Pradeep Kumar

Lecturer of Pharmaceutics and Researcher for WADDP Research Unit

Who are you and what is your academic/scientific training and background?

I am a lecturer in the Department of Pharmacy and a researcher in the Wits Advanced Drug Delivery Platform Research Unit (WADDP). Before joining Wits as a doctoral candidate, I completed my BPharm and MPharm from Maharshi Dayanand University, Rohtak (India; 2006) and Guru Jambheshwar University of Science and Technology, Hisar (India; 2008), respectively. During my Masters degree, I was a recipient of the Prime Minister's Scholarship award (Ministry of Defence, India). For my PhD I received the Elsevier's NanoToday 2011 PhD Student Award and Elsevier's International Society for Development Neuroscience 2012 Student Award for presenting my work at their flagship conferences. Recently, Wits Commercial Enterprise (Pty) Ltd. awarded me with a Wits Innovators Forum's First-Time Inventor Award for having disclosed a first patent (2013) and Prolific Inventor Award for having disclosed more than five patents (2014) at Wits.

Explain the nature of the research that you are currently undertaking.

Currently, as part of my doctoral studies, I am busy with design and development of a bioactive-loaded polymer-engineered neural device for potential application in reducing neurological deficits after spinal cord injuries. The goal of this study is to design and develop a neural device comprising of a functionalized composite polymeric framework to bridge gaps between damaged nerve ends and to deliver a bioactive control over a prolonged period in order to reduce the neurological deficit and to improve nerve healing after acute spinal cord injury.

What do you think is the most pertinent/relevant/significant contribution you have made to research/science/your field?

I have made foremost contributions to the *in silico* analytico-mathematical interpretation of multi (biomed) material assemblies for the potential quantification of energy surfaces and molecular attributes via atomistic simulations. Static-lattice atomistic simulations (SLAS), in vacuum and solvent phase, have been employed to quantify the "*in vitro – in vivo – in silico*" performance-correlation profile of various drug delivery systems and the formation, fabrication, selection, design, performance, complexation, interaction, sterospecificity, and preference of various biomaterial systems for biomedical applications ($\approx$ 60 publications).

Did you have a particular mentor or supervisor who inspired you in research?

I am indebted to Professor Viness Pillay for inculcating "perseverance" in my research character and Professor Yahya E. Choonara who inspired me with his workman- and wordsmith-ship.

Read one of Pradeep's papers: Kumar P, **Choonara YE**, **Modi G**, **Naidoo D**, **Pillay V** (2014). Nanoparticulated strategies for the five R's of traumatic spinal cord injury intervention: restriction, repair, regeneration, restoration and reorganization. *Nanomedicine*, 9 (2), pp. 331 - 348.