



# Santosh Bhosale

ASSOCIATE BIOMEDICAL SCIENTIST

Cedars-Sinai Precision Biomarker Laboratories, Los Angeles, CA, USA

✉ santosh.bhosale@cshs.org | 🌐 santosbdbhosale.github.io | 📧 santosbdbhosale | 🌐 santosbdbhosale

*As a scientist, I apply my expertise in proteomics to develop and validate biomarkers for precision medicine. Collaborations with clinicians, mass spectrometry experts and bioinformaticians.*

## Research Proficiency

### Wet lab

CELL CULTURE WORK, ANIMAL HANDLING AND CLINICAL SAMPLES, CELL & TISSUE SAMPLE LYSIS, SDS-PAGE ELECTROPHORESIS (1D, 2D) AND WESTERN BLOTTING

### High throughput proteomics

TRYPsin DIGESTION, IMMUNODEPLETION OF CSF, SERUM &/OR PLASMA SAMPLES, LABEL FREE QUANTIFICATION (DIA AND DDA ACQUISITION), ISOBARIC LABELING, OFF-LINE HIGH PH FRACTIONATION, PTMS ENRICHMENT, IMMUNOPRECIPITATION EXPERIMENTS AND TARGETED PROTEOMICS MEASUREMENTS

### Mass spectrometry

OPERATION AND TROUBLESHOOTING OF A RANGE OF INSTRUMENTS LTQ ORBITRAP VELOS PRO, Q EXACTIVE SERIES, ORBITRAP EXPLORIS 480 MASS SPECTROMETER, TSQ VANTAGE (ALL FROM THERMO SCIENTIFIC), TIMS TOF PRO (BRUKER), MALDI-TOF-MS (APPLIED BIOSYSTEM)

### Mass spectrometry informatics tools

XCALIBUR, PROTEOME DISCOVERER (THERMO SCIENTIFIC), BRUKER TIMS CONTROL AND COMPASS HYSTAR, MAXQUANT AND PERSEUS, PROGENESIS, SKYLINE, INFERNORDN, FRAGPIPE, SPECTRONAUT (BIOGNOSYS) AND DIA-NN

### Chromatography instrumentation

EASY NLC SERIES (THERMO SCIENTIFIC), EVOSEP ONE

### Automation platform

SP100 AUTOMATION INSTRUMENT (HAMILTON ROBOT), BIOMEK I-SERIES AUTOMATED WORKSTATION

### Language and softwares

R, PYTHON, MACHINE LEARNING, JUPYTER ENVIRONMENT, OMICS DATA, CYTOSCAPE AND INGENUITY PATHWAY ANALYSIS

## Employment

### Associate Biomedical Scientist

CEDARS-SINAI PRECISION BIOMARKER LABORATORIES

Los Angeles - USA

February 2023 → Present

- Applying mass spectrometry based proteomics technology to study the complexity of proteome
- Client facing role

### Postdoctoral Researcher

PROTEIN RESEARCH GROUP, DEPARTMENT OF BIOCHEMISTRY AND MOLECULAR BIOLOGY, UNIVERSITY OF SOUTHERN DENMARK

Odense - Denmark

January 2020 → December 2022

- Development of a post-translational modification (Cysteine, N-linked glycosylated and phospho modified) specific biomarkers discovery platform for the diagnosis of disease
- Analysis of PTMomics data to identify candidate plasma biomarkers to stratify ovarian cancer patients
- Supervise and work with technician and PhD students
- Work presentation internally and to the collaborators and, report writing

### Postdoctoral Researcher

UNIVERSITY OF TURKU - TURKU BIOSCIENCE

Turku - Finland

November 2018 → December 2019

- Serum proteomics measurements to compare the effects of nutrition supplementation in infancy and, child and mother proteome correlation
- Analyzed temporal serum proteomes of celiac disease (CD) developing children
- Conducted the interactomics measurements and data analysis for several transcription factors of T cells
- Designed and presented practical courses on proteomics data analysis

### Project Assistant

NATIONAL CHEMICAL LABORATORY

Pune - India

November 2009 → December 2011

- Proteomics laboratory work including protein extraction, digestion and cleanup, SDS-PAGE, MS analysis of glycosylated proteins, oligonucleotides and small molecules

## Lecturer

JSPMS JSCOPR AFFILIATED TO UNIVERSITY OF PUNE

Pune - India

July 2008 -> November 2009

- Taught theory and practicals for pharmaceutical biochemistry and pharmaceutical analysis to the bachelor of pharmacy students
- Supervised undergraduate pharmacy students
- Graded course assignments and examinations

## Education

### PhD

UNIVERSITY OF TURKU (TURKU BIOSCIENCE)

Turku - Finland

2012 -> 2018

- Developed quantitative proteomics methodology for the analysis of human serum samples, including immunoaffinity depletion, protein digestion, isobaric labelling, label free quantification, offline-SCX fractionation, LC-MS/MS and data analysis
- Developed targeted SRM-LC-MS methods to monitor multiple protein targets
- Cellular proteomic analyses of Th17 and iTreg cells from mouse and human
- Teaching experience in proteomics data analysis (presented at a national meeting, 2017)

### Master of Pharmacy (Pharmaceutical Chemistry)

RAJASTHAN UNIVERSITY OF HEALTH SCIENCES (LACHOO MEMORIAL COLLEGE OF SCIENCE & TECHNOLOGY)

Jodhpur - India

2005 -> 2008

### Bachelor of Pharmacy

UNIVERSITY OF PUNE (SITABAI THITE COLLEGE OF PHARMACY)

Shirur - Pune

2001 -> 2005

## Awards

### Doctoral dissertation award

AWARDED WITH EUR 5000 FROM ORION PHARMA

Turku - Finland

2018

### Doctoral dissertation award

AWARDED WITH EUR 5000 FROM THE MAUD KUUSTILA MEMORIAL FOUNDATION

Turku - Finland

2018

### Travel grant

AWARDED WITH EUR 500 TO ATTEND COMPUTATIONAL PROTEOMICS COURSE AT ETH ZURICH FROM TURKU CENTRE FOR SYSTEM BIOLOGY

Turku - Finland

2015

### Research grant

AWARDED WITH EUR 3500 FROM HOSPITAL DISTRICT OF SOUTHWEST FINLAND & TURKU CITY

Turku - Finland

2014

### Dr. Ashok B. Vaidya prize

SECURED FIRST POSITION IN AN ORAL SESSION (6 MINUTE COMPETITION) ORGANIZED BY SOUTH ASIAN CHAPTER OF AMERICAN COLLEGE OF CLINICAL PHARMACOLOGY

Mumbai - India

2009

## Publications

### HIC1 interacts with FOXP3 multi protein complex: novel pleiotropic mechanisms to regulate human regulatory T cell differentiation and function

Immunol Lett

ANDRABI SBA, BATKULWAR K, BHOSALE SD, MOULDER R, KHAN MH, BUCHACHER T, KHAN MM, ARNKIL I, RASOOL O, MARSON A, KALIM UU, LAHESMAA R

2023

### Serum APOC1 levels are decreased in young autoantibody positive children who rapidly progress to type 1 diabetes

Sci Rep

HIRVONEN MK, LIETZÉN N, MOULDER R, BHOSALE SD, KOSKENNIEMI J, VÄHÄ-MÄKILÄ M, NURMIO M, OREŠIČ M, ILONEN J, TOPPARI J, VEIJOLA R, HYÖTY H, LÄHDESMÄKI H, KNIP M, CHENG L, LAHESMAA R

2023

### Cardiovascular-related proteomic changes in ECFCs exposed to the serum of COVID-19 patients

Int J Biol Sci

BELTRÁN-CAMACHO L, BHOSALE SD, SÁNCHEZ-MORILLO D, SÁNCHEZ-GOMAR I, ROJAS-TORRES M, ESLAVA-ALCÓN S, MARTÍNEZ-TORIJA M, RUIZ DE INFANTE MA, NIETO-MARTÍN MD, RODRÍGUEZ-IGLESIAS MA, MORENO JA, BERROCOSO E, LARSEN MR, MORENO-LUNA R, CARMEN DURÁN-RUIZ M

2023

### A systematic comparison of FOSL1, FOSL2 and BATF-mediated transcriptional regulation during early human Th17 differentiation

Nucleic Acids Res

SHETTY A, TRIPATHI SK, JUNTILA S, BUCHACHER T, BIRADAR R, BHOSALE SD, ENVALL T, LAIHO A, MOULDER R, RASOOL O, GALANDE S, ELO LL AND LAHESMAA R

2022

## Phosphoproteomics: Methods and Challenges

KANG T, BHOSALE S, EDWARDS A, LARSEN MR

*Reference Module in Life Sciences*

2022

## HDL proteome remodeling associates with COVID-19 severity

SOUZA JUNIOR DR, SILVA ARM, ROSA-FERNANDES L, REIS LR, ALEXANDRIA G, BHOSALE SD, GHILARDI FR, DALÇÓQUIO TF, BERTOLIN AJ, NICOLAU JC, MARINHO CRF, WRENGER C, LARSEN MR, SICILIANO RF, DI MASCIO P, PALMISANO G, RONSEIN GE

*J Clin Lipidol*

2021

## Interactome Networks of FOSL1 and FOSL2 in Human Th17 Cells

SHETTY A, BHOSALE SD, TRIPATHI SK, BUCHACHER T, BIRADAR R, RASOOL O, MOULDER R, GALANDE S, LAHESMAA R

*ACS Omega*

2021

## CIP2A Constrains Th17 Differentiation by Modulating STAT3 Signaling

KHAN MM, ULLAH U, KHAN MH, KONG L, MOULDER R, VÄLIKANGAS T, BHOSALE SD, KOMSI E, RASOOL O, CHEN Z, ELO LL, WESTERMARCK J, LAHESMAA R

*iScience*

2020

## Protein interactome of the Cancerous Inhibitor of protein phosphatase 2A (CIP2A) in Th17 cells

KHAN MM, VÄLIKANGAS T, KHAN MH, MOULDER R, ULLAH U, BHOSALE SD, KOMSI E, BUTT U, QIAO X, WESTERMARCK J, ELO LL & LAHESMAA R

*Current Research in Immunology*

2020

## Quantitative Proteomics Reveals the Dynamic Protein Landscape during Initiation of Human Th17 Cell Polarization

TRIPATHI SK, VÄLIKANGAS T, SHETTY A, KHAN MM, MOULDER R, BHOSALE SD, KOMSI E, SALO V, DE ALBUQUERQUE RS, RASOOL O, GALANDE S, ELO LL, LAHESMAA R

*iScience*

2019

## Serum Proteomic Profiling to Identify Biomarkers of Premature Carotid Atherosclerosis

BHOSALE SD, MOULDER R, VENÄLÄINEN MS, KOSKINEN JS, PITKÄNEN N, JUONALA M, KÄHÖNEN M, LEHTIMÄKI T, VIKARI J, ELO LL, GOODLETT DR, LAHESMAA R, RAITAKARI OT

*Sci Rep*

2018

## Quantitative proteomic characterization and comparison of T helper 17 and induced regulatory T cells

MOHAMMAD I, NOUSIAINEN K, BHOSALE SD, STARSKAIA I, MOULDER R, ROKKA A, CHENG F, MOHANASUNDARAM P, ERIKSSON JE, GOODLETT DR, LÄHDESMÄKI H, CHEN Z

*PLoS Biol*

2018

## Analysis of the plasma proteome using iTRAQ and TMT-based Isobaric labeling

MOULDER R, BHOSALE SD, GOODLETT DR, LAHESMAA R

*Mass Spectrom Rev*

2018

## Mass Spectrometry-Based Serum Proteomics for Biomarker Discovery and Validation

BHOSALE SD, MOULDER R, KOUVONEN P, LAHESMAA R, GOODLETT DR

*Methods Mol Biol*

2017

## The progress and potential of proteomic biomarkers for type 1 diabetes in children

MOULDER R, BHOSALE SD, LAHESMAA R, GOODLETT DR

*Expert Rev Proteomics*

2017

## Serum proteomes distinguish children developing type 1 diabetes in a cohort with HLA-conferred susceptibility

MOULDER R, BHOSALE SD, ERKKILÄ T, LAAJALA E, SALMI J, NGUYEN EV, KALLIONPÄÄ H, MYKKÄNEN J, VÄHÄ-MÄKILÄ M, HYÖTY H, VEIJOLA R, ILONEN J, SIMELL T, TOPPARI J, KNIP M, GOODLETT DR, LÄHDESMÄKI H, SIMELL O, LAHESMAA R

*Diabetes*

2015

## Proteome wide reduction in AGE modification in streptozotocin induced diabetic mice by hydralazine mediated transglycation

KESAVAN SK, BHAT S, GOLEGAONKAR SB, JAGADEESHAPRASAD MG, DESHMUKH AB, PATIL HS, BHOSALE SD, SHAIKH ML, THULASIRAM HV, BOPANA R, KULKARNI MJ

*Sci Rep*

2013

## Zoom-In A targeted database search for identification of glycation modifications analyzed by untargeted tandem mass spectrometry

BHONSLE HS, KORWAR AM, KESAVAN SK, BHOSALE SD, BANSODE SB, KULKARNI MJ

*Eur J Mass Spectrom (Chichester)*

2012

## Comparative and chemical proteomic approaches reveal gatifloxacin deregulates enzymes involved in glucose metabolism

SURESH KK, BHOSALE SD, THULASIRAM HV, KULKARNI MJ

*J Toxicol Sci*

2011

## Patent Applications

### Means and methods for determining risk of type-1 diabetes by serum protein biomarkers

MOULDER R, BHOSALE SD, GOODLETT D, LÄHDESMÄKI H, SIMELL S, LAHESMAA R

*Europe & USA*

## References

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**Riitta Lahesmaa, M.D., Ph. D.**

PROFESSOR, DIRECTOR, TURKU BIOSCIENCE, P.O. BOX 123 BIOCITY, FIN-20520, TURKU, FINLAND

*rilahes@utu.fi*

**Robert Moulder, Ph.D.**

SENIOR SCIENTIST, TURKU BIOSCIENCE, P.O. BOX 123 BIOCITY, FIN-20520, TURKU, FINLAND

*robmou@utu.fi*

**Mahesh J. Kulkarni, Ph.D.**

SENIOR PRINCIPAL SCIENTIST, BIOCHEMICAL SCIENCES DIVISION, CSIR-NATIONAL CHEMICAL LABORATORY, PUNE, INDIA

*mj.kulkarni@ncl.res.in*

**David R. Goodlett, Ph.D.**

PROFESSOR OF BIOCHEMISTRY & MICROBIOLOGY AND DIRECTOR GENOME BC PROTEOME CENTRE AT UNIVERSITY OF VICTORIA,  
VICTORIA, BRITISH COLUMBIA, CANADA

*goodlett@uvic.ca*

**Martin R. Larsen, Ph.D.**

PROFESSOR, DEPARTMENT OF BIOCHEMISTRY AND MOLECULAR BIOLOGY, CAMPUSVEJ 55, ODENSE M 5230, DENMARK

*mrl@bmb.sdu.dk*

**Ole N. Jensen, Ph.D.**

PROFESSOR, DEPARTMENT OF BIOCHEMISTRY AND MOLECULAR BIOLOGY, CAMPUSVEJ 55, ODENSE M 5230, DENMARK

*jenseno@bmb.sdu.dk*