

BIOGRAPHICAL SKETCH

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NAME: Pradeep Kumar Karla

POSITION TITLE: Associate Professor

EDUCATION/TRAINING *(Begin with baccalaureate or other initial professional education, such as nursing, include postdoctoral training and residency training if applicable. Add/delete rows as necessary.)*

INSTITUTION AND LOCATION	DEGREE (if applicable)	Completion Date MM/YYYY	FIELD OF STUDY
Stanford University, Graduate School of Business	LEAD Certificate	08/20	Professional Leadership
National Institute of Health, USA	NIH Scholar	07/13	Drug Delivery and Nanotechnology
University of Missouri-Kansas City, USA	iPh.D. (Interdisciplinary)	12/08	Pharmaceutics and Drug Design
Nagarjuna University, INDIA	B.S. (HON. With Distinction)	09/02	Pharmacy

A. Personal Statement

My research expertise is in working with drug efflux transporters, multi-drug resistance, and developing novel drug delivery strategies to circumvent drug efflux. In 2021, I partnered with a Biopharmaceutical startup (Serentrix), to develop a sustained nanoformulation for TRPV1 antagonist (SER114) for the treatment of ocular pain. The proposal was successfully funded, and my research laboratory completed the physico-chemical characterization studies of the nanoformulation. My research laboratory also specializes in pre-formulation development studies, including method optimization and accelerated stability testing. As a Principal Investigator (PI), I received a highly competitive AACP New Investigator Grant, NIH-funded KL2 Grant, and several other grants as PI and Co-I. Further, my research on teaching method development includes implementing new technologies to promote active learning in the classroom. My classroom teaching involves integrating the tablet touch interface of faculty and student tablet PCs via a Wi-Fi network to create a real-time interactive platform. I received the "Teaching with Technology Award" from the Center for Excellence in Teaching, Learning, and Assessment (CETLA) and Excellence in Teaching Initiatives Grant from Howard University. Further, I received the Distinguished Faculty Award, Professor of the Year Award, Faculty Professionalism Recognition Award, and multiple other awards at HU-COP.

B. B. Positions, Scientific Appointments, and Honors**Positions and Scientific Appointments:**

2022-Current	Vice-Chair – Faculty Senate, Howard University (HU) Howard University, Faculty Senate
2020-Current	Advisory Board Member for LabPulse Development – FocalCXM LLC
2018-Current	Executive Board Member and Senior Advisor – Washington D.C. Archangels
2014-Current	Associate Professor - Howard University, College of Pharmacy

Courses taught: Pharmaceutics, Pharmaceutical Compounding Lab, Biopharmaceutics, Pharmacokinetics, Pharmaceutical Sciences Lab (Coordinator), Introduction to Pharmacy (Coordinator), Novel Drug Delivery Strategies (Graduate Course - Coordinator), Introduction to Pharmacy, and Pharmaceutical Care

Post-Doctoral Mentor: Huong Moldthan Ph.D. (2016)
Ramesh Nagarwal Ph.D. (2015)
Daniel Oyugi Ph.D. (2014)

Ph.D. Students Graduated: Ann-Marie Ako-Adounvo, PhD
Benedict Arrey, PhD
Zufan Debebe, PhD
Henry North, PhD

Class Advisor: Pharm.D. 2013 class, Pharm.D. 2020 class

2009-2014 2012	Assistant Professor - Howard University, College of Pharmacy Session Chair for Scientific Tracks: OTC Drug Products and Medicines, Safety and Quality Regulation, Pharmaceutical Business and Education – International Conference of Pharmaceutical Regulatory Affairs
2011-2013	NIH Clinical and Translational Research Post-Doctoral Scholar Award (KL2)
2011-Current	Editor - Pharmaceutical Sciences – Chronicles of Young Scientists Journal
2010-Current	Editorial Board Member - Archives of Pharmacy Practice, Pharmaceutics & Novel Drug Delivery Systems and Journal of Autocoids
2008-Current	Reviewer - Journal of Controlled Release, Pharmaceutical Research, Journal of Ocular Pharmacology and Therapeutics, Current Eye Research and Drug Dev. and Industrial Pharmacy, Clinical Research and Regulatory Affairs, Dove Medical Press
2004-2007	Graduate Teaching Assistant - University of Missouri-Kansas City, USA
2003-2008	Courses taught: Novel Drug Delivery Systems and Pharmaceutics Lab NIH Graduate Research Assistant - University of Missouri-Kansas City, USA

Honors:

2019	Distinguished Faculty of the Year Award, Howard University Alumni Association
2018	Best Research Presentation Award HU-Research Day 2018
2017	Key note speaker at 8 th World congress on Bioavailability and Bioequivalence: Pharmaceutical R & D Summit
2015	Faculty of the Year award from Pharm.D. Class of 2015
2013	First Place for Best Research Presentation in Faculty Research – Howard University Health Sciences Research Day 2013
2012	Teaching with Technology Award by Center for Excellence in Teaching, Learning, and Assessment (CETLA)
2012	Appreciation Award – Excellent Teacher - Pharmaceutics - Pharm.D. Class 2015, College of Pharmacy, Howard University
2011	Professor of the Year Award – Pharm.D. Class 2014, College of Pharmacy, Howard University
2011	First Place for Best Research Presentation in Faculty Research – Howard University Health Sciences Research Day 2011
2010	Appreciation Award – Excellence in Teaching, Mentoring and Enhancing Pharmacy Education – Pharm.D. Class of 2013, College of Pharmacy, Howard University
2010	Appreciation Award – Valuable Contributions to Pharmacy Education – Pharm.D. Class of 2012, College of Pharmacy, Howard University
2009	American Association of Colleges of Pharmacy (AACP) Outstanding research recognition – Recent top discoveries in Pharmaceutical Research
2007	Scientific Sessions organizing committee Co-chair, PGSRM Annual Meeting 2007

C. Contributions to Science

The significance of my group's research involves the discovery of new drug efflux transporters on human ocular tissue and human immune CD4 T-Cells. My group's findings on new HIV drug targets and the novel formulation design for sustained antiviral drug delivery were awarded a U.S. patent (US patent 1,020,552). Our research demonstrated for the first time that these transporters play a vital role in decreased bioavailability of drugs employed in chronic disease states such as glaucoma and HIV. My group's research was cited by the American Association of Colleges of Pharmacy (AACP) as one of the eight promising research contributions that have the potential for a therapeutic cure for glaucoma. My research group was recently awarded a grant by Bristol Myers Squibb Pharmaceuticals to further evaluate the HIV drug targets, and develop a thermoreversible gel formulation for sustained anti-viral drug delivery and prophylaxis.

Grants Funded:

Dr. Pradeep Karla, in the roles of Principal Investigator (P.I.), Co-Investigator (Co-I), and Collaborator, has so far contributed to the funding of ~\$ 18 million in center development, SBIR, research, and teaching technology grants.

1. MDR Efflux Transporters - New Drug Targets for HIV Drug Delivery (Karla PK – P.I.) - Nov 2022 - Oct 2023
Bristol Myers Squibb \$ 40,000

The research grant was awarded to evaluate the role of drug efflux transporters on CD4 Cells in HIV drug delivery. Specifically, the grant was awarded to advance the research findings from the awarded patent – “Karla PK, Inventor; Howard University, assignee. Method of increasing the bioavailability of an HIV Drug. US patent 1,020,552.” There is no scientific and budgetary overlap with the proposal.

2. Howard University Research Center for Minority Health and Health Disparities (2U54MD007597-31) – Karla PK (Collaborator), Southerland W (P.I.) – June 2019 – Mar. 2023
HU RCMI Grant \$ 17.3 million

The goal of Dr. Karla's proposal is to maintain and support the Center for Drug Efflux Transporters and Drug Metabolism at Howard University, College of Pharmacy. There is no scientific and budgetary overlap with the proposal.

3. Howard University Pitch Grant - Karla PK (P.I. on Sub Contract) and Serentrix (Awardee) – Dec 2021 – July 2022
HU-Pitch Grant \$15,000

The startup pitch application submitted by Dr. Karla on behalf of Serentrix won first place in the HU-Pitch competition. Serentrix was awarded \$ 15,000 in prize money. As a part of the HU-Pitch initiative, Dr. Karla completed physico-chemical characterization studies on the Serentrix formulations. There is no scientific and budgetary overlap with the proposal.

4. SBIR / STTR RCMI Research Grant Award for Business Partnerships (Karla PK – P.I.) - July 2018 – Nov 2019
RCMI - Howard University \$2,000

Method of Treating an Ocular Disease and Compositions Effective for Treating an Ocular Disease

The goal is to prepare pilot compositions of novel ophthalmic formulations with efflux inhibitors and pursue industrial partnerships. There is no scientific and budgetary overlap with the proposal.

5. BRIDGE Innovation Funding Grant (Karla PK – P.I.) - Aug 2014 – June 2016
HU-General Counsel with Industrial Collaboration \$ 50,000

Drug Disposition of Ophthalmic Therapeutics

The major goal of the project is to evaluate the clinical therapeutic outcomes with improved ocular drug disposition utilizing the efflux modulation drug delivery approach disclosed in the patent application. There is no scientific and budgetary overlap with the proposal.

6. ADDF Research Grant (Karla PK – Co-I), (Wang X – P.I.) - July 2013 – June 2017
Alzheimer's Drug Discovery Foundation \$100,000

Highly Selective HDAC2 Inhibitors to Treat Alzheimer's disease

The major goal is the selection of primary hits with optimal PK/PD properties for future preclinical drug development. There is no scientific and budgetary overlap with the proposal.

7. ECObiotix Industrial Research Grant (Karla PK – P.I.) - Feb 2014 – Mar 2015
ECObiotix LLC \$5,000

Evaluation of novel ECObiotix surfactant as a pharmaceutical additive

The primary goal of the project is to perform a thorough toxicity evaluation of a proprietary additive on human cells and assess its value as a pharmaceutical excipient. There is no scientific and budgetary overlap with the proposal.

8. RCMI Research Grant (Karla PK – Co-I), Southerland W (P.I.) – Jan 2014 – Jun 2014
RCMI Grant – Howard University \$9,600

The major goal of the project is to evaluate the clinical therapeutic outcomes with improved ocular drug disposition utilizing the efflux modulation drug delivery approach disclosed in the patent application. RCMI purchased the supplies to support research in Dr. Karla's lab. There is no scientific and budgetary overlap with the proposal.

9. KL2 CTSA Grant (Karla PK – P.I. (Trainee)) - Jul 2011 – Jul 2013
NIH (The Georgetown-Howard Universities Center for Clinical and Translational Science Grant) \$240,000

Nanotherapeutic Mediated Efflux Modulation for Improved Ocular Drug Disposition (Clinical and Translational Research Grant)

The major goal of this project is to develop a Chitosan-PLGA nano-ophthalmic formulation strategy for corneal drug efflux modulation and improved bioavailability. There is no scientific and budgetary overlap with the proposal.

10. AACP New Investigator Award (Karla PK – P.I.) - Jan 2012 – Jan 2013
American Association of Colleges of Pharmacy (AACP) \$9,700

Modulation of MRP Drug Efflux for Improved Ocular Drug Delivery

The primary goal of this project is to study is to evaluate the role of MRP drug efflux pumps discovered on the human corneal epithelium in affecting the ocular bioavailability of glaucoma drugs. There is no scientific and budgetary overlap with the proposal.

11. NSF-Major Instrumentation Grant (Karla PK – Co-I), (Bakare O – P.I.) - Sep 2011 – Aug 2014
National Science Foundation \$316,056

Acquisition of an Electrospray Mass Spectrometer for Chemical Research and Training

The primary goal of this project is to procure an accurate-mass time-of-flight liquid-chromatograph mass spectrometer (TOF-LC/MS) with electrospray ionization (ESI) capabilities for high sensitive chromatographic analysis of drug molecules. There is no scientific and budgetary overlap with the proposal.

12. Travel Grant (Karla PK – P.I.) - May 2011 – May 2012
Howard University

\$2,500

This grant is awarded for securing the first position in the research presentation category at Health Sciences Research Conference 2011 at Howard University.

13. Seed Grant (Karla PK – P.I.) - Mar 2010 – Jul 2011
Howard University Research Initiatives (Peer-Reviewed and Scored)

\$25,000

Evaluation of the Role of Efflux Transporter Discovered on Human Cornea in Glaucoma and Ocular Herpes Drug Resistance. There is no scientific and budgetary overlap with the proposal.

14. Teaching Innovation Grant (Karla PK – P.I.) - Mar 2010 – Jul 2011
Excellence in Teaching Initiatives - Howard University

\$10,000

Development of an Interactive Learning Environment in the Classroom by an Innovative Internet-based Teaching tool to Improve Faculty-Student Interaction. There is no scientific and budgetary overlap with the proposal.

Selected Publications:

Patents Issued and Published:

Karla PK, Inventor; Howard University, assignee. Method of increasing the bioavailability of an HIV Drug. US patent 1,020,552. February 12, 2019.

Mangat S, **Karla PK**. Compositions and method for treatment of ischemic neuronal reperfusion injury. US Patent 9,433,608. September 6, 2016.

Mangat S, **Karla PK**. Compositions and method for treatment of ischemic neuronal reperfusion injury. US Patent 9,248,118. February 2, 2016.

Mangat S, **Karla PK**. Compositions and method for treatment of ischemic neuronal reperfusion injury. US Patent 8,993,512. March 31, 2015.

Research Articles (Select):

Kamal N, Habib M, Jidan A, **Karla PK**.* NAG-PEGylated Multilamellar Liposomes for BBB-GLUT Transporter Targeting. Cogent Medicine. Jan 2020; 6(1):1-12. *Corresponding Author.
<https://www.tandfonline.com/doi/full/10.1080/2331205X.2019.1701343>.

Bachu R, Chowdhury P, Al-Saedi Z, **Karla PK***, Boddu S*. Ocular Drug Delivery Barriers—Role of Nanocarriers in the Treatment of Anterior Segment Ocular Diseases. *Pharmaceutics*. 2018; 10(1):28. DOI:10.3390/pharmaceutics10010028.

Basant N, Lin X, Reid TE, **Karla PK**, Wang XS. Discovery of a Novel HDAC2 Inhibitor by a Scaffold-Merging Hybrid Query. *Comb Chem High Throughput Screen*. 2015; 18(7):693-700.

Debebe Z, Nekhai S, Ashenafi M, Lovejoy DB, Kalinowski DS, Gordeuk VR, Byrnes WM, Richardson DR, **Karla PK***. Development of a sensitive HPLC method to measure in-vitro permeability of E- and Z-isomeric forms of thiosemicarbazones (*HIV-1 Chelators*) in Caco-2 monolayers. *J Chromatogr B Analyt Technol Biomed Life Sci*. 2012; 906:25-32.