

Acknowledgements

Writing this thesis brings me to the completion of my PhD and I must admit that it would not have been possible without the inspiration and support of many people. I dedicate this page to all those who contributed in assorted ways to the successful completion of this entire study and its compilation into a thesis.

*First and foremost, I owe my sincere and deep sense of gratitude to my research supervisor, **Dr. Ranjitsinh Devkar**, at the Department of Zoology, The Maharaja Sayajirao University of Baroda (MSUB). It is very difficult to describe his contribution in just a few words but his constant support, patience and valuable guidance are worth mentioning. I find myself very lucky to have a guide who is understanding, enthusiastic, knowledgeable, cheerful and very optimistic. I shall always be grateful to him for having an undying faith in me that kept me going even during tough times. He has been a constant inspiration, in research as well as in personal life, and I wish to imbibe at least some of the many qualities that he owns- be it balancing personal and professional life or multitasking or being an excellent speaker. I admire his way of looking at Science and of allowing students to seek their own research quest, while always evaluating their work critically. Sir, you are the best guide anyone could ask for and I am highly privileged to be your student.*

*I am extremely grateful to **Prof. P. C. Mankodi**, former Head, and **Prof. Dolly Kumar**, current Head, Department of Zoology, MSUB, for providing me with facilities to carry out my research work and for being constantly supportive and encouraging. They have also been kind enough to provide me with opportunities that helped in developing my academic skills.*

*I would like to extend my thanks to **Prof. Vihās Vasu** and **Dr. Prakash Pillai**, for their valuable suggestions, constructive criticism, encouragement and easy access to their laboratories whenever required. I would also like to acknowledge the past and present **faculties** of the department, Prof. Kauresh Vachhrajani, Prof. Pragna Parikh, Prof. Geeta Padate, Dr. Sunita Salunke, Dr. Suresh Balakrishnan, Dr. Hetal Roy and Dr. U. K. Gowri Kumari, for their kind support and encouragement throughout my PhD tenure.*

*I specially thank all the **clerical staff** of the department, Late Shree Sangeet Patel, Shailesh Chikne, Hemant Parmar, Hitesh Suthar, Urmilaben Patel, Rajesh Nayak and Gulab Yadav, for their constant help and co-operation in the hassle-free accomplishment of administrative work.*

*I take this opportunity to extend my sincere gratitude to **Dr. Shiva Shankaran Chettiar**, GeneXplore Diagnostics and Research Centre Pvt. Ltd., Ahmedabad, who has been my guiding light through the path of scientific research, right from my Master's dissertation, which was my first step in research, to getting a PhD position in Dr. Devkar's laboratory. He was the first person to identify my inclination towards research and ever since then, he has had my back. I shall forever be grateful to him for his valuable guidance and support.*

*I offer my sincere thanks to **Prof. Jayashree Pohnerkar**, Department of Biochemistry, MSUB, for allowing me to carry out bacterial transformation and related work in her laboratory. I also thank her student, Vaidehi Mukadam, for being kind and co-operative. Many thanks to **Prof. Rajesh Singh**, Department of Biochemistry and **Dr. Kishore Rajput**, Department of Botany, MSUB, for providing access of their laboratory instrumentation whenever required. I further express my gratitude to **Prof. Sarita Gupta**, Co-ordinator, DBT-MSUB-ILSPARE for allowing the use of Central Instrument facility at the Vikram Sarabhai Science Block, MSUB.*

*I consider myself fortunate to work in a friendly, cheerful and encouraging team that became my family away from home. **Dr. Jaymesh Thadani**, **Dr. Shweta Patel**, **Dr. Sarmita Jana** and **Dr. Kapil Kumar Upadhyay** are most warm-hearted seniors that I have encountered in my entire research career of close to seven years. They welcomed me wholeheartedly and I never had a single day of feeling like a newbie. Jaymesh bhai taught me the dos and don'ts of working with endothelial cells while Kapil helped me understand the research environment of a University setup. Sarmita di and Shweta di have been more of elder sisters and closest friends to me. They have been constantly helping me with every small and big problems of mine, even after completion of their PhD. Shweta di, thank you so much for critically reviewing my thesis in the last minute. I would also like to thank **Aliasgar Vohra** and **Hitarthi Vyas**, for their unconditional support. Ali, thank you for cheering me up in my gloomy days and also for sharing all the "tasty food" (you know what I mean!). Hitarthi, even though you joined in the last phase of my PhD, I thank you for our fruitful discussions and for the proof-reading my manuscripts. I believe you will*

maintain the momentum of the lab with your hard work and commitment. It was a pleasant experience working with you all and the memories will forever hold special place in my heart.

*Special thanks to **Ms. Apeksha Joshi** for always being there for me as my closest buddy in the lab. I could rely on her for all the wet-lab work whenever my absence in the lab was unavoidable and I really appreciate the help. I can never forget the fun we had while working together and also during the coffee breaks. I have also shared the best of my personal moments with her that I will cherish lifelong.*

I would also like to thank Dr. Ashutosh Tripathi, Dr. Zalak Parikh, Dr. Jaldeep Laghnoja, Dr. Lipi Buch, Dr. Kedarlal Sharma, Dr. Juhi Singh, Dr. Arpita Dave, Dr. Kangkan Sarma and Ruzbeh Mirza, for the unforgettable fun memories of Research lab-1. I appreciate all the help that you all have rendered to me in some or the other way. I would also like to thank the past and present members of VVL for helping me whenever needed. I would further acknowledge all the research scholars of the department for maintaining a healthy and friendly environment.

*I would like to extend my gratitude to **Ms. Aradhana Singh** for helping me learn the minute details of immunocytochemistry and ELISA.*

*I extend my sincere gratitude to **Dr. Thomas Corydon**, Aarhus University, Denmark, for sharing plasmid and shRNA constructs.*

I acknowledge the financial support provided to me by University Grant Commission (UGC) in the form of Rajiv Gandhi National Fellowship (RGNF) for my PhD and by Science and Engineering Research Board (SERB) in form of International Travel Support (ITS) for presenting my findings at the 'ASCB-EMBO meet 2019' held at San Diego, CA, USA.

*I would also like to thank **Milind bhai** and **Mayur bhai** at the administrative department of MSUB head office, for facilitating speedy execution of the administrative processes right from PhD registration to the final submission of this thesis (during the tough times of Covid-19 Pandemic).*

*My warm and heartfelt thanks to two persons who mean a lot to me, my beloved **parents**, for showing faith in me and giving me the liberty to choose what I desired for. They have been selfless*

*in giving me the best of everything and I express my deep gratitude for their love and sacrifices, without which this work would not have been completed. I express my loving thanks to my dearest brother, **Vikas**, for supporting me, especially during the tough time of Covid-19 pandemic when I wrote this thesis. My heartfelt regards goes to my in-laws for being extremely supportive and understanding, especially my **Mom- and Dad-in-law**, who stood by my side even though it was difficult for them to understand what I researched on. I am really grateful to them for their constant love and blessings.*

*I take this moment to express my gratitude to my husband, **Rahul**, for understanding and supporting my goals and aspirations that made the completion of my PhD possible. His love, care and encouragement has been my strength even in tough times. His patience and sacrifice will continue to be my inspiration and I am thankful to him for believing in my capabilities more than I did.*

Finally, I would like to thank everybody who was important to the successful realization of this thesis and whose names I might have inadvertently missed out.

I thank the Almighty for giving me the strength and patience to work through all these years.

Kavita S. Shirsath