Sandra Aravind Areekal

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About me

As a health researcher, I draw on my expertise in biology, statistics, mathematics and data science to explore questions in human physiology. I am near the completion of my PhD from the Department of Biology, IISER Pune, India, under the supervision of Dr Pranay Goel. For my thesis entitled "Modelling growth processes in Indian children and adolescents", I studied two important aspects of growth, namely metabolism and height growth, using data from multiple studies in school children from Pune and children diagnosed with Type-1 Diabetes.

I am interested in pursuing interdisciplinary projects related to but not limited to **healthcare data analysis, observational studies, longitudinal data analysis, causal inference, mixed-effects modelling, precision medicine, electronic health records analysis, maternal and child health, and Type-1 diabetes**. I am proficient in using R language and environment for these purposes and willing to learn other techniques.

Publications

- Sandra A. Areekal, Pranay Goel, Anuradha Khadilkar, Vaman Khadilkar and Tim J. Cole (2023). Longitudinal height growth curves in children and adolescents with Type-1 diabetes compared to controls in Pune, India. Pediatric Diabetes, vol. 2023, Article ID 8813031, 8 pages, 2023. https://doi.org/10.1155/2023/8813031
- Sandra A. Areekal, Pranay Goel, Anuradha Khadilkar, Vaman Khadilkar and Tim J. Cole (2022). Assessment of height growth in Indian children using growth centiles and growth curves, Annals of Human Biology, DOI: 10.1080/03014460.2022.2107238
- Sandra A. Areekal, Anuradha Khadilkar, Veena Ekbote, Neha Kajale, Arun S. Kinare, and

Pranay Goel (2023). Two novel models evaluating the determinants of resting metabolic rate in Indian children. Human Biology and Public Health, 3. https://doi.org/10.52905/hbph2022.3.55

Softwares developed

growHT is a web app we developed using R shiny to monitor height growth in Indian children. This is a prototype of a futuristic cloud based growth monitoring app for Indian children.

Link: https://digimed.acads.iiserpune.ac.in/growth-charts

Education

Aug 2017 to present	Graduate Student, Biological Sciences Indian Institute of Science Education and Research (IISER) Pune, India Supervisor : Dr. Pranay Goel Research interests: Mathematical modelling in physiology, biomedical data analysis, medical statistics, public health, child health Thesis Title: Modelling growth processes in Indian children and adolescents
2012-2017	Integrated BS-MS, Majored in Biological Sciences and Minored in Mathematics Indian Institute of Science Education and Research, Thiruvananthapuram, India Masters Dissertation Advisor: Dr. Nishant K.T Masters Dissertation: Developing a Graphical User Interface for the analysis of meiotic recombination patterns from whole-genome sequence data using R shiny.

Scholarships

June 2022	Newton Bhabha PhD Placement Fellowship 2019-2020 (extended to 2022) Visiting research fellow at University College London GOS Institute of Child Health Supervisor: Prof. Tim J. Cole, Professor of Medical Statistics
Dec 2017	Council of Scientific and Industrial Research-Junior Research Fellowship
Feb 2017	Graduate Aptitude Test in Engineering (Life Science) Fellowship
2012-2017	Department of Science and Technology- INSPIRE SHE Fellowship

Experiences

Dec 16-18 2022	Volunteer: Conference on Nonlinear Systems and Dynamics, organised by IISER Pune
June 2022- Aug 2022	Visiting Research Fellow (Newton-Bhabha PhD Placement Fellow) University College London GOS Institute of Child Health Supervisor : Prof. Tim J Cole Project: Longitudinal analysis of height growth in children diagnosed with Type-1 diabetic mellitus in comparison to a control group from Pune India
JULY 24-26 2019	Volunteer: Workshop on Introduction to Machine Learning, Applications in Biology for Undergraduate Teachers organised by IISER Pune
JAN - MAR 2019	Teaching Assistant: Data science Indian Institute of Science Education and Research Pune for Undergraduates and PhD students
AUG - NOV 2018	Teaching Assistant: Biostatistics Indian Institute of Science Education and Research Pune for Undergraduates and PhD students

Programming Skills

I am highly proficient in the **R** language and have extensive experience working with major R packages for data science such as **Tidyverse**. I am also familiar with specific **R** packages for general regression (GAMLSS) and non-linear mixed-effects modeling analysis (SITAR). I have a strong background in reproducible research and report writing, utilizing **Rmarkdown** documents. Additionally, I have created a personal website using **R Blogdown**, hosted on Netlify, and developed a **R Shiny** web-app to monitor height growth in Indian children (growHT hosted on Shiny servers).

I am experienced in **cluster programming** and batch scripting, with a solid foundation in **MATLAB**. I am also familiar with basic Python scripts but have primarily used R for my work. If needed, I am confident in my ability to quickly learn new programs. I have recently begun learning SQL as well. Other tools I am familiar with include LATEX and Microsoft Office.

Referees

PhD supervisor: Dr. Pranay Goel (pranay.goel@gmail.com)

Associate Professor, Department of Biology

Indian Institute Of Science Education And Research Pune, India

Dr. Anuradha Khadilkar (anuradhavkhadilkar@gmail.com)

Deputy Director

Hirabai Cowasji Jehangir Medical Research Institute Pune, India

Prof. Tim J Cole (tim.cole@ucl.ac.uk)

Professor, Department of Population, Policy Practice

University College London GOS Institute of Child Health, UK