

Venkaiah Betapudi, MS., PhD

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CAREER SUMMARY

Biomedical Scientist, Editor, and Scientific Advisor with nearly three decades of research experience discovering and developing recombinant proteins, nanoparticles, and viral vector-based therapeutics for cancer, autoimmune bleeding disorders, blast overpressure-induced traumatic brain injury, and cholinergic crisis caused by highly neurotoxic nerve gases, using a comprehensive approach that integrates biochemistry, molecular biology, cell biology, virology, proteomics, and mouse model systems. My doctoral work identified starch phosphorylase variants, optimized their immobilization on eggshell powder, and demonstrated their biotechnological application in producing glucose-1-phosphate, a cytostatic compound used in myocardial pathology and as a T-Cell immunomodulator in cancer treatment. During postdoctoral training, I engineered a polyhedron promoter with enhancer elements to develop a recombinant baculovirus expression system that increased foreign protein expression by 60–90-fold. I identified and characterized novel genes (VWKF, MHCKD) regulating non-muscle myosin II-mediated cell division, migration, and development, and demonstrated the distinct roles of myosin IIA, IIB, and IIC in tumor cell migration and metastasis. I established the anti-angiogenic activity of a cleaved blood coagulation factor using lentiviral vectors and tumor models, investigated cytoskeletal activation in keratinocyte migration and wound healing, and identified non-muscle myosin II as an autoantibody target that drives vesicle secretion in antiphospholipid syndrome development. Using viral vector expertise, I developed AAV-mediated gene therapy to offer complete protection for the Army against neurotoxic nerve agents in a mouse model system. Recently, I have supported federal agencies in identifying research gaps and developing medical countermeasures for blast, chemical, and biological threats, bridging biomedical innovation with national security priorities and public health. Passionate about teaching science and developing therapeutics for unmet medical needs through biochemical and biotechnological approaches.

AREAS OF EXPERTISE

Idea Generation & Scouting | Scientific Program Development & Strategic Planning | Writing & Reviewing Research Proposals | Drug & Vaccine Discovery and Development | Countering WMD & Biodefense Research | Toxic Chemicals – Neurotoxicity & Prophylactics Development | Blast Overpressure – Neurotrauma & Biomarkers | Medical Countermeasure Development | Recombinant Proteins | Biothreats | Chemical Threats | Blast Injuries | Diagnostics & Detectors Development | Gene Therapy & Viral Vector Engineering (AAV, LV, AV, BV) | Recombinant Virus Development | PFU & MOI | Cell Infection, Transfection & Stable Cell Line Development | Regulatory Documentation (IRB, SOPs, SOWs, FDA Processes) | Peer-Reviewed Scientific Writing & Editing | Literature Review & Research Gap Analysis | Biochemistry, Immunology, Molecular & Cell Biology | Virology & Infectious Disease Surveillance | Immunoassays, ADA, NAb Assays & Cell-Based Assays | Protein Expression, Chromatography, Purification & Characterization | Enzyme Kinetics | PK & PD | Immunogenicity | Biodistribution | Flow Cytometry, Confocal Microscopy & Imaging Analysis | ELISA, PCR, Western/Northern Blotting, Cloning | Bioinformatics, Genomic Data Mining & Alpha Kinase Identification | Nanoparticle Therapeutics & Tumor Angiogenesis | Autoimmune Bleeding Disorders & Antiphospholipid Syndrome | Cancer Cell Migration & Metastasis | Keratinocytes & Wound Healing | Cell Growth, Proliferation & Development | Endothelium Activation & Microparticle Release | Cytoskeleton Dynamics | Animal Studies: Mouse Models, Tumor Assays, Injections | Scientific Visualization & Data Presentation | Cross-Functional Collaboration & Stakeholder Engagement | Scientific Investigation/Study | Supply Chain Management | AI Prompt Engineering & Emerging Technologies |

TECHNICAL SKILLS

Microsoft Office: Word, Excel, and PowerPoint | Reference Manager | EndNote | ImageJ | GraphPad Prism | Sigma Plot | Coral Draw | Photo-Paint | DNASTAR/Lasergene | PyMOL | AI Generative Tools

MAJOR ACCOMPLISHMENTS

- **Gene Therapy-based Drug Development for the Army:** Engineered and developed an adeno-associated viral vector-based therapy that provides complete protection against neurotoxic nerve agents at the USAMRICD, DOD (Betapudi et al., 2020, Science Trans Med).
- **Protein-based Drug Testing:** Tested the therapeutic efficacy and immunogenicity (anti-drug antibody development) of a potential therapeutic candidate/medical countermeasure against highly neurotoxic nerve agents using a mouse model system at the USAMRICD, DOD.
- **Nanoparticle-based Drug Development:** Tested the therapeutic efficacy of synthetic nanoparticles for controlling an autoimmune bleeding disorder using a mouse model, tail-bleeding and clotting assays, pharmacodynamics, pharmacokinetics, anti-drug antibody and neutralizing antibody assays, and biodistribution at the Cleveland Clinic (J Thromb and Haemostasis, 2: 375–387).
- **Identifying gaps in Drug Development:** Proposed several research areas for the Research and Development Division, DHS, including live detector development, trigger technologies, and chem-biosurveillance.
- **Analysis of Chemical and Biological Weapons of Mass Destruction (WMD) incidence data:** Daily analysis of chemical and biological WMD incidence data and presentation to the leadership of Countering Weapons of Mass Destruction (CWMD), DHS.
- **Preparing the annual report on developing a medical countermeasure for Blast Overpressure (BOP):** Conducted a scientific review, collaborated with stakeholders, and prepared a 246-page report on the impact of BOP on brain injury for the Defense Secretary.
- **New Gene Identification & Characterization:** Using bioinformatic tools and biochemical techniques, identified novel protein kinases VwK_A and MhckD, designed epitopes for antibody development, and elucidated their roles in cell growth and development (Betapudi et al., 2005, MBC; 2006 MBC).
- **Developed a Recombinant Baculovirus Vector System:** Developed an efficient expression system for high-level expression of foreign proteins in insect cells (US Patent 5965393).
- **Demonstrated the Anti-Tumor Angiogenic Activity of a Blood Coagulation Factor:** Demonstrated the efficacy of a cleaved fragment of the blood coagulation factor kininogen in suppressing angiogenesis and tumor growth using a lentiviral vector and a rodent model system (Betapudi et al., 2016, FASEB J; 2016, Blood).
- **Uncovered the Mechanism of Pathological Microvesicle Release:** Identified mechanisms underlying pathological microvesicle release from endothelium-derived primary cells treated with antiphospholipid (APL) antibodies from patients with antiphospholipid syndrome (Betapudi et al., 2013, Blood; 2012, Blood). Note: A cover-page research article.
- **Developed a technique to generate stable double-knockout cell lines:** a method for deleting two genes simultaneously via single transfection (Betapudi et al., 2004, Biotechniques).
- **Novel insights into cancer metastasis:** Discovered overexpression of non-muscle myosin IIA and IIB in tumors, revealing their contrasting roles in cancer cell migration and metastasis (Betapudi et al., 2006, Cancer Res; 2006, MBC).
- **Novel Insights into Wound Healing Mechanisms:** Primary human keratinocytes were isolated from discarded, deidentified human foreskins, and cytoskeletal activation was identified as a key factor in cell migration and wound healing (Betapudi et al., 2010, Exp Cell Res).
- **Publishing a Widely Cited Review article on Gene Therapy:** Senior author of a comprehensive review on gene therapy (Goswami et al., 2019, Frontiers in Oncology).
- **Developed a Method to Produce Glucose-1-P:** Designed and developed a bioreactor for the continuous production of glucose-1-phosphate, a cytostatic compound and T-Cell immunomodulator, from starch solution using eggshell-bound starch phosphorylases (Betapudi and Kumar, 1994, J Biotech).
- **Other Scientific Contributions:** I have shared my plasmid expression vectors with more than 250 laboratories via the Addgene.org platform.
- **Editorial Work:** In an Associate Editor role, I have edited nearly 100 manuscripts for Frontiers in Cell Dev Biol and Frontiers Mol Biosci.

PROFESSIONAL EXPERIENCE

6/2024 – 4/2025 Brain Research Scientist, Cognosante.com/AFS.com, Fort Detrick, MD 21702

- Wrote, edited, and published summaries of brain injury research articles and annual reports on a government website, supporting public access to scientific findings.
- Served as a subject matter expert in blast injury research and in medical countermeasures development, providing critical insights to inform strategic program decisions.
- Prepared executive summaries, briefings, charters, and annual reports that clearly communicated research findings to senior leadership and government stakeholders.

4/2023 – 5/2024 Associate Editor (Remote), Frontiers Cell Develop Biol and Frontiers Mol Biosci, London, UK

- Managed the peer review process and editorial workflow for scientific manuscripts submitted to *Frontiers in Cell Development and Biology* and *Frontiers in Molecular Biosciences*, ensuring timely, rigorous publication of high-quality research.
- Oversaw the peer review process and made final publication decisions to ensure the quality and integrity of accepted manuscripts.
- Reviewed, edited, and provided expert feedback on scientific manuscripts to maintain editorial standards and scientific rigor.
- Authored and curated Research Topics featuring peer-reviewed articles on key themes in cellular biochemistry, thereby enhancing the journal's scholarly visibility.

12/2021 – 3/2023 Program Manager/SME (Vaccines/Test Kits), Goldbelt.com, Washington, DC 20005

- Served as a Technical Program Manager, procuring nearly one billion COVID-19 At-Home Test Kits from national and international vendors and distributing them to American households by collaborating with program managers at DoD, BARDA, ASPR, CDC, FDA, and USPS.
- Collected and analyzed data and served as a POC for the COVID-19 At-Home Test Kit Program Management Review (PMR) conducted by an external auditor.
- Wrote SOW, SOP, COVID-19 At-Home Tests Air Bridge Overview, and an Air Bridge Playbook related to test kit supply chain management (SCM).
- Played a key role in operating, executing, and completing the COVID-19 At-Home Tests Air Bridge Mission.
- Performed daily data collection and analysis and offered technical and scientific advice to federal leadership and other stakeholders.

4/2019 – 11/2021 Program Analyst/Senior Scientist, CWMD/DHS/Noblis.org/Mayvin.com/ Gryphon-Schaffer Technologies, Washington, DC 20005

- Supported the Research and Development, Countering Weapons of Mass Destruction (CWMD) Office at DHS as a Program Analyst and Senior Scientist, providing scientific and analytical expertise to develop and support research programs, policy development, and operational decision-making.
- As an SME- biological and chemical weapons of mass destruction (WMD), offered scientific and technical advice to leadership and other stakeholders.
- Performed research analysis and provided recommendations to fix glitches and update software for optimal use of chemical WMD data analysis, and wrote SOPs.
- Performed daily research and data analysis of chemical and biological WMD and presented to leadership and other stakeholders.
- As an SME- biological and chemical weapons of mass destruction (WMD), offered scientific and technical advice to the performers of the BioDetection 21 Algorithm Development Program (BD21 ADA) focused on detecting real-time biothreat agents in aerosol.
- Worked closely with Program Managers and supported managing and overseeing an interagency research program focused on developing a throwable Gollum Ball chemical detector sponsored by SOCOM and DHS/CWMD/RDD.
- Supported the management and operation and monitored the performance of the customers of several nuclear forensic research programs.

- Researched multi-phase chemical and biological science problems of considerable scope and complexity and identified technological gaps and potential research areas in countering chemical and biological WMD.
- Wrote several research programs focused on countering WMD in chemical and biological sectors.
- Reviewed research pitch papers and full proposals on countering chemical and biological WMD.
- Communicated orally and in writing with different vendors and organizations for research program development, completion, and management.
- Supported and advised leadership on concepts, technologies, requirements, and systems within the area of responsibility.
- Gave a presentation on “Living with weapons of mass destruction” at an international meeting.
- Wrote SOW for programs on developing detectors of chemical and biological weapons.

2/2016 – 3/2019 Research Investigator, USAMRICD/Alakaina Foundation, Aberdeen Proving Ground, MD 21010

- Conducted advanced research on chemical injury and medical countermeasures at USAMRICD, supporting Alakaina Foundation in developing solutions to enhance military and public health preparedness.
- Constructed plasmid viral vectors, transfected HEK 2923 cells, generated and purified recombinant Adeno-associated virus (AAV) particles, and formulated for testing their therapeutic activity in rodents.
- Measured viral titer by plaque assays, performed mouse tail-vein injections, collected mouse blood, made plasma, and tested therapeutic protein expression by enzyme assay, ELISA, and Western blot analysis.
- Tested the therapeutic efficacy of a gene therapy-based medical countermeasure of nerve agents by exposing mice expressing a recombinant protein.
- Successfully tested a therapeutic candidate's pharmacodynamics, pharmacokinetics, and immunogenicity against nerve gases.
- Tested mouse plasma for the development of anti-drug antibodies (ADA), performed neutralizing antibody (Nab) assays using mouse plasma, and biodistribution of the therapeutic proteins by analyzing different mouse tissues.
- Conceived novel ideas and wrote and submitted research grants to develop new methods and products to counter WMD.
- Wrote a US Patent Application, a review article, and a research manuscript on gene therapy.
- Mentored a postdoctoral fellow, two college students, and a technician, and collaborated with other stakeholders in the institute.
- Received guidance on using animal rules, FDA regulations, and approval processes from experts at the FDA.
- Actively involved in scientific discussions, analyzing data, reviewing research articles and grant proposals, and offering constructive criticism.
- Presented research results to leadership, stakeholders, and other audiences at local, national, and international meetings.

9/2015 – 1/2016 Research Specialist, Rockefeller University, New York, NY 10065

- Conducted laboratory research and experimental design and data analysis at Rockefeller University to advance scientific discoveries in molecular biology, cardiovascular research, protein structure, and drug development.
- Established a recombinant baculovirus expression system to express a therapeutic protein in cells.
- Performed extensive designing and cloning of human αV , αIIb , and $\beta 3$ integrin genes in baculovirus expression vectors.
- Trained a postdoctoral fellow and a technician in cloning and developing a recombinant baculovirus system.

2/2015 – 8/2015 CEO and Co-Founder, XY Biology Corporation, Shaker Heights, OH 44122

- Co-founded and led XY Biology Corporation as CEO, securing laboratory space to establish the Research and Development Division and drive early-stage innovation in biotechnology.

- Conceived novel ideas and wrote and submitted research grants to develop new methods and products.
- Performed laboratory research work and generated preliminary data.
- Presented research work, vision, and future perception to stakeholders.

7/2008 – 1/2015 Assistant Professor, Lerner Medical College of Case Western Reserve University, Cleveland, OH

- **Project I:** Successfully demonstrated the anti-angiogenic role and anti-tumor activity of a blood coagulation factor by applying a comprehensive approach consisting of a recombinant protein and Lentivirus (LV)-mediated gene therapy, molecular biology, cell biology, and a mouse model system.
- **Project II:** Published a cover page research article on identifying a novel mechanism of secreting endothelial microparticles and promoting antiphospholipid syndrome (a bleeding disorder) in a prestigious journal, *Blood*.
- **Project III (collaboration):** Successfully studied pharmacodynamics, biodistribution, and the therapeutic efficacy of synthetic nanoparticles in treating thrombocytopenia (a bleeding disorder) using a mouse model system.
- **Project IV:** Discovered novel mechanism of keratinocyte migration and wound healing. Conceived novel ideas, and wrote and submitted research grants to develop new research areas.
- **Other Activities:** Wrote review articles, book chapters, and several research articles, and mentored visitors, research associates, postdocs, and students.

9/2001-6/2008 Research Associate and Instructor, Case Western Reserve University, Cleveland, OH 44106

- Drove multiple research projects on understanding the underlying mechanisms of cell migration and metastasis as well as wound healing by applying a comprehensive approach consisting of biochemical, molecular cell biology, confocal imaging, proteomic approaches, and *Dictyostelium discoideum* amoeba, mammalian cancer cell, and keratinocyte model systems.
- Discovered novel genes encoding VwKα and MHCKD α kinases using bioinformatic tools and data mining, biochemical, molecular biology, and cell biology, and developed stable and gene knockout cell lines.
- Uncovered novel roles of non-muscle myosin IIA, myosin IIB, and myosin IIC motor proteins in driving cell migration and metastasis by applying cell migration assays, western blotting, siRNA approaches, biochemical techniques, and proteome techniques.
- Uncovered new signaling pathways regulating myosin II motor proteins during cell migration.
- Performed extensive cell transfections and stable cell line development to express GFP-myosin IIA, Cherry-myosin IIA, and GFP-myosin IIB in MDA-MB breast cancer cells as well as GFP-myosin in *Dictyostelium discoideum*. More than 250 laboratories across the world are using these plasmids (addgene.org)
- Performed extensive immunostaining of cells and confocal imaging analysis of immunostained and live cells to study intracellular localization of myosin II motor proteins.
- Generated, analyzed, processed data, and prepared figures using Coral Draw, Sigma Plot, Prism, Excel, and ImageJ.
- Conceived novel ideas and wrote and submitted research grants to develop new research areas.
- Wrote review articles, book chapters, and several research articles, and mentored visitors, research associates, postdocs, and students.
- Presented research results at local, national, and international meetings.
- Successfully established scientific collaboration with six different scientists.

1/1999-8/2001 Postdoctoral Fellow, The Ohio State University, Columbus, OH 4

- Investigated the role of poly(A) tail in mRNA transportation and translation in vitro and in vivo cell transcription and translational assays.

- Cloned a wide variety of poly(A) tail-regulating elements in plasmid expression vectors to study the role of the poly(A) tail of mRNA.
- Performed mammalian cell cultures and cell transfections with plasmid DNAs to express reporter genes.
- Isolated and purified total RNA from cell cultures using commercially available RNA isolation kits.
- Prepared cDNA and PCR using commercially available kits.
- Performed DNA sequencing to verify cloning of poly(A) tail regulating element, bacterial cell transformation, and growth for plasmid preparation.
- Prepared miniprep and maxiprep DNA from bacterial cultures using commercially available DNA isolation kits.
- Generated, analyzed, and processed data, and prepared figures using Sigma Plot, Excel, and ImageJ.
- Participated in regular briefings of research results to higher authorities and at local, national, and international scientific meetings.

12/1997-12/1998 Postdoctoral Fellow, Institute of Molecular Medicine And Genetics, Medical College of Georgia,

Augusta, GA 30912

- Performed Glutamate Decarboxylase 65 (Gad65) and Glutamate Decarboxylase 67 (Gad67) promoter-regulated transcription by applying a comprehensive approach consisting of molecular biology and cell biology using a mouse model system.
- Performed cloning and construction of plasmid expression vectors, bacterial cultures, bacterial cell transformation, and DNA fingerprinting assays to perform promoter characterization, isolation, and purification of miniprep and maxi prep DNA using commercially available DNA isolation kits.
- Presented research and results in weekly Lab Meetings and trained technicians and graduate students.

3/1995-11/1997 Project Associate, National Institute of Immunology, New Delhi, India 110067

- Performed extensive studies on transcription enhancer elements, promoter activation, and transcriptional regulation using a recombinant baculovirus expression system and a mammalian expression system.
- Extensively cloned and constructed several plasmid expression vectors with an enhancer element and created several recombinant plasmid expression vectors to study the impact of the baculovirus enhancer element on gene expression in insect cells and mammalian cells.
- Established a US Patent on developing a recombinant baculovirus expression system.
- Demonstrated functional roles of baculovirus enhancer element in mammalian cells by performing cell transfection, luciferase reporter assays and PCR, and northern blotting.
- Cloned, amplified, and purified several recombinant baculoviruses.
- Performed plaque assays to measure baculovirus titer, extensive insect cell transformation, insect cell culture growth, infection of insect cells with recombinant baculovirus, bacterial cell transformation, and growth for plasmid preparation.
- Generated, analyzed, and processed data, and prepared figures using, sigma plot, excel, and ImageJ.
- Gave regular briefings of research results to higher authorities.
- Presented research results at local, national, and international meetings.
- Trained graduate, undergraduate, and technicians.
- Wrote and published manuscripts in high-impact factor journals.

EDUCATION

Doctor of Philosophy (Ph.D.), Biotechnology

Devi Ahilya University School of Biotechnology, Indore, India

***Thesis:** Discovered multiple starch phosphorylase isoforms, performed biochemical characterization, immobilized them on eggshell powder, and designed and developed a bioreactor for continuous production of glucose-1-P, a cytostatic compound used in cardiomyopathy and T cell immunomodulation.*

Master of Science (M.S.), Biochemistry

Devi Ahilya University School of Biochemistry, Indore, India

Biochemistry, Virology, Molecular Biology, Cell Biology

Bachelor of Science (B.S.), Chemistry

Acharya Nagarjuna University, Guntur, India

Chemistry (Main), Botany and Zoology (Ancillary)

CERTIFICATIONS AND MEMBERSHIP

- Optical Imaging Training, MBL, Woods Hole, MA.
- Immunoinformatic and Vaccine Design/Immunotechnology and Computational Vaccine Design, BDG Life Sciences (OPC), PVT LTD, India.
- Complete prompt engineering, ChatGPT, and AI Bootcamping- Udemy
- Writing in the Sciences, Stanford University, Stanford, CA
- GCP training completed through the CITI program
- Drug Development and Product Management, University of California, San Diego, CA
- Drug Discovery, Development, and Commercialization, University of California, San Diego, CA
- Critical Thinking in Research Summer Grant-Writing (PSCL 453), Case Western Reserve University, Cleveland, OH
- Member: American Medical Writers Association (AMWA)
- Life Member: Association of Biotechnology and Pharmacology
- American Society of Cell Biology

AWARDS AND SPECIAL RECOGNITION

Blue Flame Award, Addgene, Inc., Watertown, MA 02472

Elsa Albrecht Best Research Paper Award, Cleveland Clinic, Cleveland, OH 44195

Elsa Albrecht Best Research Paper Award, Cleveland Clinic, Cleveland, OH 44195

Chairman's Award for Art in Science, Cleveland Clinic, Cleveland, OH 44195

Best Poster Presentation Award, Cell Biology Annual Meeting, Cleveland Clinic and Case Western Reserve University

Best Poster Presentation Award, Cell Biology Meeting, Cleveland Clinic and Case Western Reserve University

Senior Research Fellowship Award, CSIR, Government of India

Organizing Secretary, Baculovirus Expression System and Applications, National Institute of Immunology, New Delhi 110067

PATENTS

- Betapudi Venkaiah (1999) Method for enhancing foreign gene expression in baculovirus expression vector system, 5965393. U.S. Patent and Trademark Office.
- Betapudi Venkaiah (1997) Method for enhancing foreign gene expression in the baculovirus expression vector system. 112/DEL/97. New Delhi: Patent Office.
- Betapudi Venkaiah (2017) A method for developing and employing recombinant adeno-associated virus-Paraoxonase 1 F11 particles for prophylactic protection against G-type Chemical Warfare Nerve Agents. 62/475,502. U.S. Provisional Patent Office.

PUBLICATIONS (Peer-Reviewed)

- Betapudi Venkaiah and Kumar, A. (1991a) Dissociation of purified starch phosphorylase from leaves. *Ind. J Plant Physiol.*, 34: 97-101.
- Betapudi Venkaiah and Kumar, A. (1991b) Predicted secondary structure of glycogen phosphorylase from *Escherichia coli* was deduced using the Chou-Fasman model. *Ind. J Pathol & Microbiol.*, 34: 270-275.
- Betapudi Venkaiah, Srivastav, S., and Kumar, A. (1991) Starch phosphorylase from *Musa Paradisiaca* leaves. *Plant Physiol & Biochem*, 18: 1-4.

- Betapudi Venkaiah and Kumar, A. (1994) Eggshell-bound starch phosphorylase packed bed reactor for the continuous production of glucose-1-phosphate. *J Biotech.*, 34: 11–17.
- Betapudi Venkaiah and Kumar, A. (1995) Process for the recovery and immobilization of starch phosphorylase from starch-based industrial wastewater. *Biotech Applied Biochem.*, 21: 77–85.
- Betapudi Venkaiah and Kumar, A. (1996) Multiple forms of starch phosphorylase from sorghum leaves. *Phytochemistry*, 41: 713–717.
- Chatterji, U., Ahmed, R., Betapudi Venkaiah, and Hasnain, S.E. (1996) A recombinant efficient baculovirus vector for simultaneous expression of multiple genes. *Gene*, 171: 209–213.
- Hasnain, S.E., Jain, A., Habib, S., Ghosh, S., Chatterji, U., Ramachandran, A., Betapudi Venkaiah, Azim, A. (1997). Involvement of host factors in transcription from baculovirus very late gene promoters. *Gene*, 190: 113–118.
- Romani, K., Hassan, Q., Betapudi Venkaiah, Hasnain, S.E., and Sarkar, D.P. (1998) Site-specific gene Delivery in vivo through an engineered Sendai viral envelope. *Proc Natl Acad Sci USA*, 95: 11886 – 11890.
- De la Roche, M.A., Smith, J.L., Betapudi Venkaiah, Egelhoff, T.T., and Cote, G.P. (2002) Signaling pathways regulating Dictyostelium myosin II. *J Muscle Research and Cell Motility*, 23: 703–718.
- Viswanathan, P., Betapudi Venkaiah, Kumar, M.S., Rasheedi, S., Vrati, S., Bashyam, M.D., and Hasnain, S.E. (2003) The homologous region sequence (hr1) of Autographa californica multinucleocapsid polyhedrosis virus can enhance transcription from non-baculoviral promoters in mammalian cells. *J Biol Chem.*, 278: 52564–52671.
- Betapudi Venkaiah, Shoebtham, K., and Egelhoff, T.T. (2004) Generation of double gene disruptions in Dictyostelium discoideum using a single antibiotic marker selection. *Biotechniques*, 36: 106–112.
- Betapudi Venkaiah, Viswanathan, P., Habib, S., and Hasnain, S.E. (2004) An additional copy of the homologous region (hr1) sequence in the Autographa californica multinucleocapsid polyhedrosis virus genome promotes hyperexpression of foreign genes. *Biochemistry*, 43: 8143–8151.
- Betapudi Venkaiah, Mason, C., Licate, L., and Egelhoff, T.T. (2005) Identification and characterization of a novel alpha kinase with a vWFA motif localized to the contractile vacuole and Golgi complex in Dictyostelium discoideum. *Mol Biol Cell*, 16: 2248–2262.
- Yumura, S., Yoshida, M., Betapudi Venkaiah, Licate, L., Iwadate, Y., Nagasaki, A., Egelhoff, T.T. (2005) Multiple myosin II heavy chain kinases: Roles in filament assembly control and proper cytokinesis in Dictyostelium. *Mol Biol Cell*, 16: 4256–4266.
- Betapudi Venkaiah, Licate, L., and Egelhoff, T.T. (2006) Distinct roles of non-muscle myosin II isoforms in the regulation of MDA-MB 231 cancer cell spreading and migration. *Cancer Research*, 66: 4725–4733.
- Dulyaninova, N.G., House, R.P., Betapudi Venkaiah, and Bresnick, A.R. (2007) Myosin IIA heavy chain phosphorylation regulates the motility of MDA-MB 231 carcinoma cells. *Mol Biol Cell*, 18: 3144–3155.
- Betapudi Venkaiah and Egelhoff, T.T. (2009a) Roles of an unconventional protein kinase in amoeba osmotic shock responses. *Traffic*, 10: 1773–1784.
- Betapudi Venkaiah (2009b) Myosin II isoforms with separate but linked functions determine the fate of lamellipodia extension during cell spreading. *Nature Proceedings* 4. I:10.1038/npre.2009.2868.1
- Betapudi Venkaiah, Rai, V., Beach, J. and Egelhoff, T.T. (2010a) Novel regulation and dynamics of myosin II activation during epidermal wound responses. *Exp Cell Res*, 316: 980–991.
- Betapudi Venkaiah (2010b) Myosin II motor proteins with different functions determine the fate of lamellipodia extension during cell spreading. *PLoS One*, e5: 8560.
- Betapudi Venkaiah, Gokulrangan, S., Chance, M., and Egelhoff, T.T. (2011a) A proteomic study of myosin II motor proteins during tumor cell migration. *J Mol Biol*, 407: 673–686.
- Betapudi Venkaiah, Hsi, L., Kristi, L., Willard, B., and McCrae, K.R. (2011b) Non-muscle myosin II mediates microparticle release from endothelial cells activated by antiphospholipid antibodies. *Blood*, 118: 3343.
- Betapudi Venkaiah, and McCrae, K.R. (2012a) Induction of endothelial cell apoptosis by cleaved high molecular weight Kininogen is mediated through a Lck and p53-dependent pathway. *Blood*, 120: 3305.
- Betapudi Venkaiah, and McCrae, K.R. (2012b) Analysis of changes in endothelial cell protein expression and phosphorylation induced by cleaved high molecular weight Kininogen. *Blood*, 120: 5195.

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- Betapudi Venkaiah, Lominadze, G., His, L., Willard, B., Wu, M., and McCrae, K. (2013) Anti- β 2GPI antibodies stimulate endothelial cell microparticle release via a non-muscle myosin II motor protein-dependent pathway. *Blood*, 122: 3808–3817. Note: This appeared as a cover page article and was commented on in *Blood*
- Betapudi Venkaiah (2014) Life without double-headed non-muscle myosin II motor proteins. *Frontiers Chem*, 2: 1–13.
- Betapudi Venkaiah, Merkoulov, S.M., Kundu, S., Ji, O., Wu, M., McCrae, K.R. (2014) The SRC Kinase family member lymphocyte-specific kinase (p56lck) regulates endothelial proliferation and survival. *Blood*, 124: 1445.
- Wu, M., Kundu, S., Betapudi Venkaiah, and McCrae, R.K. (2014). A novel mechanism of cellular activation mediated by antiphospholipid antibody-induced extracellular vesicles. *Blood*, 124(21):100-100.
- Betapudi Venkaiah, Shukla, M., Alluri, R., Merkulov, S. and McCrae, K.R. (2016) Novel role for p56/Lck in the regulation of endothelial cell survival and angiogenesis. *FASEB J*, 30: 3515–3525.
- Shukla, M., Betapudi Venkaiah, Alluri, R.K., Merkulov, S., Hale, J., Lathia, J., McCrae, K.R. (2016) Regulation of the tumor microenvironment by high molecular weight Kininogen. *Blood*, 128: 1394.
- Shukla, M., Sekhon, D.S.U., Betapudi Venkaiah, Hickman, D.A., Li, W., Pawlowski, C.L....Sen Gupta, A. (2016) In vitro characterization of SynthoPlate™ (synthetic platelet) technology and its in vivo evaluation in severely thrombocytopenic mice. *J Thromb and Haemostasis*, 2: 375–387.
- Ng, C.J., McCrae, K.R., Ashworth, K., Sosa, L.J., Betapudi Venkaiah, Manco-Johnson, M.J....Paola, J.D. (2018) Effect of anti- β 2GPI antibodies on VWF release from human umbilical vein endothelial cells and decrease ADAMTS13 activity. *Res Pract Thromb Haemost*, 2: 380-389.
- Goswami, R., Subramanian, G., Newkirk, I., Silayeva, I., Doctor, D., Chawla, K., Chandra, D., Chattopadhyay, S., Chilukuri, N., and Betapudi Venkaiah (2019) Gene therapy leaves a vicious cycle. *Front. Oncology* 9: 297.
- Betapudi Venkaiah, Goswami, R., Silayeva, L., Doctor, D., and Chilukuri, N. (2020) Gene therapy delivering a paraoxonase 1 variant offers long-term prophylactic protection against nerve gases in mice. *Science Translational Medicine* 12: eaay0356. Note: Comments featured in *Science*, *Discover Magazine*, and *Army News*
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- Betapudi Venkaiah, Patro, B.S., Saika, S., and Rahaman, O.S. (2023) Editorial: TGF- β signaling pathways and their enigmatic role as a friend and foe in human health and diseases. *Frontiers Mol. Biosci*.
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- Betapudi Venkaiah (2004b) Role of alpha kinases in driving amoeba migration and development. Program in Cell Biology, Case Western Reserve University, Cleveland, OH.
- Betapudi Venkaiah (2005) VwK is involved in the regulation of contractile vacuole dynamics in Dictyostelium discoideum. Department of Physiology Biophysics, Case Western Reserve University, Cleveland, OH.
- Betapudi Venkaiah (2007a) Conventional myosins in driving the migration of cancer cells: The inside story. Department of Physiology Biophysics, Case Western Reserve University, Cleveland, OH.
- Betapudi Venkaiah (2007b) Identification and characterization of a novel alpha kinase. Department of Physiology Biophysics, Case Western Reserve University, Cleveland, OH.
- Betapudi Venkaiah (2008a) A proteomic approach to understand myosin II regulation during cell migration. Department of Cell Biology, Cleveland Clinic, Cleveland, OH.
- Betapudi Venkaiah (2008b) Regulation and dynamics of myosin II-activation during wound healing, Department of Physiology Biophysics, Case Western Reserve University, Cleveland, OH.
- Betapudi Venkaiah (2008c) Myosin II motor proteins with opposite functions determine the fate of lamellipodium extension. Proteomics Center, Case Western Reserve University, Cleveland, OH.
- Betapudi Venkaiah (2009a) Myosin II motor proteins go awry in cancer cells, Department of Cell Biology, Cleveland Clinic, Cleveland, OH.
- Betapudi Venkaiah (2009b) Life without non-muscle myosin II motor proteins, National Institute of Science Education and Research, Bhubaneswar, Orissa, India.
- Betapudi Venkaiah (2010) Regulation of myosin II-activation during epidermal wound responses. Department of Cell Biology, Cleveland Clinic, Cleveland, OH.
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- Betapudi Venkaiah (2012) Myosin II motor proteins and extracellular particle secretion. Department of Cell Biology, Cleveland Clinic, Cleveland, OH.
- Betapudi Venkaiah (2013a) Blood coagulation factor kininogen controls angiogenesis and tumor growth, Department of Cellular and Molecular Medicine, Cleveland Clinic, Cleveland, OH.

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- Betapudi Venkaiah (2015c) Cleaved fragment of blood coagulation factor controls tumor growth, Division of Infectious Diseases and HIV Medicine, Case Western Reserve University, Cleveland, OH.
- Betapudi Venkaiah (2015d) Deregulation of myosin II motor proteins and disease development. XY Biology Corporation, Cleveland, OH.
- Betapudi Venkaiah (2016a) Peptides, microparticles, and nanoparticles: The emerging medicine for cancer and bleeding. Physiology and Immunology Branch, Research Division of USAMRICD, Aberdeen Proving Ground, MD.
- Betapudi Venkaiah (2016b) Gene therapy to combat chemical weapons. Physiology and Immunology Branch, Research Division of USAMRICD, Aberdeen Proving Ground, MD.
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- Betapudi Venkaiah (2016d) Gene therapy to offer protection against chemical weapons, Toxicology Seminar Series, US Army Public Health Center (Provisional), Aberdeen Proving Ground, MD.
- Betapudi Venkaiah (2017a) PON1-IF11 gene therapy to combat chemical weapons, 25th Bioprocessing Summit 2017, Boston, MA.
- Betapudi Venkaiah (2017b) Adeno-associated virus-mediated gene therapy to offer long-term protection against chemical weapons, Toxicology Seminar Series, U.S. Army Public Health Center, Aberdeen Proving Ground, MD,
- Betapudi Venkaiah (2018a) Viral-mediated gene therapy for long-term protection against nerve gases, 21st Bioscience Review: Advances in medical chemical defense, USAMRICD, Aberdeen Proving Ground, MD.
- Betapudi Venkaiah (2018b) Gene therapy to combat chemical weapons. Demo Day Presentation, USAMRICD, Aberdeen Proving Ground, MD.
- Betapudi Venkaiah (2024a) Gene Therapy, Dept. of Pharmacology, Howard University, Washington, DC.
- Betapudi Venkaiah (2024b) Gene Therapy in Therapeutic Landscape, Department of Pharmacology, Howard University, Washington, DC.
- Betapudi Venkaiah (2024C) Army Blast Overpressure: The enemy within, DoD Blast Injury Research Coordination Office (BIRCO), Fort Detrick, MD.