GURINDER BIR SINGH, PhD

Basic & Translational Cardiovascular Research
Department of Cardiology
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EDUCATION AND TRAINING

Harvard Medical School — Boston, MA,USA
Post-Doctoral fellow — October, 2019-Present
Department of Cardiology
Boston Children's Hospital

University of Houston — Houston, TX, USA
Post-Doctoral fellow — July, 2017
Dept. of Pharmacological and Pharmaceutical Sciences

Post Graduate Institute of Medical Education and Research — Chandigarh, India
PhD — October, 2015
Department of Experimental Medicine & Biotechnology
Advisor: Dr Madhu Khullar
Thesis Title: Role and epigenetic regulation of mitogen activated protein kinase and mitogen activated protein kinase phosphatases in Diabetic Cardiomyopathy

Panjab University — Chandigarh, India
M.Sc (Hons. School), Biotechnology — June, 2009
Department of Biotechnology

Panjab University — Chandigarh, India
B.Sc (Hons. School), Biotechnology — June, 2007
Department of Biotechnology

WORK EXPERIENCE

Harvard Medical School — Boston, MA,USA
Post-Doctoral fellow — October, 2019-Present
Department of Cardiology
Boston Children's Hospital

Post-Doctoral fellow — University of Houston, USA
Dept. of Pharmacological & Pharmaceutical Sciences — July, 2017- September, 2019

Senior Demonstrator — PGIMER, Chandigarh, India
Central Sophisticated Instrument Cell — 1st July, 2016- 30th June, 2017

Assistant Professor — School of Biosciences
Molecular Biology & Genetic Engineering — Lovely Professional University
Punjab, India
1st January- 30th June, 2016

Senior Research Fellow — PGIMER, Chandigarh, India
1st April- 31st December, 2015

Senior Research fellow — PGIMER, Chandigarh, India
1st January- 28th February, 2015

AWARDS AND HONORS

Junior Scientist Award — San Diego, CA
Association of Scientists of Indian Origin in America — USA, 2018

Science and Engineering Research Board — New Delhi, India, 2017
National Post-Doctoral fellowship

George Jackowski award **(Best Oral Presentation),** International Conference on Recent Advances in Cardiovascular Sciences (RACS) — Amity, New Delhi India, 2015

Best Poster Award, International Conference on Recent Advances in Cardiovascular Sciences (RACS) — DIPSAR, New Delhi India, 2014

Travel Award, for International society for heart research, XXI World Congress, USA — Dept. of Biotechnology India, 2013

Department of Biotechnology-Senior research fellowship — New Delhi, India, 2012

Council of Scientific and Industrial Research (CSIR) Junior Research Fellowship — New Delhi, India, 2010

Department of Biotechnology-Junior research fellowship — New Delhi, India, 2009

National Eligibility Test (NET) for Lectureship — New Delhi, India, 2009

Secured 3rd Rank in nationwide Ph.D. Entrance test — PGIMER, Chandigarh, India, 2010

PUBLICATIONS

- **Singh GB**, Kshirasagar N, Patibandla S, Puchchakayala G, Koka S, Boini KM. Nicotine instigates podocyte injury via NLRP3 inflammasomes activation. Aging (Albany NY). 2019 Dec 13;11(24):12810-12821. ISSN: 1945-4589.

- **Singh GB**, Zhang Y, Boini KM and Koka S. High Mobility Group Box 1 Mediates TMAO-Induced Endothelial Dysfunction. Int J Mol Sci. 2019 Jul 22;20(14). ISSN: 1422-0067.

- **Singh GB,** Kshirasagar N, Patibandla S, Hussain T, Li X, PL Li, Koka S and Boini KM. NLRP3 Inflammasome as a Novel Target to Abrogate Nicotine-Induced Podocyte Injury. The FASEB J. 33, 749.5-749.5. 2019.

- **Singh GB,** Patibandla S, Y Zhang, S Koka and KM Boini. Contribution of Membrane Raft Redox Signaling to Visfatin-Induced Inflammasome Activation and Podocyte Injury. FASEB J. 33, 572.4-572.4, 2019.

- **Singh GB**, Mohammad RS, Kshirasagar N, Zhang Y, McConnell BK, Li PL, Boini KM and Koka. Gut Microbial Metabolite TMAO Induces Endothelial Dysfunction by Activating the HMGB1/TLR-4 Signalling Pathway. FASEB J. 32, 902.17, 2018.

- **Singh GB,** Raut SK, Khanna S, Kumar A, Sharma S and Khullar M. MicroRNA-200c modulates DUSP-1 expression in diabetes induced cardiac hypertrophy. Molecular and Cellular Biochemistry. 2017 Jan;424(1-2):1-11. ISSN: 0300-8177.

- **Singh GB,** Khanna S, Raut SK, Saurabh S, Sharma R and Khullar M. DUSP-1 gene expression is not regulated by promoter methylation in diabetes associated cardiac hypertrophy. Therapeutic Advances in Cardiovascular Disease. 2017 April 1. ISSN: 1753-9447.

- **Singh GB**, Sharma R, Khullar M. Epigenetics and diabetic cardiomyopathy. Diabetes Research and Clinical Practice. 2011 Oct;94 (1):14-21. ISSN: 0168-8227.

- Raut SK, **Singh GB**, Rastogi B, Saikia UN, Mittal A, Dogra N, Singh S, Prasad R, Khullar M. miR-30c and miR-181a synergistically modulate p53-p21 pathway in diabetes induced cardiac hypertrophy. Molecular and cellular Biochemistry. 2016 Jun;417(1-2):191-203. ISSN: 0344-0338.

- Raut SK, Kumar A, **Singh GB**, Nahar U, Sharma V, Mittal A, Sharma R, Khullar M. miR-30c mediates upregulation of Cdc42 and Pak1 in diabetic cardiomyopathy. Cardiovascular Therapeutics, 2015 Jun;33(3):89-97**.** ISSN: 1755-5922.

- Khanna S, **Singh GB,** Khullar M. Nitric oxide synthases and diabetic cardiomyopathy. Nitric Oxide. 2014 Dec 1;43:29-34. ISSN: 1089-8603.

- KM Boini, Patibandla S, **Singh GB**, Puchchakayala G, Koka S. Contribution of High Mobility Group Box 1 to Nicotine-Induced Podocyte Injury. FASEB J. 33, 572.3-572.3.2019

- Mohammad RS, **Singh GB**, Kshirasagar N, Li X, Hussain T, Li N, Li PL, Koka S and Boini KM. Thioredoxin Interacting Protein Deficiency Protects Against Obesity-induced Podocyte Injury and Glomerular Sclerosis. FASEB J. 32, 562.6, 2018.

- Koka S, Mohammad RS, **Singh GB**, Kshirasagar N, Hussain T, Li N, Li PL, Li X, Boini KM. Contribution of High Mobility Group Box 1 to Obesity-Induced Podocyte Dysfunction and Glomerular Injury. FASEB J. 32, 572.3-572.3, 2018.

- Khullar M, Kumar A, Raut SK, **Singh GB**, Sharma V, Mittal A, Kumar A, Sharma R, Nahar U, Ola RP. Role of micro-RNAs in pathophysiology of diabetic cardiomyopathy. **GEO accession no: GSE44179.**

POSTER/ORAL PRESENTATION

- **Singh GB,** Kshirasagar N, Patibandla S, Hussain T, Li X, PL Li, Koka S and Boini KM. NLRP3 Inflammasome as a Novel Target to Abrogate Nicotine-Induced Podocyte Injury. Experimental Biology Conference. Orlando, USA, 2019 (Poster)

- **Singh GB,** Patibandla S, Y Zhang, S Koka and KM Boini. Contribution of Membrane Raft Redox Signaling to Visfatin-Induced Inflammasome Activation and Podocyte Injury. Experimental Biology Conference. Orlando, USA, 2019 (Poster).

- **Singh GB,** Mohammad RS, Kshirasagar N, Zhang Y, McConnell BK, Li PL, Boini KM and Koka S. Gut Microbial Metabolite TMAO Induces Endothelial Dysfunction by Activating the HMGB1/TLR-4 Signalling Pathway. Experimental Biology Conference. San Diego, USA, 2018 (Poster).

- **Singh GB,** Raut SK, Khanna S, Kumar A, Sharma Rajni, Saikia U and Khullar M. MicroRNA-200c modulates MKP-1 expression in diabetes induced cardiac hypertrophy. International Conference on Recent Advances in Cardiovascular Science (RACS - 7). Amity University, Noida, India, 2015 (Oral).

- **Singh GB,** Raut SK, Khanna S, Kumar A, Sharma Rajni, Saikia U and Khullar M. "MicroRNA-20a modulates DUSP-8 expression in diabetes associated cardiac hypertrophy. Annual conference of International society for heart research (Indian section). JNU, New Delhi, India, 2015 (Poster).

- **Singh GB,** Raut SK, Khanna S, Kumar A, Saikia U and Khullar M. MicroRNA-200c regulates mitogen-activated protein kinases by modulating mitogen-activated protein kinase phosphatases-1 expression in diabetes induced cardiac hypertrophy. International

conference on recent advances in cardiovascular sciences (RACS). New Delhi, India, 2013(Poster).

- **Singh GB,** Raut SK, Sharma R Saikia U and Khullar M. Myotrophin plays a role in Type 2 diabetes associated Cardiac Hypertrophy. Cardiovascular Research Convergence, AIIMS, New Delhi, India, 2012 (Poster).

- Khullar M, **Singh GB**, Raut SK, Kumar A, Sharma R and Saikia U. MAPK phosphatase-3 (MKP-3) mediates activation of FoxO1 in Diabetic Cardiomyopathy (DCM). International society for heart research (ISHR) World Congress, USA, 2013. (Poster).

TECHNICAL EXPERIENCE

- Robust stem culture experience with induced Pluripotent Stem Cells (iPSC) including reprogramming to cardiomyocytes.

- Familiar with partial ligation carotid artery (PLCA) mice atherosclerotic model, mice nephrectomy model, Installation of osmotic pumps in mice, development of In-vivo rat model of Diabetic Cardiomyopathy

- Primary culture (Cardiomyocytes, Fibroblasts and Endothelial Cells) and cell line culture, exosome isolation, transfection of microRNA and siRNA, isolation of DNA, RNA and proteins.
- Confocal microscopy, FACS, real time PCR, western blotting & Immuno-fluorescence.
- Promoter methylation analysis using Methylation-Specific PCR (MSP) and Bisulfite-Sequencing PCR (BSP), CHIP-PCR.
- DNA Sequencing (ABI 3500Dx), Next Generation Sequencing (Illumina MiSeq), Library preparation for NGS, Quantification by Bioanalyzer.

LEADERSHIP EXPERIENCE

- Organized an international conference on cardiomyopathy research (ICCR 2013) at PGIMER Chandigarh, India.
- Organized 2nd World heart failure society congress-2010 (international conference) at PGIMER Chandigarh.
- Department Representative, Department of Biotechnology, Panjab University, India for the academic year (2006-07).
- Organized annual functions & departmental science events during graduation and post-graduation.

PERSONAL DETAILS

Date of Birth	: 18 August 1983
Nationality	: Indian
Gender	: Male

REFERENCES

Dr Krishna Boini **Assistant Professor** College of Pharmacy University of Houston 4849 Calhoun Road Houston, TX -77204-5037 Ph. No – +1- 713-743-9630 Email: kmboini@uh.edu	**Dr Madhu Khullar** **Professor** Department of Experimental Medicine & Biotechnology, Post Graduate Institute of Medical Education and Research Chandigarh – 160012, India Ph. No – + 91-9316131057 Email: madhu.khullar@gmail.com	**Dr Jagdeep Kaur** **Professor** Department of Biotechnology Panjab University Chandigarh-160014, India Ph. No- + 91-9872846201 Email: jagsekhon@yahoo.com	**Dr. K Shivakumar** **Scientist G** Division of Cellular & Molecular Cardiology, Sree Chitra Tirunal Institute for Medical Sciences and Technology Trivandrum-695 011, India Ph. No: +471-2524593 Email: shivak@sctimst.ac.in