teacher adapts to diverse learning styles, making even the most challenging concepts accessible and engaging.

July, 2023 **Associate Product Manager (Faculty)** • Hyderabad, TL, India OdinSchool Aug, · Training working professionals in data sciene field 2021 · Teaching Python, R, Statisitcs, EDA, SQL, Machine learning, Plotly DASH and Git and GitHub · Preparing products such as assignments, blogs, projects.exams and interview questions July, 2021 **Research Scientist** Lucknow, UP, India GenTox Research and Development · Guided several thesis specifically statistical analysis in medical research 2018 · Supervised uundergraduate and graduate students in their projects · Taught Bioinformatics, Genetics, Immunology, Molecular Biology, PCR PRESENTATIONS 2019 Singh SK, Dorak MT. Longevity associated HLA class II region variants map to the B-cell-specific Super-enhancer XL9 at the 33rd European Immunogenetic and Histocompatibility Conference. Lisbon, Portugal 2019 Singh SK, Singh S, Kumar P. Functional annotation of Rheumatoid Arthritis associated loci identified by genome-wide association studies at the First BiOmics Conference. • Neemrana, RJ, India **Singh SK**, Dapprich J, Dorak MT, Functional annotation of the cluster of 2018 schizophrenia risk markers in the extended HLA class I region at the 32nd European Immunogenetic and Histocompatibility Conference. • Venice, Italy Singh SK, McCauley JL, Dorak MT. Expression QTLs with opposing effects on 2018 HLA-DR and -DQ genes are associated with autoimmune disorders: Evidence for mixed isotype heterodimer formation at the 32nd European Immunogenetic and Histocompatibility Conference. ♥ Venice, Italy Ozbek U, **Singh SK**, Kennedy AE, et al. Exploration of very long-range linkage 2018 disequilibrium within the extended HLA region at the 32nd European

Immunogenetic and Histocompatibility Conference.

♥ Venice, Italy

Sucheston-Campbell LE, **Singh SK**, Karaesman E, et al. Donor SNPs in IL1RL1, 2018 Strongly Correlated with Serum sST2 Concentration, Significantly Associate with Risk of Acute GvHD: Implications for Donor Selection at the BMT Tandem meeting. Salt Lake City, Utah, USA 2018 Rizvi A, Karaesman E, Preus L, McCarthy PL, Pasquini M, Singh S, Singh SK, et al. Novel genetic associations with day +100 transplant related mortality after HLA-matched unrelated donor blood and marrow transplantation (DISCOVeRY-BMT) at the BMT Tandem meeting. Salt Lake City, Utah, USA 2018 Karaesman E, Rizvi A, Preus L, McCarthy PL, Pasquini M, Singh S, Singh SK, et al. Genome-Wide significant donor genetic associations with death due to disease in AML and MDS patients in the first 1 year after BMT are not modified by Conditioning intensity or TBI at the BMT Tandem meeting. Salt Lake City, Utah, USA 2017 Singh S, Singh SK, Rizvi A, Karaesmen E, et al. Genetic variation in the MHC region increases risk of death to graft versus host disease in leukemia patients treated with an HLA-matched unrelated donor transplant at the 2nd Annual Divison of Pharmaceutics Scientific Retreat 2017. Oclumbus, OH, USA Singh SK, Kennedy AE, Dorak MT. Genetic Evidence for Cancer Immune 2017 Surveillance at the 31st European Immunogenetics and Histocompatibility Conference. • Heidelberg/Mannheim, Germany Ozbek U, Kennedy AE, Singh SK, et al. SNPs correlating with Functional HLA 2017 region Epitopes and Supertypes Offer Insight into GWAS Associations at the 31st European Immunogenetics and Histocompatibility Conference. • Heidelberg/Mannheim, Germany Singh SK, Lupo PJ, Scheurer ME, et al. Making Sense of Genetic Associations with 2016 Childhood Leukaemia Risk at the Childhood Cancer Conference 2016. ♠ London, UK 2016 Singh SK, Chentoufi AA, McCauley JL, Dorak MT. Insights into type 1 diabetes and multiple sclerosis pathogenesis from common genetic associations at the 30th European Immunogenetics and Histocompatibility Conference. • Kos Island, Greece 2016 Singh SK, Huang Y, Caobi A, Barbieri MA, Dorak MT. Functional annotations of common disease markers in immune regulatory genes at the 30th European Immunogenetics and Histocompatibility Conference. • Kos Island, Greece

2015	Kennedy AE, Mustafi S, <b>Singh SK</b> , et al. A catalog of HLA region SNPs with functional annotations, disease associations and correlations with HLA types at the 41st Annual Meeting of the American Society for Histocompatibility and Immunogenetics Society.
	♥ Savannah, GA, USA
2015	Singh SK, Lupo PJ, Scheurer ME, et al. Genome-wide association study of childhood acute lymphoblastic leukaemia risk with gender-specificity at the European Society for Human Genetics.  ◆ Glasgow, Scotland, United Kingdom
2015	Stasik I, Kennedy AE, <b>Singh SK</b> , Dorak MT. HLA region Contains Multiple Lung Cancer Susceptibility Genes at the European Society for Human Genetics.  • Glasgow, Scotland, United Kingdom
2015	Singh SK, Lupo PJ, Scheurer ME, et al. HLA region contributes to the gender differential in childhood leukaemia risk at the 29th European Immunogenetics and Histocompatibility Conference.
2015	Kekik C, <b>Singh SK</b> , Yavuz C, Oguz FS, Dorak MT. HLA and childhood acute myeloid leukemia at the 29th European Immunogenetics and Histocompatibility Conference.
	▼ derieva, switzeriana
2014	<b>Singh SK</b> and Dorak MT. Alternative Explanations for HLA and Disease Associations at the 28th European Immunogenetics and Histocompatibility Conference.
	Stockholm, Sweden
2014	Singh SK, Ben Taleb Z, Kennedy AE, Dorak MT. X-Linked Immune Regulatory Genes Polymorphisms, Childhood Acute Lymphoblastic Leukemia Risk and Male Disadvantage at the 16th Annual Biomedical & Comparative Immunology Symposium.
	• Miami, FL, USA
2014	Oguz FS, Kekik C, <b>Singh SK</b> , et al. HLA and age-of-onset in childhood acute lymphoblastic leukaemia at the 28th European Immunogenetics and Histocompatibility Conference.
	Stockholm, Sweden
2013	Kennedy AE, <b>Singh SK</b> , Villalba K, Dorak MT. Analysis of HLA region polymorphisms associated with cancer at the 39th Annual Meeting of the American Society for Histocompatibility and Immunogenetics.  • Chicago, IL, USA





