

UMESH R. DESAI

Alfred and Frances Burger Professor of Biological and Medicinal Chemistry

Department of Medicinal Chemistry

and

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Education

<i>Bachelor of Science</i>	July '80 – May '83	M.S. University of Baroda, India (Major: Chemistry; Minor: Physics and Mathematics)
<i>Master of Science</i>	July '83 – May '85	Indian Institute of Technology - Bombay, INDIA (Organic Chemistry)
<i>Doctor of Philosophy</i>	July '85 – May '91	Indian Institute of Technology - Bombay, INDIA (Organic Chemistry)

Positions

<i>Chair</i>	Jan. '18 – present	Department of Medicinal Chemistry, VCU, Richmond, VA
<i>Director</i>	Jan. '15 – Aug '21	Inst. Struct. Biol., Drug Discovery & Development, VCU
<i>Interim Director</i>	Feb. '09 – Dec. '14	Inst. Struct. Biology and Drug Discovery, VCU
<i>Professor</i>	Jul '07 – present	Dept. Medicinal Chemistry, VCU, Richmond, VA
<i>Assistant Director</i>	Feb '06 – Jan '09	Inst. Struct. Biology and Drug Discovery, VCU
<i>Associate Professor</i>	Jul '04 – Jun '07	Dept. Medicinal Chemistry, VCU, Richmond, VA
<i>Assistant Professor</i>	Jul '98 – Jul '04	Dept. Medicinal Chemistry, VCU, Richmond, VA
<i>Res. Asst. Professor</i>	May '96 – Jun '98	Ctr. Mol. Biol. Oral Dis., Univ. Illinois - Chicago
<i>Assistant Professor</i>	Oct '94 – Apr '96	Biotech. Ctr, Ind. Inst. Tech. – Bombay, India
<i>Postdoc. Associate</i>	May '93 – Oct '94	Dept. of Chem., MIT, Cambridge, MA
<i>Postdoc. Associate</i>	July '91 – May '93	Med. & Natural Prod. Chem., Univ. Iowa, Iowa City, IA

Awards, Fellowships and Honors

2022	Guest Editor, Special issue on 'Computer-Aided Drug Discovery' in <i>Biomolecules</i>
2021	Guest Editor, Special issue on 'Enzymology' in <i>Biomolecules</i>
2020	Editorial Board Member, <i>Biomolecules</i>
2018	Alfred and Frances Burger Professorship
2015	Chair, Cardiovascular Section, Drug Discovery and Therapy World Congress, Boston
2013	University Distinguished Scholarship Award of VCU, Richmond, VA
2013	Chair, Cardiovascular Section, Drug Discovery and Therapy World Congress, Boston
2010	School of Pharmacy Teaching Excellence Award, VCU, Richmond, VA
2010	Chair, Cardiovascular Section, Int. Conf. on Drug Discovery and Therapy, Dubai
2010 – 2014	Member, Hemostasis and Thrombosis Study Section, CSR, NIH
2006 – 2010	Established Investigator of the American Heart Association
2003	School of Pharmacy Faculty Research Award, VCU, Richmond, VA
2002 – 2010	Ad hoc Reviewer, HT, HEME, Special Emphasis Panels, CSR, NIH
1996	Senior Research Fellowship from American Heart Association
1995	Young Scientist Award from Government of India
1985	Silver Medal from Indian Institute of Technology - Bombay
1983	Gold Medal from M. S. University – Baroda, India

Research Funding

Current Funding

- 1) *Glycans in Blood Homeostasis and Disease*
Programs of Excellence in Glycosciences (K12 HL141954)
National Heart, Lung and Blood Institute
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- 2018–2023; \$1,023,960 (Desai portion)
Role: **Multi-Principal Investigator** (Other MPIs: Nancy Dahms, Karin Hoffmeister & Joseph Lau)
 - 2) *Rational Design of Cancer Invasion and Metastasis Inhibitors*
Commonwealth Health Research Board (Grant #236-04-20)
2020–2022; \$90,000 (Desai portion)
Role: **Co-Investigator** (PI: Dr. Paul Fisher)
 - 3) *Molecular and Clinical Glycobiology of Bone Marrow Environment*
Program Project (P01 HL151333)
National Heart, Lung and Blood Institute
2021–2025; \$2,872,115 (Desai portion)
Role: **Multi-Principal Investigator** (Other MPIs: Karin Hoffmeister and Joseph Lau)
 - 4) *Lead Identification and Pre-Clinical Studies on Allosteric Inhibitors of Coagulation Factor XIa*
National Heart, Lung and Blood Institute (R61/33 HL161813-01)
2022–2025; \$1,630,125
Role: **Principal Investigator**

Past Funding

- 1) *Tool for Predicting Glycosaminoglycan Recognition of Proteins*
Office of the Director / National Cancer Institute (U01 CA241951)
2019 – 2022; \$863,859
Role: **Principal Investigator**
- 2) *Selective Non-Saccharide Glycosaminoglycan Mimetic for Colon Cancer*
Commonwealth Health Research Board
2019 – 2022; \$43,500 (Desai portion)
Role: **Co-Investigator** (PI: Dr. Bhaumik Patel)
- 3) *Biophysical Studies on Glycosaminoglycans and Mimetics Binding to Protein Targets*
Diversity Supplement Award to benefit a graduate student's PhD Research
Office of the Director / National Cancer Institute (U01 CA241951)
2020 – 2022; \$138,501
Role: **Sponsor** (Beneficiary: Mr. Elsamani Abdelfadiel)
- 4) *A Novel Strategy Targeting a Cellular Protein to Develop Therapies for COVID-19*
2020 VCU Commercialization Fund
2020 – 2021; \$22,500 (Desai portion)
Role: **Co-Investigator** (PI: Dr. Paul Fisher)
- 5) *Lipid Analogs of Anti-Cancer Stem Cell Agent*
2019 VCU Quest Commercialization Fund
2019 – 2020; \$50,000
Role: **Co-Principal Investigator**
PI: Dr. Bhaumik Patel
- 6) *Advanced Skills Development in Glyco-Hematology and Glyco-Oncology*
National Heart, Lung and Blood Institute (R25 HL128639)
2015 – 2020; \$613,220
Role: **Program Director/Principal Investigator**
Other Investigators: Drs. Bhaumik B. Patel, Donald Brophy, Adam Hawkrigde and Martin Safo
- 7) *Allosteric Inhibition of Coagulation Proteases*
National Heart, Lung and Blood Institute (R01 HL090586)
2015 – 2020; \$2,053,385
Role: **Principal Investigator**
Other Investigators: Drs. Martin Safo, Masahiro Sakagami and David Gailani
- 8) *Administrative Supplement to 'Allosteric Inhibition of Coagulation Proteases'*
National Heart, Lung and Blood Institute (R01 HL090586-08S1)
2018 – 2020; \$394,375
Role: **Principal Investigator**

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- Other Investigators: Dr. Kuberan Balagurunathan
- 9) *Novel Flavonoid-based Oligomer Modulators of Elastase and Iron*
2018 VCU Quest Commercialization Fund
2018 – 2019; \$15,000
Role: **Co-PI**
PI: Dr. Masahiro Sakagami
 - 10) *Chemistry and Biology of Heparan Sulfate*
Program Project – Programs of Excellence in Glycosciences (P01 HL107152)
National Heart, Lung and Blood Institute
2011–2019; \$15,811,926
Role: **Program Director**
 - 11) *A salvianolic acid B derivative: HIF1alpha/STAT3-directed VEGF stimulation for lung repair in emphysema*
Commonwealth Health Research Board
2016 – 2017; \$200,000
Role: **Co-Investigator**
PI: Dr. Masahiro Sakagami
 - 12) *Rapid Measurement of Plasma Antithrombin*
Commonwealth Research Commercialization Fund (CRCF)
2015–2016; \$100,000
Role: **Principal Investigator**
 - 13) *Inhaled 2-O,3-O desulfated heparin is a multifunctional anti-inflammatory therapy for cystic fibrosis lung disease*
Commonwealth Health Research Board
2014 – 2015; \$100,000
Role: **Co-Investigator**
PI: Judith Voynow (Other Co-Investigators: Masahiro Sakagami and Peter Byron)
 - 14) *Synthetic, Non-Saccharide, Glycosaminoglycan Mimetics Selectively Target Colon Cancer Stem Cells*
MCC Pilot Project
2014 – 2015; \$50,000
Role: **Co-Investigator**
PI: Bhaumik B. Patel
 - 15) *A Robust Predictive Method for Heparin and Heparan Sulfate Binding to Proteins*
Investigator-initiated Challenge Grant (RC1)
National Heart, Lung and Blood Institute
2009–2011; \$469,653
Role: **Principal Investigator**
 - 16) *Direct Dual Inhibitors of Thrombin and Factor Xa*
Investigator original research project (R01)
National Heart, Lung and Blood Institute
2009–2014; \$1,493,000
Role: **Principal Investigator**
 - 17) *Direct Dual Inhibitors of Coagulation Enzymes*
Multi-Disciplinary Grant Funding
A. D. Williams Fund
2008–2009; \$120,000
Role: **Principal Investigator**
 - 18) *Heparin/Heparan Sulfate – Heparin Co-factor II Interaction*
Research Project
Mizutani Foundation for Glycoscience
2008–2009; Japanese ¥ 6,000,000
Role: **Principal Investigator**
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- 19) *Synthesis and Biochemical Characterization of 3rd Generation Rationally Designed Antithrombin Activators*
A. D. Williams Fund
2007–2008; \$25,000
Role: **Principal Investigator**
- 20) *Oral Pro-drug Form of Heparins and Organic Mimics*
Established Investigator Award
American Heart Association–National Center
2006–2010; \$500,000
Role: **Principal Investigator**
- 21) *Novel Rationally-Designed Synthetic Non-heparin Antithrombin Activators*
Technology Transfer Project (STTR) with NovelMed Therapeutics, Cleveland, OH
National Heart, Lung and Blood Institute
2005–2007; \$208,149
Role: **Principal Investigator**
- 22) *Designing Mechanism-based Anticoagulants*
Investigator original research project (R01)
National Heart, Lung and Blood Institute
2003–2008; \$950,000
Role: **Principal Investigator**
- 23) *Towards Organic Activators of Antithrombin*
Grant-in-Aid
American Heart Association–Mid-Atlantic Affiliate
2002–2004; \$132,000
Role: **Principal Investigator**
- 24) *Engineering Inhibitory Corticosteroid Binding Globulin*
New Area Research Grant
A. D. Williams Fund
2000–2001; \$10,000
Role: **Principal Investigator**
- 25) *Designing Mechanism-based Activators of Antithrombin”*
Beginning Grant-in-Aid
American Heart Association–Mid-Atlantic Affiliate
1999–2001; \$76,500
Role: **Principal Investigator**
- 26) *Interaction of Glucocorticoids with Corticosteroid Binding Globulin*
Beginning Grant to New Investigators
A. D. Williams Fund
1999–2000; \$10,000
Role: **Principal Investigator**
- 27) *Mechanism of Heparin Activation with Antithrombin*
Post-doctoral Fellowship
American Heart Association – Chicago Affiliate
1996–1998; \$57,500
Role: **Principal Investigator**; Sponsor: Professor Steven T. Olson, University of Illinois - Chicago
- 28) *High Flux X-ray Data Collection System*
National Institutes of Health
2004-2005; \$495,000
Role: **Co-Investigator**
PI: H. Tonie Wright (Other Co-Investigators: Several from VCU and ISBDD)
- 29) *Serpin Complexes: Formation, Properties and Links to Angiogenesis and Alzheimer’s Disease*
A. D. Williams Foundation
2003–2004; \$138,707
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Role: **Co-Investigator**

PI: H. Tonie Wright

- 30) *Mechanistic Studies of Plasmin Inhibition by Sulfated Small Molecules: Novel Opportunity to Design Allosteric, Potent and Potentially Safe Treatment for Fibrinolysis and Bleeding Disorders*

VCU Postdoctoral Association

2014 – 2015; \$5,000

Role: **Advisor/Sponsor of Student/Postdoc/Trainee** (Dr. Rami Al-Horani)

- 31) *Non-Heparin, Sulfated, Readily Synthesized, Allosteric Direct Factor XIa Inhibitors as Potentially Safe Anticoagulants*

American Heart Association – Mid-Atlantic Affiliate

2012 – 2014; \$82,000

Role: **Advisor/Sponsor of Student/Postdoc/Trainee** (Dr. Rami Al-Horani)

- 32) *Design of Synthetic Heparin Pentasaccharide Mimics*

American Heart Association – Mid-Atlantic Association

2003–2005; \$70,000

Role: **Advisor/Sponsor of Student/Postdoc/Trainee** (Dr. Gunnar T. Gunnarsson)

- 33) *Design, Synthesis and Biochemical Evaluation of Novel Antithrombin Activators*

American Heart Association – Mid-Atlantic Association

2001–2003; \$36,400

Role: **Advisor/Sponsor of Student/Postdoc/Trainee** (Mr. Gunnar T. Gunnarsson)

- 34) *Interaction of Corticosteroid Binding Globulin with Glucocorticoids*

Virginia Commonwealth University

2000; \$500

Role: **Advisor/Sponsor of Student/Postdoc/Trainee** (Ms. Laura Lahaye)

Invited Talks

1. “Challenges and Resolutions in Designing Glycosaminoglycans as Drugs” at the Symposium on Contemporary Challenges in Chemical Sciences (C3S) organized by the Indian Institute of Technology, Bombay, India (to be delivered December 2023).
2. “Synthetic Mimetics of Glycosaminoglycans as Anticancer and Antithrombotic Agents” at the 2023 Mid-South Glycoscience Meeting organized by the University of Mississippi, Oxford, MS (to be delivered June 2023).
3. “Synthetic, Orally Bioavailable, Selective, Highly Sulfated Mimetics of Heparan Sulfate as AntiCancer Agents with In Vivo Activity” at the Global Meet on Medicinal Chemistry, Drug Discovery & Drug Delivery (GMMCDD2023; <https://primemeetings.org/2023/medicinal-chemistry/>) Osaka, Japan (April 2023).
4. “Discovery of Highly Selective and Potent Glycosaminoglycan-Based Anti-Cancer Stem Cell Agents” at the 2nd Global Virtual Summit on European Public Health and Healthcare (<https://publichealth.researchermeetings.com/>) (February 2023).
5. “Glycosaminoglycan Mimetics as Selective Anti-Cancer Stem Cells Agents” at the Old Dominion University, Norfolk, VA (November 2022).
6. “Discovery and Mechanism of Action of Highly Selective Anti-Cancer Stem Cells Agents” at the Cancer Research Webinar 2022 (<https://scholarsconferences.com/cancer-research-therapeutics/>) (November 2022).
7. “Molecular Modeling for Discovering Promising Glycosaminoglycans” at the K12 Glycoscience Program of the University of California – San Diego (July 2022).
8. “A Tool to Understand Glycosaminoglycan–Protein Interactions” at the 2022 Annual Glycoscience Common Fund Meeting, National Institutes of Health (May 2022).
9. “Targeting Early Steps of Cellular Fusion of SARS-CoV-2” at the Old Dominion University, Norfolk, VA (November 2021).

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10. “*Discovering Glycosaminoglycan Sequences that Recognize Proteins with High Selectivity*” at the Pharmaceutical Research and Drug Development conference (PharmD 2021), Virtual Meet (September 2021).
 11. “*Discovering Small Molecule Mimetics of Glycosaminoglycans that Target Receptor Tyrosine Kinases*” at the Indo-Australian Web-Symposium hosted by CSIR–Indian Institute of Chemical Biology, Kolkata, India (September 2021).
 12. “*Heparin–Platelet Factor 4 Interactome Using Computational Methods*” at the 3rd Translational Glycomics Annual Meeting, Online Meeting (August 2021).
 13. “*The Diversity of Heparin Structures and Their Interactions with Proteins*” as online educational material in preparation for the Heparin-Induced Thrombocytopenia (HIT) Symposium, VERSITI.ORG, Milwaukee, WI (<https://vimeo.com/showcase/8664405>) (July 2021).
 14. “*Glycosaminoglycan–Protein Recognition: Parsing Selective and Plastic Sequences from the Library of Thousands*” at the 2021 Annual Glycoscience Common Fund Meeting, National Institutes of Health (July 2021).
 15. “*Glycosaminoglycans Recognition of Chemokines*” at the 3rd International Symposium on Frontiers in Biomaterial Science, German Research Foundation (DFG), Leipzig, Germany (July 2021).
 16. “*Development of Combinatorial Virtual Library Screening Web-Server*” at Glycoscience Common Fund Workgroup meeting of the National Institutes of Health (April 2021).
 17. “*COVID-19 Therapeutics Targeting Early Steps of Cell Entry*” at the Targeted Therapeutics of COVID-19 symposium, University of South Carolina (December 2020).
 18. “*Enhancing Affordability and Self-Reliance of Drugs through GOI Policies*” at the VAIBHAV (Vaishwik Bharatiya Vaigyanik) Summit of the Government of India (October 2020).
 19. “*Computational Virtual Library Screening for Discovery of Glycosaminoglycan Sequences that Selectively Recognize Target Proteins*” at National Institutes of Health workshop on The Biology of Glycosaminoglycans in Health and Disease (September 2020).
 20. “*A Tool to Predict Affinity and Specificity of GAG Binding to Proteins*” at ASBMB SpotLight Session Webinar, (June 2020).
 21. “*Graphical User Interface of CVLS Algorithm in Understanding GAG – Protein Interactions*” at the Annual Glycoscience Common Fund Meeting, National Institutes of Health (June 2020).
 22. “*Discovering Small Molecule Drugs against COVID-19*” at Delhi University through an International Webinar on ‘COVID-19: Impact, Challenges and Opportunities for the World Community’ (June 2020).
 23. “*Glycosaminoglycans and Drug Discovery*” at Division of Developmental Therapeutics meeting, Massey Cancer Center, Richmond, VA (December 2019).
 24. “*Tool for Predicting Glycosaminoglycan Recognition of Proteins*” at Glycoscience Common Fund Meeting, National Institutes of Health (November 2019).
 25. “*Natural Biopolymers Glycosaminoglycans in Chemical Biology and Drug Discovery*” at International Conference on Applied Biology, Jammu, India (November 2019).
 26. “*Glycosaminoglycans – Talented Biopolymers Lurking behind the Functions of Many Extracellular, Intracellular and Cell Surface Proteins*” in the Department of Biochemistry, Virginia Commonwealth University, Richmond, VA (October 2019).
 27. “*The Dos and Don’ts of NIH Grant Writing*” at University of Texas at Tyler, Tyler, TX (September 2019).
 28. “*Modulation of Hematopoiesis by Extracellular Glycosaminoglycans and Mimetics*” at National Heart, Lung and Blood Institute, Bethesda, MD (February 2019).
 29. “*A Specific Small Molecule as Inhibitor of Cancer Stem Cells for Prevention of Cancer Relapse*” at Drug Discovery India, Mumbai, India (January 2019).
 30. “*Novel Anticoagulants through Allosteric Regulation of Coagulation Proteases*” Gordon Research Conferences–Hemostasis, Waterville Valley, NH (August 2018).
 31. “*A Synthetic, Highly Potent Allosteric Inhibitor of Factor XIa for Prothrombotic Disorders*” 3rd Virginia Drug Discovery Consortium annual meeting, George Mason University, Fairfax, VA (June 2018).
 32. “*Glycosaminoglycan Specificity – A Pipe Dream?*” at the Great Lakes Translational Glycobiology Symposium, Milwaukee, WI (May 2018).
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33. “*Enhancing the DruGAGome*” at the San Diego Glycobiology Symposium, San Diego, CA (March 2018).
 34. “*2B Glycoscientist, or Not 2B, that's no question. Ours is to forge ahead with full comprehension!*” at the 7th Inter-PEG Annual Meeting, San Diego, CA (March 2018).
 35. “*So You Think Glycosaminoglycans are Non-Specific? Think Again!*” at Louisiana State University, New Orleans, LA (November 2017).
 36. “*Cancer, Glycosaminoglycans and Drugs Thereof*” at Massey Cancer Center, Richmond, VA (November 2017).
 37. “*On Molecules, Machines and Men: The Inter-Play of Diversity and Specificity*” at the School of Pharmacy, Virginia Commonwealth University, Richmond, VA (October 2017).
 38. “*Biotechnology-based Methods to Prepare Natural Glycosaminoglycan Oligosaccharides*” at MedChem India, Bangalore, India (September 2017).
 39. “*Biotechnological Approaches in Synthesis of Glycosaminoglycans*” at Shri Mata Vaishno Devi University, Jammu, India (September 2017).
 40. “*Harvesting Nature’s Diversity of Glycosaminoglycans for Discovery of Therapeutics*” at Drug Discovery India 2017, Bangalore, India (September 2017).
 41. “*Structurally Unique, Synthetic Mimetics of Glycosaminoglycans as Selective Anti-Cancer Stem Cell Therapeutics*” at Virginia CancerRx 2017, Charlottesville, VA (May 2017).
 42. “*Glycosaminoglycan Diversity and Physiologic/Pathologic Consequences*” at Department of Physiology and Molecular Biophysics, Virginia Commonwealth University, Richmond, VA (April 2017).
 43. “*The Interplay of Specific and Non-Specific Interactions of Glycosaminoglycans in Modulation of Human Physiology*” at Arizona State University, Tempe, AZ (February 2017)
 44. “*Glycosaminoglycans – Nature’s Bounty of Molecules with Many Roles in Human Physiology*” at Christopher Newport University, Newport News, VA (November 2016)
 45. “*Designing De Novo Sequences of Heparan Sulfate that Exhibit High Selectivity for their Target.*” Glycobiology World Congress 2016, Atlanta, GA (August 2016)
 46. “*Exploiting the Biology of Glycosaminoglycans to Discover Low Hanging Fruits*” at Indian Institute of Technology - Roorkee, Roorkee, India (August 2016).
 47. “*Glycosaminoglycan – Protein Interactions and Drug Discovery*” at Indian Institute of Technology - Bombay, Mumbai, India (August 2016).
 48. “*Drug Discovery at a Small Academic Institution. The Story of 5-HMF through Clinical Trials*” ASPET/ADDC Annual Meeting, San Diego, CA (April 2016).
 49. “*Novel Anti-Influenza A Agents by Targeting the M1 Protein*” at VCU 3D Summit 2016, Richmond (February 2016).
 50. “*Molecules and Technologies That Change Lives*” at the Investors Forum, Biotechnology Park, Richmond, VA (August 2015).
 51. “*Modulating the Biology of Glycosaminoglycans. Implications for Thrombosis and Cancer*” at Midwestern University, Chicago, IL (July 2015).
 52. “*Discovering Antagonists of Glycosaminoglycan–Binding Proteins for Treating Thrombosis, Cancer, and Other Diseases*” at the 2nd Drug Discovery and Therapy World Congress, Boston (July 2015).
 53. “*Sulfated Pentagalloyl Glucopyranose for Thrombosis*” at VCU 3D Summit, Richmond (February 2015).
 54. “*Careers in Pharmacy and Pharmaceutical Sciences*” at College of William and Mary, Williamsburg (February 2015).
 55. “*The Case for Academic Drug Discovery*” at the School of Pharmacy, Virginia Commonwealth University, Richmond, VA (November 2014).
 56. “*Antithrombin Quantitation Using a NanoSensor*” at Grifols, Inc., Raleigh, NC (September 2014).
 57. “*Glycosaminoglycans: Beauty in Diversity*” at the Department of Bioscience and Bioengineering, Indian Institute of Technology – Bombay, India (September 2014).
 58. “*Drugs through Mimicking the Actions of Glycosaminoglycans - Anticoagulants, AntiEmphysema/COPD and Anti-Cancer Stem Cells*” at the Drug Discovery India 2014, Bombay, India (September 2014).
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59. “*Allosteric Inhibitors of Factor XIa*” at the 60th annual Scientific and Standardization Committee meeting of the International Society for Thrombosis and Haemostasis, Milwaukee (June 2014).
 60. “*A NanoSensor for Detecting PPB Levels of OverSulfated Chondroitin Sulfate in Heparin*” Public Hearing on Regulatory Science Initiatives for Generic Drugs, Food and Drug Administration, Washington, DC (May 2014). (see <http://www.fda.gov/downloads/ForIndustry/UserFees/GenericDrugUserFees/UCM398892.pdf>)
 61. “*A Major Leap Forward: Computational Design of Highly Specific of Glycosaminoglycans Binding to Proteins*” at the 27th International Carbohydrate Symposium, Indian Institute of Science, Bangalore, India (January 2014).
 62. “*Computational Design of Highly Specific Glycosaminoglycans*” at Center for the Study of Biological Complexity, Virginia Commonwealth University (December 2013).
 63. “*Forays into Non-Saccharide Glycosaminoglycan Mimetics*” at RTI International, Research Triangle Park, NC (June 2013).
 64. “*Small, Synthetic Glycosaminoglycan Mimetics as Allosteric Modulators of Coagulation Cascade*” at the Drug Discovery and Therapy World Congress 2013, Boston (June 2013).
 65. “*Combinatorial Virtual Library Screening for the Discovery of High Specificity Glycosaminoglycans*” at the Drug Discovery and Development Division of the Indian Lab Automation 2012, Mumbai, India (Oct. 2012).
 66. “*Specificity of Heparin/Heparan Sulfate Binding to Proteins*” at the International Conference on Computer Aided Drug Design & QSAR (CADD-2012), Chicago (Oct. 2012).
 67. “*Computational Design of Highly Specific Heparan Sulfates*” at the 2nd Inter-PEG meeting, University of San Diego, San Diego, CA (March 2012).
 68. “*Chemistry and Biology of Heparan Sulfate*” at the Programs of Excellence in Glycosciences (PEG) meeting, National Heart, Lung and Blood Institute, Bethesda, MD (October 2011).
 69. “*Fingerprinting Low Molecular Weight Heparins for Regulating Quality and Equivalence*” at the International Conference and Exhibition on Pharmaceutical Regulatory Affairs, Baltimore, MD (September 2011).
 70. “*Combinatorial Virtual Library Screening for Targeting Heparin-Binding Proteins*” at the Huazhong University of Science and Technology, Hubei, China (April 2011).
 71. “*Novel Allosteric Regulators of Coagulation Enzymes*” 2nd Symposium on Enzymes and Biocatalysis, Dalian, China (April 2011).
 72. “*Allosteric Regulators of Coagulation Factors*” Molecular Medicine Tri-Con 2011 – San Francisco, CA (Feb 2011).
 73. “*Pharmacokinetics and Pharmacodynamics*” at the Huazhong University of Science and Technology, Hubei, China (April 2011).
 74. “*Computational Design of Allosteric Anticoagulants*” Indian Institute of Technology – Bombay annual meeting of faculty, graduate students and scholars, Santa Clara, CA (September 2010).
 75. “*Novel Allosteric Inhibition of Coagulation Enzymes*” Gordon Research Conferences – Hemostasis, Waterville Valley, NH (July 2010).
 76. “*Rational Design of New Anticoagulants*” at the Department of Biosciences and Biotechnology, Indian Institute of Technology, Bombay, India (May 2010).
 77. “*Allosteric Activation of Coagulation Proteins*” at the Huazhong University of Science and Technology, Hubei, China (May 2010).
 78. “*Combinatorial Virtual Library Screening to Design Heparin – Protein Interactions Modulators*” at the 1st Annual International MediChem Conference, Beijing, China (May 2010).
 79. “*Rational Design of Non-Saccharide Mimetics of Heparin*” at the 2nd International Conference on Drug Discovery and Therapy, Dubai, UAE (February 2010).
 80. “*Novel Synthetic Regulators of Coagulation Cascade*” at the Department of Biochemistry, St. Louis School of Medicine, St. Louis, MO (May 2009).
 81. “*Exosite II-Mediated Allosteric Inhibition of Selected Coagulation Enzymes by Novel Hydrophobic, yet Water Soluble, Molecules*” at the Frontiers in Chemical Biology session, 237th Annual Meeting of the American Chemical Society, Salt Lake City, UT (March 2009).
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82. “*Designing Molecules – Keeping Blood Alive*” at the Department of Chemistry, Mary Washington University, Fredericksburg, VA (September 2008).
 83. “*A Chemoinformatics Approach to Understanding Glycosaminoglycans*” at the 2nd Annual Chemical Biology Meet, Virginia Commonwealth University, Richmond, VA (April 2008).
 84. “*Serendipitous Discovery of Dual Direct Anticoagulants*” at the 12th International Conference on the Interface of Chemistry – Biology in Biomedical Research, Birla Institute of Technology and Science, Pilani, India (February 2008).
 85. “*Rational Design of Organic Scaffolds for Regulating the Coagulation Cascade*” at 3rd Annual Great Lakes Symposium, University of Pittsburgh, Pittsburgh, PA (July 2007).
 86. “*Designing Anticoagulants that Target Antithrombin, Thrombin and Factor Xa*” at NovelMed Therapeutics, Cleveland, OH (May 2007).
 87. “*Finding a Needle in a Haystack: Combinatorial Virtual Screening Approach to Identifying Key Heparin / Heparan Sulfate Sequences*” at the Inaugural MedChem India Conference, Hyderabad; Select Biosciences (Sudbury, UK) (April 2007).
 88. “*Rational Design of Highly Charged Organic Anticoagulants*” at Department of Chemistry, Florida Atlantic University, Boca Raton (February 2007).
 89. “*Radical Approaches to Targeting Coagulation Enzymes*” at Department of Chemistry, Virginia Commonwealth University, Richmond (November 2006).
 90. “*Rational Design of Anticoagulants*” at MD/PhD Students’ Group Meeting, School of Medicine, Virginia Commonwealth University, Richmond, VA (April 2006).
 91. “*Designing new organic activators of antithrombin*” Virginia Science Academy Annual Meeting, University of Virginia, Charlottesville, VA (May 2003).
 92. “*Why Structurally Complex Glycosaminoglycans? Engineering Specificity and Generality in Balance*” at Center for Biological Complexity, Virginia Commonwealth University, Richmond, VA (November 2005).
 93. “*Antithrombin Antithrombotics: From Heparin to Organics*” at University of North Carolina, Chapel Hill (November 2001).
 94. “*(-)-Epicatechin sulfate: A Small Non-Sugar Synthetic Activator of Antithrombin*” at American Heart Association Annual Meeting (November 2001).
 95. “*Serpins: Using a Molecular Framework for Drug Design*” at Indian Institute of Technology – Bombay (April 2000).
 96. “*The Unusual in the Usual: Using the Web for Molecular Teaching*” at the Instructional Design Center, Virginia Commonwealth University (April 2000).
 97. “*Antithrombin – Glycosaminoglycan Interactions*” at Department of Medicinal Chemistry, Virginia Commonwealth University, Richmond, VA (March 1998).
 98. “*Heparin Activation of Antithrombin*” at Department of Chemistry, Florida International University, Miami (February 1998).
 99. “*Mechanism of Heparin Activation of Antithrombin*” at Division of Medicinal and Natural Products Chemistry, University of Iowa (September 1997).
 100. “*Structure of Proteins in Organic Solvents*” at Hindustan Ciba Geigy Research Centre, Bombay (February 1995).
 101. “*Specificity studies on heparinases*” at the 204th American Chemical Society National Meeting at Washington, D.C., USA (August 1992).

Other Leadership Positions

Executive Committee Member, Virginia Drug Discovery Consortium (VaDDC) (2022 – present)

Member, GlyCORE External Advisory Committee, University of Mississippi (2020 – present)

Chair, Virginia Drug Discovery Consortium (VaDDC) (2020 & 2021)

Member, Research-related Institutes and Centers Advisory Committee (RICAC) (2019 – 2020)

Founding Member, Virginia Drug Discovery Consortium (VaDDC) (2017)

Chair, Inter-PEG (Programs of Excellence in Glycosciences) annual meeting, Washington, DC (April 2016)

Chair, Cardiovascular Track, Drug Discovery and Therapy World Congress, Boston (July 2015)
Chair, P&T Review Committee of an Associate Professor, VCU (2013)
Chair, Cardiovascular Track, Drug Discovery and Therapy World Congress, Boston (June 2013)
Director, Training Camp on 'Chemistry and Biology of Heparan Sulfate', Virginia Commonwealth University, Richmond, VA (Dec. 2012)
Director, Training Camp on 'Chemistry and Biology of Heparan Sulfate', University of Utah, Salt Lake City, UT (May 2012)
Chair, American Chemical Society Committee for a prestigious national award (2011)
Chair, Cardiovascular (Discovery) Track, 2nd International Conference on Drug Discovery and Therapy, Dubai, UAE (2010)
Chair, Innovation Committee, Department of Medicinal Chemistry (2009 – 2012)
Chair, NHLBI Small Business Innovation Research Panel – Drug Development (2009)
Chair, VCU Investigative Panel on Research and Scholarly Misconduct (2009)
Member, American Chemical Society Committee for a prestigious national award (2007, 2009)
Director, Graduate Admissions, Department of Medicinal Chemistry, VCU (2000 – 2005)
President, Symbiotek Association of Indian Institute of Technology – Bombay (1994 – 1995)

PUBLICATIONS (* indicates corresponding author(s); ORCID ID: 0000-0002-1976-6597 (orcid.org))

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Book Chapters

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Book(s)

1. Volume 2303 (2022) of *Methods in Molecular Biology* volume on '**Glycosaminoglycans – Methods and Protocols**' was published by Springer, NY. Drs. Kuberan Balagurunathan, Hiroshi Nakato, Umesh R. Desai, and Yukio Saijoh are editors of this volume. The volume contains 64 chapters on various aspects of glycosaminoglycans.
2. Volume 1229 (2015) of *Methods in Molecular Biology* on '**Glycosaminoglycans – Chemistry and Biology**'. *Methods in Molecular Biology* is published by Springer, NY. Drs. Kuberan Balagurunathan, Hiroshi Nakato and Umesh R. Desai are editors of this volume. The volume contains 47 chapters on various aspects of chemistry and biology of glycosaminoglycans.

Patents/Technologies/Molecules Licensed

1. 'Method for finger-printing heparins' US Patent #8,262,881 B2 issued September 11, 2012. Licensed to Biological E. Inc., Hyderabad, India.
2. 'Cinnamic acid-based oligomers and uses thereof' US 8,993,620; US 8,613,909; and US 8,491,872 issued between 2013 and 2015. Licensed to Aradigm Corporation, CA, USA.
3. 'Sulfated and unsulfated flavonoid oligomers as cancer therapeutics' US 9,850,221 B2 issued on Dec. 26, 2017. Licensed to BioKos Ventures, Chicago, IL.

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1. Desai, U. R.; Patel, B. B.; Patel, N. J.; Karuturi, R. *Sulfated and unsulfated flavonoid oligomers as cancer therapeutics*. US Patent 9,850,221 B2. Priority date: Nov. 8, 2013; Issued on Dec. 26, 2017.
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1. Desai, U. R.; Nagarajan, B.; O'Hara, C.; Afosah, D. K.; Abdelfadiel, E. I.; Sistla, J.; Gangji, RN.; Ongolu, R.; Morla, S.; Sankaranarayanan, NV. Patel, B.B.; Sharon, C.; Boothello, R.; Vera, A.; *Lipidic analogs of anti-cancer stem cell agent*. Status: US Patent Application 2022/0169673A1. Published Jun 2, 2022. Priority date: March 7, 2019.

Invention Disclosures

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Material Transfer Agreements

1. AIMSTM Research Award from Atomwise, Inc. San Francisco, CA. Agreement on computational virtual high-throughput screening of small molecules and biochemical analysis of hits against validated protein targets involved in progression of cancer.

Research Abstracts

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 45. A computational model of in vivo trauma induced coagulopathy. N Menke, U Desai, C-K Cheng, L Kier, and K Ward (2008) **Circulation** 118:S1452.
 46. A computational model of the effect of cardiac arrest on the coagulation system. N Menke, U Desai, L Kier, C-K Cheng, MA Peberdy, J Ornato, KR Ward (2008) **Circulation** 118: S1478.
 47. Finding a needle in the haystack: Prediction of specific glycosaminoglycan sequences that binds proteins. A Raghuraman, PD Mosier and UR Desai (2006) **Abstracts of Papers of the American Chemical Society** 231: 46-CARB.
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48. Novel chemoenzymatic oligomers of cinnamic acid that inhibit coagulation enzymes utilizing antithrombin dependent and independent mechanisms. BL Henry, BH Monien, A Raghuraman and UR Desai (2006) **Abstracts of Papers of the American Chemical Society 231**: 94-MEDI.
 49. Stabilization of conformationally activated antithrombin by networks of amino acid interactions: The importance of tryptophan 49. BH Monien, C Krishnasamy, ST Olson and UR Desai (2005) **Abstracts of Papers of the American Chemical Society 230**: U617-U617 244-BIOL.
 50. Structural characterization and molecular investigation of a serendipitously discovered bioactive macromolecule, lignin sulfate. A Raghuraman, JN Thakkar, GT Gunnarsson and UR Desai (2005) **Abstracts of Papers of the American Chemical Society 230**: U2589-U2590 143-MEDI.
 51. Antithrombin activation with designed small organic activators: The design of a bicyclic-unicyclic isoquinoline based activator. C Krishnasamy, GT Gunnarsson and UR Desai (2005) **Abstracts of Papers of the American Chemical Society 230**: U2664-U2665 284-MEDI.
 52. Capillary electrophoretic method of analysis of sulfated flavanoids. M Dantuluri and UR Desai (2004) **Virginia Journal of Science 55**, 41.
 53. HINT analyses of antithrombin binding to pentasaccharides. C Krishnasamy and UR Desai (2004) **Virginia Journal of Science 55**, 41.
 54. Synthetic, non-sulfated polymers as heparinoids: Antithrombin binding and activation studies. B Monien and UR Desai (2004) **Virginia Journal of Science 55**, 36.
 55. Role of hydrophobic amino acids in heparin binding and conformational activation of antithrombin III. MA Jairajpuri, AQ Lu, U Desai, et al. (2003) **Circulation 108**, S29.
 56. Designing new organic activators of antithrombin. UR Desai (2003) **Virginia Journal of Science 54**, 78.
 57. The design of new non-sugar small antithrombin activators based on a natural trisaccharide pharmacophore. GT Gunnarsson and UR Desai (2002) **Abstract of Papers of 28th National Medicinal Chemistry Symposium**, San Diego, CA, p. 135.
 58. (-)-Epicatechin sulfate: A non-sugar, small, synthetic activator of antithrombin. UR Desai and GT Gunnarsson (2001) **Circulation 104**, supplement II, II-96.
 59. Computerized molecular design of heparin pentasaccharide mimics. GT Gunnarsson and UR Desai (2000) **Virginia Journal of Science 51**, 107.
 60. Interactive WWW-based 3D molecular visualization for classroom teaching of cardiac glycosides and anticoagulants. UR Desai (2000) **American Journal of Pharmaceutical Education 64**, 86S.
 61. An interactive WWW-based method for a course emphasizing documentation and evaluation of OTC analytical devices. UR Desai, HT Karnes and WH Soine (2000) **American Journal of Pharmaceutical Education 64**, 86S.
 62. Role of Arg129 and Lys125 of antithrombin in heparin binding and allosteric activation. U Desai, SC Bock, I Bjork, et al. (1999) **Thrombosis and Haemostasis S517**.
 63. Role of individual saccharide residues of the heparin pentasaccharide in activation of the serpin, antithrombin. UR Desai, M Petitou, I Björk and ST Olson (1997) **FASEB Journal 11**, 3183 Suppl. S.
 64. Heparin and its interaction with antithrombin – III. RJ Linhardt, RE Edens, J Bae, UR Desai, A Pervin, E Caldwell and JM Weiler (1993) **Thrombosis Hemostasis 69**, 656.
 65. Low-molecular-weight dermatan sulfate as an antithrombotic agent – Structure–activity studies. RJ Linhardt, UR Desai, J Liu, A Pervin, D Hoppensteadt, J Fareed (1993) **Thrombosis and Hemostasis 69**, 889.
 66. Approach for sequencing the glycosaminoglycan chains of proteoglycans. J Liu, UR Desai and RJ Linhardt (1993) **Abstracts of Papers of the American Chemical Society 206**: 16-Carb, Part 1.
 67. Polysaccharide–protein interaction – Study of heparin binding to antithrombin III using a synthetic peptide model. JH Bae, UR Desai, A Pervin, E Caldwell, JM Weiler and RJ Linhardt (1993) **Abstracts of Papers of the American Chemical Society 206**: 14-Carb Part 1.
 68. Complete mass balance in compositional analysis of heparins by capillary zone electrophoresis. UR Desai, SA Ampofo, HM Wang and RJ Linhardt (1992) **Abstracts of Papers of the American Chemical Society 204**: 58-Carb Part 1.
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69. Specificity studies on heparin lyases – A conformational analysis based approach to understanding enzyme action. UR Desai, HM Wang, DL Lohse and RJ Linhardt (1992) **Abstracts of Papers of the American Chemical Society** **204**: 40-Carb Part 1.

Other Publications (non-peer reviewed) Related to Research

1. Tiwari, V.; Tandon, R.; Sankaranarayanan, NV.; Beer, J. C.; Kohlmeir, E. K.; Swanson-Mungerson, M.; Desai, U. R. Preferential recognition and antagonism of SARS-CoV-2 spike glycoprotein binding to 3-*O*-sulfated heparan sulfate. *BioRxiv* **2020**. (PMID: 33052337) <https://doi.org/10.1101/2020.10.08.331751>
2. Nagarajan, B.; Sankaranarayanan, NV.; Desai, U. R. Molecular dynamics simulations of glycosaminoglycan oligosaccharide using newer force fields. *BioRxiv* **2019**. <https://doi.org/10.1101/561969>.
3. Agre, P.; Bertozzi, C.; Bissell, M.; Campbell, K.; Cummings, R.; Desai, U. R. Estes, M.; Flotte, T.; Fogleman, G.; Gage, F.; Ginsburg, D.; Gordon, J. I.; Hart, G.; Hascall, V.; Kiessling, L.; Kornfeld, S.; Lowe, J; Magnani, J.; Mahal, L. K.; Medzhitov, R.; Roberts, R.; Sackstein, R.; Sarkar, R.; Schnaar, R.*; Schwartz, N.; Varki, A.*; Walt, D.; Weissman, I. Training the next generation of biomedical investigators in glycosciences. *Journal of Clinical Investigation* **2016**, *126*, 405–408. (PMID: 26829621)
4. Balagurunathan, K.; Nakato, H.; Desai, U. R. Preface. In *Glycosaminoglycans – Chemistry and Biology*, a *Methods in Molecular Biology* volume published by Springer, NY (**2015**). (PMID: 25489643)
5. Desai, U. R. Nurturing young scientists. *Current Science* **1995**, *69*, 893–894.

Editorial and Reviewing Activity

Associate Editor – Enzymology Section

Biomolecules (2020 – present)

Ad hoc reviewer – Journals

<i>ACS Chemical Biology</i>	<i>Biotechnology Letters</i>
<i>ACS Medicinal Chemistry Letters</i>	<i>Blood</i>
<i>Acta Biochimica Biophysica Sinica</i>	<i>BMC - Biochemistry</i>
<i>Acta Biomaterialia</i>	<i>Canadian Journal of Chemistry</i>
<i>Advances in Medical Sciences</i>	<i>Carbohydrate Research</i>
<i>American Journal of Respiratory Cell and Molecular Biology</i>	<i>Cell Adhesion and Migration</i>
<i>Analytical Biochemistry</i>	<i>Cellular and Molecular Life Sciences</i>
<i>Antiviral Research</i>	<i>Chemical Biology and Drug Design</i>
<i>Archives of Biochemistry and Biophysics</i>	<i>Chemical Science</i>
<i>Asian Chemistry Letters</i>	<i>ChemMedChem</i>
<i>Biochemical Journal</i>	<i>Chemical Society Reviews</i>
<i>Biochemistry</i>	<i>Current Chemical Biology</i>
<i>Biochimie</i>	<i>Current Medicinal Chemistry</i>
<i>Bioconjugate Chemistry</i>	<i>Current Organic Synthesis</i>
<i>BioEssays</i>	<i>Current Nutrition and Food Science</i>
<i>Biological Chemistry</i>	<i>Enzyme and Microbial Technology</i>
<i>Biologicals</i>	<i>European Journal of Medicinal Chemistry</i>
<i>Biomacromolecule</i>	<i>European Journal of Pharmacology</i>
<i>Biomedical Chromatography</i>	<i>Expert Opinion on Drug Discovery</i>
<i>Biomed Research International</i>	<i>Expert Opinion on Therapeutic Patents</i>
<i>Biomolecules</i>	<i>Expert Reviews in Cardiology Therapy</i>
<i>Bioorganic and Medicinal Chemistry</i>	<i>Expert Reviews in Hematology</i>
<i>Bioorganic and Medicinal Chemistry Letters</i>	<i>Frontiers in Medicine</i>
<i>Biopolymers</i>	<i>Frontiers in Molecular Biosciences</i>
<i>Biotechnology and Bioengineering</i>	<i>Frontiers in Pharmacology</i>
	<i>Future Medicinal Chemistry</i>

Glycobiology
Infection and Drug Resistance
International Journal of Applied Chemistry
Journal of American Chemical Society
Journal of American Chemical Society Au
Journal of Biological Chemistry
Journal of Biomolecular Structure and Dynamics
Journal of Chromatographic Science
Journal of Enzyme Inhibition and Medicinal Chemistry
Journal of Medicinal Chemistry
Journal of Organic Chemistry
Journal of Pharmaceutical Sciences
Journal of Physical Chemistry
Journal of Sulfur Chemistry
Journal of Thrombosis and Hemostasis
Journal of Visual Experiments
Langmuir
Marine Drugs
Matrix Biology Plus

Medicinal Chemistry Research
Microorganisms
Mini-Reviews in Organic Chemistry
Molecules
Nature Communications
OncoTarget & Therapeutics
Organic and Biomolecular Chemistry
Physical Chemistry and Chemical Physics
PLoS One
Proceedings of the National Academy of Sciences USA
Proteins: Structure, Function and Genetics
Science Advances
Scientific Reports
Small
Talanta
Tetrahedron Letters
The Chemical Record
Thrombosis and Haemostasis
Thrombosis Research
Translational Research

Reviewer – Grants

Academy of Finland
A. D. Williams Fund
American Heart Association National Center
Alzheimer's and Related Diseases Grant, Virginia Center on Aging
American – Russian Foundation for Scientific Research
Czech Science Foundation
Israel Science Foundation
Jeffress Memorial Trust Scientific Research
Kentucky Science Technology Awards
National Institutes of Health – Center for Scientific Review
National Science Centre, Poland
Qatar National Research Fund
Research Corporation for Science Advancement – Cottrell College Science Awards
Research Council for Natural Sciences and Engineering, Academy of Finland
South Carolina Exp. Prog. to Stimulate Competitive Research and Institutional Development Awards
Virginia Center on Aging
Wellcome Trust DBT India Alliance Fellowship Grants

Reviewer – Dissertations & Theses

- Ph.D. Dissertation “*Isolation, Characterization of Active Principles and Antimicrobial Studies of the Extracts of Some Medicinal Plants*” Department of Chemistry, Bharathidasan University, India, September 2002.
- Ph.D. Dissertation “*Synthesis and Characterization of New Antibiotics*” School of Pharmacy, Nirma Institute of Science and Technology, India, March 2011.
- Ph.D. Dissertation “*Synthesis Characterization Pharmacological Evaluation and Computational Studies on a Series of Substituted 1,3,4-Oxadiazole Analogues*” Faculty of Pharmaceutical Sciences, Maharishi Markandeshwar University, Haryana, India, May 2014.
- Ph.D. Dissertation “*Identification of potential direct InhA inhibitors for isoniazid-Resistant Tuberculosis: Insights from Computational Studies*” National Institute of Pharmaceutical Education and Research (NIPER), Mohali, Punjab, India, November 2015.

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- Ph.D. Dissertation “*Isolation, Characterization, Purification and Immobilization of Microbial Lipase for Enantioselective Resolution of Bioactive Molecules*” Shri Mata Vaishno Devi University, Katra, J&K, India, January 2019.
 - Ph.D. Dissertation “*Multi-Component Strategy for the Synthesis of Pharmaceutically Active N- and O-Heterocyclic Compounds*” Shri Mata Vaishno Devi University, Katra, J&K, India, March 2019.
 - Ph.D. Dissertation “*Studies on Secondary Metabolites Production in Important Fungi by Chemical Mutagenesis*” Shri Mata Vaishno Devi University, Katra, J&K, India, December 2019.
 - Ph.D. Dissertation “*On-Chip Tuberculosis Diagnosis*” Shri Mata Vaishno Devi University, Katra, J&K, India, December 2020.
 - Ph.D. Dissertation “*Heparin-based Nanocomposites for Biomedical Applications*” Indian Institute of Technology, Roorkee, India, March 2023.

Legal/Testimony Experience

1. *Legal Consultant*, Arnold and Porter, Washington, DC (2008, 2009)
Prior Art analysis on an anticoagulant drug; Report preparation; Case closed before deposition.
2. *Legal Consultant*, Choate, Hall & Stewart, Boston, MA (2012, 2016, 2017)
Prior Art and Innovation concept analysis on an anticoagulant drug; Report preparation; Deposition followed by court testimony in Boston, MA.
3. *Legal Consultant*, Taft, Stettinius & Hollister, Chicago, IL (2016, 2017)
Prior Art analysis on a steroid-based drug; Report preparation; Not required to depose.
4. *Legal Consultant*, Smart & Biggar, Toronto, Canada (2016, 2017)
Prior Art and Innovation concept analysis on an anticoagulant drug; Report preparation; Gave testimony through video recorded full-day deposition for the court, Toronto, Canada.

Scientific Consulting Experience

Scientific Consultant, NovelMed Therapeutics, Inc. Cleveland, OH (2004–2014)
Scientific Consultant, Teva Pharmaceuticals, Israel (2005, 2006)
Scientific Consultant, Biological E. Ltd, Hyderabad, India (2013–2017)
Scientific Consultant, Amneal Pharmaceuticals, NJ (2013)
Scientific Consultant, Sarfez USA, MD (2015)

Service Activities

Chair, Executive and Steering Committee, Virginia Drug Discovery Consortium (VaDDC, www.vaddc.org) (2020 – 2021).
Member, External Advisory Committee, Glycoscience Center of Research Excellence, University of Mississippi, University, MS (2020 – present).
Editor, Special Issue titled ‘*Featured Topics in Enzymology*’ in *Biomolecules*, MDPI, Basel, Switzerland (2020 – 2021)
Editorial Board Member, *Biomolecules*, MDPI, Basel, Switzerland (2020 – present).
Member, Executive Committee, Virginia Drug Discovery Consortium (VaDDC, www.vaddc.org) (2018 – 2019).
Member, P01 Special Emphasis Panels, Center for Scientific Review, NIH (October 2015, May 2017)
Ad Hoc Reviewer, HT Study Sections, SBIR/STTR–Lung Diseases Study Sections, R35 Special Emphasis Panels, Center for Scientific Review, NIH (2015 - present).
Member, NHLBI Workgroup on Training in Glycosciences, NIH, Bethesda, MD (2015)
Member, Special Emphasis Study Section for P01 applications, Center for Scientific Review, National Institutes of Health (2014)
Panel Reviewer, HT Study Section, Center for Scientific Review, NIH (2010 – 2014)
Coordinator, Seminar Program, Department of Medicinal Chemistry, VCU (2009 – 2012)
Member, Virginia Institute for Aging Grant Review Committee (2008)

Chair, Half-Time Tenure Review Committee of an Assistant Professor, VCU (2008)
Panel Member, New Authors Mentoring Forum, VCU Libraries (2008)
Member, American Chemical Society Committee for a prestigious national award (2007, 2009)
Chair, P&T Review Committee of an Associate Professor, VCU (2006)
Member, A. D. Williams Grant Review Committee (2006 – 2012)
Member, University Promotion and Tenure Appeals Committee, VCU (2006 – 2009)
Chair, Assistant Professor Search Committee, VCU (2005 – 2006)
Mentor, Center for Teaching Excellence, VCU (2004 – 2005)
Reviewer, Center for Scientific Review, National Institutes of Health (2002 – 2009)
Secretary, Chemistry Section, Virginia Academy of Science (2003 – 2004)
Director, Graduate Admissions, Department of Medicinal Chemistry, VCU (2000 – 2005)
Web-Course Coordinator, Analysis of Pharmaceutical Products Laboratory (2001 – 2004)

Service to Professional Organizations

Member, American Chemical Society (ACS)
Member, American Society for Biochemistry and Molecular Biology (ASBMB)
Member, American Association for Advancement of Science (AAAS)
Member, American Association of Colleges of Pharmacy (AACP)
Member, Virginia Academy of Science (VAS)
Member, International Society for Thrombosis and Haemostasis (ISTH)
Member, American Pharmacists Association (APhA)
Member, American Association of Pharmaceutical Scientists (AAPS)

TEACHING

Course Coordinatorship

MEDC 691 Special Topics in Medicinal Chemistry – Glycochemistry and Glycobiology
[Spring 2013 – present]; MS/PhD program; School of Pharmacy, VCU

MEDC 555 Fundamentals of Drug Discovery I
[Fall 2015 – Fall 2018]; MS/PhD program; School of Pharmacy, VCU

MEDC 542 Biotechnology-Derived Therapeutic Agents
[Spring 2015 – 2016]; PharmD program; School of Pharmacy, VCU

MEDC 501 Introductory Medicinal Chemistry
[Fall 2005 – 2007]; Pharm. D. program; School of Pharmacy, VCU

MEDC 607/608 Introduction to Pharmaceutical Sciences: From Bench to Shelf
[Fall 2004 – 2009]; Ph. D. program; School of Pharmacy, VCU

BIOS 501 Biomolecular Spectroscopy
[Fall 1994 – 1995]; M.Sc./Ph.D. (Biotechnology) program; Department of Biotechnology, Indian Institute of Technology – Bombay

BIOP 502 Molecular Biophysics
[Spring 1994 – 1995]; M.Sc./Ph.D. (Biotechnology) program; Department of Biotechnology, Indian Institute of Technology – Bombay

Director of Training Camps as a part of NIH sponsored ‘Programs of Excellence in Glycosciences’

May 2012 Camp at University of Utah, Salt Lake City, UT

Didactic Lectures (1 – 1.5 h) including:

- ✓ Structure of Carbohydrates
- ✓ Characterization of Carbohydrates
- ✓ Liquid Chromatography of Carbohydrates
- ✓ Function of Proteoglycans and Glycosaminoglycans
- ✓ Carbohydrate – Protein Interactions
- ✓ Techniques Used in the Study of Carbohydrate – Protein Interactions

December 2012 Camp at Virginia Commonwealth University, Richmond, VA

Didactic Lectures (1–1.5 h) including:

- ✓ Role of Glycans in Physiology and Disease
- ✓ Allosteric Regulation of Physiological Processes
- ✓ Interactions of Glycosaminoglycans through Fluorescence and Capillary Electrophoresis Approaches
- ✓ Screening of Carbohydrate Libraries

Development of Hands-on Training Sessions (3 – 4.5 h) including:

- ✓ Modeling Glycans
- ✓ Docking and Scoring of Glycans – Protein Interactions
- ✓ Chondroitin Sulfate - Thrombin Interaction through Fluorescence Spectroscopy
- ✓ Chondroitin Sulfate - Thrombin Interaction through Surface Plasmon Resonance
- ✓ Disaccharide Composition of Chondroitin Sulfates Using Capillary Electrophoresis
- ✓ UPLC – MS Study of Chondroitin Di- and Oligosaccharides

Current Lectures/Sections

Anticoagulants and Antiplatelet Agents

[2000 – present] 600 Level; PhD program; School of Pharmacy, VCU
Heparins; Coumarins, DOACs

Fundamentals of Drug Discovery

[2010 – present] 500 Level; Pharmaceutical Sciences graduate program; School of Pharmacy, VCU
Chemical kinetics, enzyme kinetics, enzyme inhibition, targeted drug discovery, chemical proteomics

Biologic Drugs

[2016 – present] 600 Level; Pharm. D. program; School of Pharmacy, VCU
Biosimilar Heparins

Antithrombotic Agents

[2016 – present] 600 Level Course; Pharm. D. program; School of Pharmacy, VCU
Anticoagulants; Anti-platelets

Past Lectures/Sections

Biosimilarity

[2016– 2022] 500 Level; PharmD program; School of Pharmacy, VCU
Biosimilarity, Regulatory Aspects

Fundamentals of Drug Discovery

[2010 – 2021] 500 Level; Pharmaceutical Sciences graduate program; School of Pharmacy, VCU
Physicochemical properties

Chemical Biology of Carbohydrates

[2008– 2020] 600 Level; Ph.D (Chem. Biol.) program; College of Humanities & Sciences, VCU
Carbohydrate Structure - Function

Introductory Medicinal Chemistry

[1998 – 2018] 500 Level; Pharm.D. program; School of Pharmacy, VCU
Physicochemical properties, pKa, drug solubility

Anticoagulants

[1998 – 2016] 500 Level; Nurse Anesthesia program; School of Allied Health, VCU
Heparin; Low-Molecular-Weight Heparins; Heparin Pentasaccharide; Coumarins; 1,3-Indanediones;
Direct Thrombin and Factor Xa Inhibitors; Biochemical Mechanisms

Biological Drugs

[2015 – 2016] 600 Level; Pharm. D. program; School of Pharmacy, VCU
History and Structure of Biologics, Biosimilars, Heparins, Insulins

Pharmaceutical Skills Laboratory

[2008– 2013] 600 Level; Pharm. D. program; School of Pharmacy, VCU
Biohazard Laboratory

Combinatorial Chemistry and Drug Design

[2000 – 2013] 600 Level; Pharmaceutical Sciences graduate program; School of Pharmacy, VCU
Combinatorial Chemistry

Ligand Binding

[2004, 2008, 2010] 600 Level; Medicinal Chemistry graduate program; VCU
Binding affinities; Modes of Binding; Measurement

Protein Inhibitors

[2004, 2008] 600 Level; Medicinal Chemistry graduate program; VCU
Serine proteinase inhibitors, structure, mechanism

Advanced Molecular Modeling

[2002 – 2005] 500 Level; Pharmaceutical Sciences program; School of Pharmacy, VCU
Docking; FlexX; Flexidock

Introductory Medicinal Chemistry

[2001 – 2004] 500 Level; Pharm. D. program; School of Pharmacy, VCU
Chemical Bonding; Hybridization; Resonance; Electronegativity; Bonding Forces

Anxiolytics and Neuroleptics

[2001 – 2003] 500 Level; Nurse Anesthesia program; School of Allied Health, VCU
Anxiolytics; Neuroleptics

Biochemical Approaches to Drug Design

[2000 – 2004] 600 Level; Pharmaceutical Sciences graduate program; School of Pharmacy, VCU
Rational Drug Design, Site directed Mutagenesis, Gene Therapy

Pharmaceutical Analysis Laboratory

[1998 – 2007] 600 Level; Pharm. D. program; School of Pharmacy, VCU
Biohazard Laboratory; Lipid Analysis; Herbal Product Analysis

Cardiovascular Agents

[1998 – 2016] 600 Level Course; Pharm. D. program; School of Pharmacy, VCU
Oral hypoglycemic agents; Insulin; Anticoagulants; Anti-platelets; Antianginals; Cardiac
Glycosides; Anti-hyperlipidemics

Steroids

[1998 – 2008] 600 Level Course; Pharm. D. program; School of Pharmacy, VCU
Introduction; Structure; Nomenclature; Conformation; Hypercholesterolemia; Androgens; Estrogens;
Progestins; Glucocorticoids

Computers in Biology – Laboratory

[1994 – 1995] 500 Level; Biotechnology program; Department of Biotechnology, IIT – Bombay
Protein Visualization; Secondary Structure Prediction; Peptide Design; Docking

Special Teaching Advances

Development of a laboratory “*Transport of Drugs Across Lipid Bilayer*” for Doctor of Pharmacy students, Virginia Commonwealth University, Richmond, VA, Fall 2009.

Video conference-based mini-course on ‘Drug Discovery’ consisting of 8 lectures in March – April 2008 for educating graduate students and faculty of Pakistan. Organized by the Higher Education Commission, International Center for Chemical and Biological Sciences, Karachi, Pakistan.

Awarded Center for Teaching Excellence grant (\$3,500) in January 2004 for enhancing Web-based classroom teaching materials for Medicinal Chemistry lectures.

Development of a laboratory “*Herbal Products Analysis–St. John’s Wort – MEDC602*” for Doctor of Pharmacy students, Virginia Commonwealth University, Richmond, VA, Fall 1999.

Awarded a mentoring grant from Instructional Development Center, VCU for designing web-based teaching materials for students of Pharmacy and Nurse Anesthesia, Virginia Commonwealth University, VA, Fall 1999.

Development of a laboratory “*Computers in Biology – BIO510*” for Master of Biotechnology students, Indian Institute of Technology – Bombay, Fall 1995.

Postdoctoral Fellows, Graduate and Undergraduate Students, and Technicians

Current Graduate Students

- 1) **Connor O'Hara, B. S.**
PhD candidate
July 2019 – present
Funded by: School of Pharmacy, VCU
- 2) **Samuel Holmes, B. S.**
PhD candidate
Jan 2019 – present
Funded by: School of Pharmacy, VCU
- 3) **Tamim Chiba, B. Pharm.**
PhD candidate
October 2021 – present
Funded by: School of Pharmacy, VCU
- 4) **Rawan Fayyad, B.S.**
PhD candidate
August 2021 – present
Funded by: School of Pharmacy, VCU
- 5) **Ally Thompson, B.S.**
PhD candidate
August 2022 – present
Funded by: School of Pharmacy, VCU

Current Post-doctoral/Resident Fellows

- 1) **Rama Gunta**
PhD from Indian Institute of Technology, Bombay, India
June 2019 – present
Funded by: NIH R01 HL090586
- 2) **Bharath Villuri**
PhD from National Taiwan Normal University, Taipei
Nov 2021 – present
Funded by: NIH R01 HL090586

Current Senior Scientists

- 1) **Nehru Viji S., PhD**
PhD from the University of Madras, India
January 2012 – present
Funded by: NIH R01 HS090586-01S1
- 2) **Daniel Afosah, PhD**
PhD from Virginia Commonwealth University
February 2022 – present
Funded by NIH K99/R00 HL161423

Past PhD Students

- 1) **Gunnar Gunnarsson, B.S.**
Awarded PhD (Pharmaceutical Sciences)
Thesis “*Rational Design of First Organic Antithrombin Activators*”
Department of Medicinal Chemistry, VCU
July 1998 – June 2003
Awarded AHA – Postdoctoral Fellowship to continue work in the laboratory
Current position: Scientific Officer, European Directorate for the Quality of Medicines & HealthCare (EDQM), France
Funded by AHA Beginning Grant-In-Aid
- 2) **Brian Henry, B.S.**
Awarded MD/PhD (Pharmaceutical Sciences)
Title “*Novel Sulfated 4-HydroxyCinnamic Acid Oligomers as Potent Anticoagulants*”
Department of Medicinal Chemistry
March 2005 – July 2007
Continued onto the MD residency at the University of Pittsburgh, PA
- 3) **Arjun Raghuraman, B.Pharm.**
Awarded PhD (Pharmaceutical Sciences)
Title “*Designing a General Approach towards Heparin / Heparan Sulfate Mimics*”
Department of Medicinal Chemistry
January 2003 – May 2008
Continued as a post-doctoral associate with Professor Kevin Burgess, Texas A& M University
Current Position: R&D Scientist, Dupont, Wilmington, DE
Funded by NIH R01 HL069975
- 4) **Chandravel Krishnasamy, M.Pharm.**
Awarded PhD (Pharmaceutical Sciences)
Title “*Molecular Modeling Studies on Heparin and Heparin Mimetics Interacting With Proteins*”
Department of Medicinal Chemistry
February 2003 – August 2009
Started working as a pharmacist at Rite-Aid

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- Current Position: Pharmacy Manager, Rite-Aid,
Richmond
Funded by NIH R01 HL069975
- 5) **Jay N. Thakkar, M.S.**
Awarded PhD (Pharmaceutical Sciences)
Thesis Title “*Biochemical Evaluation of Lignin-Like Molecules*”
Department of Medicinal Chemistry
January 2007 – May 2011
Continued as a postdoctoral fellow, University of Colorado, Boulder.
Funded by AHA Established Investigator Award
- 6) **J. Timothy King**
Awarded PharmD/PhD (Pharmaceutical Sciences)
Thesis Title “*Analysis and Fingerprinting of Glycosaminoglycans*”
Department of Medicinal Chemistry
September 2006 – July 2011
Started as a Pharmacist
Current Position: Hospital Pharmacist, Roanoke Hospital
Funded by School of Pharmacy, VCU
- 7) **Preetpal Singh Sidhu, B.Pharm.**
Awarded PhD (Pharmaceutical Sciences)
Thesis Title “*Rational Design of Allosteric Inhibitors of Thrombin*”
Department of Medicinal Chemistry
November 2007 – November 2011
Current Position: Founder and CEO, Solaris Diagnostics, Lexington, KY
Funded by AHA Established Investigator Award
- 8) **Rami Al-Horani, M.Pharm.**
Awarded PhD (Pharmaceutical Sciences)
Thesis Title “*Direct and Indirect Inhibitors of Factor Xa as Anticoagulants*”
Department of Medicinal Chemistry
November 2007 – November 2011
Funded by NIH R01 HL069975
Current Position: Assistant Professor, Xavier University, New Orleans, LA
- 9) **May Hamdy AbdelAziz, M.Pharm.**
Awarded PhD (Pharmaceutical Sciences)
Thesis Title “*Biochemical and Biophysical Studies on Allosteric Modulators of Thrombin*”
Department of Medicinal Chemistry
November 2008 – February 2013
Continued as a postdoctoral fellow at University of Utah, Salt Lake City, UT
Current Position: Assistant Professor, University of Texas at Tyler, TX
Funded by AHA National Center & NIH P01 HL107152
- 10) **Akul Mehta, B.Pharm.**
Awarded PhD (Pharmaceutical Sciences)
- Thesis Title “*Synthetic, Sulfated Lignin-Based Anticoagulants*”
Department of Medicinal Chemistry
November 2008 – April 2014
Continued as a CRCF fellow in the laboratory
Funded by NIH R01 HL090586 and P01 HL107152
- 11) **Rio Boothello, B.Pharm.**
Awarded PhD (Pharmaceutical Sciences)
Thesis Title “*Studies on Rationally Designed, Allosteric Coagulation Inhibitors*”
Department of Medicinal Chemistry
November 2009 – April 2014
Current Position: Postdoctoral fellow at McGuire VA Hospital, Richmond, VA
Funded by NIH R01 HL090586 and P01 HL107152
- 12) **Meghan Thompson, B.S.**
Awarded PharmD/PhD (Pharmaceutical Sciences)
Dissertation title: “*Physicochemical and Structural Characterization of Polymers as Putative Drugs*”
Department of Medicinal Chemistry
November 2010 – December 2015
Started as an Assistant Professor, South University, Richmond, VA
Funded by School of Pharmacy, VCU
- 13) **Stephen Verespy, B.S.**
Awarded PhD in Chemistry
Dissertation title: “*Probing Allosteric, Partial Inhibition of Thrombin Using Novel Anticoagulants*”
Program in Chemical Biology
November 2012 – July 2016
Current position: Scientist, Encodia, Inc. San Diego, CA
Funded by NIH P01 HL107152
- 14) **Daniel Afosah, B.S.**
Awarded PhD in Pharmaceutical Sciences
Dissertation title: “*Study of Interactions of Glycosaminoglycans (GAGs) and GAG Mimetics with their Protein Targets*”
November 2012 – June 2017
Current position: K12 Scholar, VCU
Funded by NIH P01 HL107152
- 15) **Alhumaidi Alabbas, M.S.**
Awarded PhD in Pharmaceutical Sciences
Dissertation title: “*Glycosaminoglycan lyases in the preparation of oligosaccharides*”
August 2014 – May 2018
Funded by: Government of Saudi Arabia
Current position: Assistant Professor of Medicinal Chemistry, Prince Sattam Bin Abdulaziz University, Alkharj Riyadh, Saudi Arabia
- 16) **Shravan Morla, B. Pharm.**
Awarded PhD in Pharmaceutical Sciences
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Dissertation title: “*Glycosaminoglycans and glycosaminoglycan mimetics for cancer and inflammation*”
November 2015 – May 2019
Funded by: School of Pharmacy, VCU
Current position: Investigator, H3 Biomedicine, Boston, MA

17) Rahaman Navaz Gangji, B.S.

Awarded MD/PhD in Biochemistry
Dissertation title: “*Characterizing Glycosaminoglycan and Glycosaminoglycan-Oligo Interactions with Cancer Stem Cells and their Regulators*”
May 2016 – April 2020
Funded by: NIH R25 HL128639
Current position: Returned to his MD program to complete MD/PhD at Medical College of Virginia, VCU

18) John Chittum, B.S.

Past MS Students

1) Ishan Capila, BS

Awarded M.Sc. (Biotechnology)
Thesis “*Sugar-Protein Interactions: Modeling the Binding of Heparin with Antithrombin*”
Biotechnology Centre, Indian Institute of Technology – Bombay
July 1995 – March 1996
Enrolled as PhD student, Medicinal Chemistry, University of Iowa, Iowa City, IA
Current Position: R&D Scientist, Momenta Pharmaceuticals, Cambridge, MA
Self-Funded Student

2) Junaid Afridi, BS

Awarded M.S. (Pharmaceutical Sciences)
Thesis “*Small Molecules Binding to Serpins*”
Department of Medicinal Chemistry, VCU
February 2003 – March 2006
Enrolled as Dental student at New York Univ.
Current Position: Practicing Dentist, New York, NY
Self-Funded Student

3) Mohammed Rahman, BS

Awarded M.S. (Pharmaceutical Sciences)
Thesis “*Synthesis of Novel Biflavonoids*”
Department of Medicinal Chemistry, VCU
February 2003 – March 2006
Started as Research Scientist, Lyotropic Technologies, Ashland, VA
Current Position: Business Director, Evonik Industries, North America
Self-Funded Student

4) Jay Thakkar, BS

Awarded M.S. (Pharmaceutical Sciences)

Awarded Ph.D. in Pharmaceutical Sciences
Dissertation title: “*Use of GAG Microarray Technology in Understanding Structure–Function Relationships of Glycosaminoglycan–Protein Systems*”

Oct 2018 – Nov 2022

Funded by: School of Pharmacy, VCU & P01 HL151333

Current Position: Postdoctoral Associate, National Cancer Institute, Frederick, MD

19) Elsamani Abdelfadial, B.S.

Awarded Ph.D. in Biochemistry
Dissertation title: “*Assessing Drug Development Properties of Antithrombotic and Anticancer Agents*”

Aug 2017 – March 2023

Funded by: School of Medicine, VCU & U01 CA241951-01S1

Current position: Postdoctoral Fellow, VCU

Thesis Title “*Discovery of Lignin Sulfate, a Potent Inhibitor of Herpes Simplex Virus – 1 Entry into Cells*”

Department of Medicinal Chemistry

February 2003 – March 2006

Continued to PhD program in the laboratory
Self-Funded Student

5) Jenson Verghese, BPharm

Awarded M.S. (Pharmaceutical Sciences)
Thesis Title “*Synthesis and Biochemical Studies on Sulfated Monomers of Low Molecular Weight Lignins*”

Department of Medicinal Chemistry

November 2007 – July 2009

Continued as a PhD student in the Dr. Keith Ellis’ (VCU) laboratory

Current Position: Postdoctoral Associate, VCU
Self-Funded Student

6) Bijoy Desai, BPharm

Awarded M.S. (Pharmaceutical Sciences)
Thesis Title “*Interaction of Thrombin with Exosite II Ligands*”

Department of Medicinal Chemistry

November 2007 – July 2009

Continued as a PhD student at University of Illinois-Urbana Champaign
Self-Funded Student

7) Shrenik Mehta, BPharm

Awarded M.S. (Pharmaceutical Sciences)
Thesis Title “*Synthesis of a Library of Small Sulfated Molecules*”

Department of Medicinal Chemistry

November 2009 – July 2011

Self-Funded Student
Current Position: Scientist, Genentech, South San Francisco, LA

Continued as a PhD student in the lab
Funded by Government of Saudi Arabia
Funded by the Government of Kuwait

8) Malaika Argade, BPharm

Awarded M.S. (Pharmaceutical Sciences)
Thesis Title “*Discovery and Biophysical Characterization of Allosteric Inhibitors of Factor XIa*”
Department of Medicinal Chemistry
November 2010 – July 2012
Continued as a PhD student in the laboratory of Dr. M. Dukat, VCU
Self-Funded Student

11) Elsamani Abdelfadiel, BS

Awarded M.S. in Biochemistry
Dissertation title: “*Investigation of Coagulation Properties of Glycosaminoglycans Mimetics*”
March 2016 – August 2017
Current position: PhD student, VCU
Funded by School of Medicine, VCU

9) Pooja Ponnusamy, BPharm

Awarded M.S. (Pharmaceutical Sciences)
Thesis Title “*Reverse-phase Ion-Pairing Ultra Performance Liquid Chromatography – Mass Spectrometry in Characterization and Fingerprinting of Diverse Sulfated Glycosaminoglycan Mimetics*”
Department of Medicinal Chemistry
November 2010 – April 2013
Started as a Certifying Scientist (LC-MS) at Alere Toxicology Service, Richmond, VA
Current position: R&D Scientist, MediTox, West Palm Beach, FL
Self-Funded Student

12) Connor O’Hara, BS

Awarded M.S. in Pharmaceutical Sciences
Dissertation title: “*Inhibition of cancer stem cells by glycosaminoglycan mimetics*”
July 2017 – June 2019
Self-Funded Student
Current position: PhD student, VCU

10) Alhumaidi Alabbas, BPharm

Awarded M.S. (Pharmaceutical Sciences)
Thesis Title: “*Structural Studies on Heparan Sulfated Oligosaccharides*”
Department of Medicinal Chemistry
November 2012 – July 2014

13) Rawan Fayyad, BS

Awarded M.S. in Pharmaceutical Sciences
Dissertation title: “*Development of Analytical Methods for Glycosaminoglycan Analysis*”
October 2019 – May 2021
Funded by: School of Pharmacy, VCU
Current position: Joined PhD program at VCU

14) Tamim Chiba, BPharm

Awarded M.S. in Pharmaceutical Sciences
Dissertation title: “*Glycosaminoglycan Recognition of Proteins Important in Alzheimer’s Disease*”
Oct 2018 – June 2021
Funded by: Self-Funded
Current position: Joined PhD program at VCU

Past Post-doctoral Fellows

1) Dipal Bhowmik, PhD

PhD from the Indian Institute for Cultivation of Science, Calcutta, India
July 2000 – June 2002
Moved as Postdoctoral Fellow, University of Syracuse, NY
Current Position: R&D Scientist, Dr. Reddy’s Research Laboratories, Hyderabad, India
Funded by AHA Beginning Grant-In-Aid

Funded by AHA –Mid-Atlantic Affiliate

3) Bernhard H. Monien, PhD

PhD from University of Freiburg, Germany
July 2003 – Sept. 2005
Took up position as a postdoctoral fellow at the University of California – Los Angeles
Funded by NIH R01 HL069975

2) Gunnar Gunnarsson, PhD

PhD from the Department of Medicinal Chemistry, VCU
Funded by a postdoctoral grant from the American Heart Association – Mid-Atlantic Affiliate
June 2003 – June 2005
Took up position as Junior Investigator, National Cancer Institute, Frederick, MD
Current position: Scientific Officer, European Directorate for the Quality of Medicines & HealthCare (EDQM), France

4) Muhammed Riaz, PhD

PhD from the University of Karachi, Pakistan
May 2004 – August 2007
Took up position as an assistant professor at the Virginia State University, Petersburg, VA
Current position: Associate Professor, NUST Center of Virology and Immunology, National University of Science and Technology, H-12, Islamabad, Pakistan
Funded by NIH R01 HL069975

5) Shashidhar Akubathini, PhD

PhD from the Osmania University, India

December 2010 – March 2011
Returned to India to join Sapala Organics,
Hyderabad, India
Current position: DST Young Scientist, Department
of Chemistry, National Institute of Technology,
Warangal, India
Funded by NIH R01 HL090586

6) Aiye Liang, PhD

PhD from the Dalian Institute of Chemical Physics,
China
July 2006 – August 2011
Took up an assistant professorship in the Charleston
Southern University, Charleston, SC
Current Position: Professor, Charleston Southern
University, Charleston, SC
Funded by NIH R01 HL090586

7) Phil Mosier, PhD

PhD from the Pennsylvania State University, PA
October 2009 – August 2011
Current Position: Research Assistant Professor,
Virginia Commonwealth University, Richmond, VA
Funded by NIH R01 HL090586

8) Neha Gandhi, PhD

PhD from Curtin University, Australia
February 2012 – July 2012
Joined Curtin University as a lecturer
Current Position: Lecturer, Curtin University,
Australia
Funded by NIH P01 HL107152

9) Rajesh Karuturi, PhD

PhD from the Institute of Chemical Technology,
India
January 2010 – April 2014
Current Position: R&D Scientist, Biogene Organics,
Raleigh, NC
Funded by NIH P01 HL107152

10) Aurijit Sarkar, PhD

PhD from the Virginia Commonwealth University,
Richmond, VA
September 2012 – February 2016
Current Position: Assistant Professor, Creighton
University, Nebraska
Funded by NIH P01 HL107152

11) Rami Al-Horani, M.Pharm.

PhD from Virginia Commonwealth University,
Richmond, VA

American Heart Association post-doctoral fellow
(#12POST10930004)
July 2012 – August 2016
Funded by AHA – Mid-Atlantic Affiliate
Current Position: Assistant Professor, Xavier
University, New Orleans, LA

12) Akul Mehta, B.Pharm.

PhD from VCU, Richmond, VA
July 2014 – October 2016
Commonwealth Research Commercialization Fund
(CRCF) post-doctoral fellow
Current Position: Postdoctoral Fellow, Harvard
Medical School, Boston, MA
Funded by CRCF – Virginia

13) Jyothi Sistla, PhD

PhD from the University of Mysore, India
May 2016 – June 2020
Current Position: Postdoctoral Fellow, Stonybrook
University, NY
Funded by: NIH K12 HL141954 & R25 HL128639

14) Ravikumar Ongolu

PhD from Indian Institute of Technology, Bombay,
India
July 2017 – November 2020
Current Position: Postdoctoral Fellow, Medicines for
All, Virginia Commonwealth University, VA
Funded by: NIH R01 HL090586

15) Daniel Afosah

PhD from VCU, Richmond, VA
July 2017 – June 2021
Current Position: Assistant Professor, Washington
and Lee University, VA
Funded by: NIH K12 HL128639

16) Swarnali Roy

PhD from Indian Institute of Chemical Biology,
Calcutta, India
Nov 2021 – February 2023
Current Position: Postdoctoral Associate, National
Institutes of Health
Funded by: NIH R01 HL090586

17) Balaji Nagarajan, PhD

PhD from the University of Madras, India
January 2014 – December 2022
Current Position: Staff Scientist, Virginia
Commonwealth University
Funded by: NIH P01 HL107152, U01 CA241951

Undergrad. Students Trained OR in Training

1) Monita Patel

Summer Intern from Univ. of Virginia
June – August 1999

Enrolled as M.S. student, Public Health, Duke
University, NC

2) Laura Lahaye

Undergraduate Intern

from Virginia Commonwealth University
December 1999 – July 2001
Enrolled in the MD program, University of
Virginia

3) Jenny Johns, B.S.

Ph.D. candidate
of Department of Biochemistry, VCU
December 1999 – July 2001
Moved to Harvard Medical School as post-
doctoral fellow

4) Annika Ingemansson

Summer Intern
from Lund University, Malmö, Sweden
February – May 2002
Enrolled as an MD student in Lund University

5) Derrick Glymph

Summer Intern
From Department of Nurse Anesthesia
Virginia Commonwealth University
June–August 2003
Graduated as Nurse Anesthetist from VCU

6) Henrietta Nielsen

Undergraduate Intern
from Lund University, Malmö, Sweden
March 2004 – June 2004
Enrolled as a PhD student in Lund University

7) Joanna Adams

REU (NSF) Student
From Mary Washington College,
Fredericksburg, VA
June 2004 – August 2004
Started as a MD student at Medical College of
Virginia

8) H. Nguyen

Pharmacy Research Student
From VCU
Jul 2004 – Apr 2005
Returned to Pharmacy school at VCU

9) Justin Connell

Undergraduate Intern
From College of William and Mary,
Williamsburg, VA
May 2007 – August 2007
Started as a PhD student at Northwestern
University, IL

10) Paisley Bowles

Undergraduate Research Student
From Department of Chemistry, VCU
May 2008 – Dec. 2008
Started as a chemist at Boehringer-Ingelheim,
VA

11) Mauro Costigiani

Pharmacy Research Student
From University of Messina, Italy
Nov 2008 – Dec 2008
Returned back to Italy to complete Pharmacy
degree

12) Meghan Thompson

Pharmacy Research Student
From VCU
Jul 2009 – Jul 2010
Started as PharmD/PhD student at VCU

13) Ji-Yeong Kim

Undergraduate Research Student
From VCU
Jul 2009 – Jul 2010
Started at PharmD student at Shenandoah
University, VA

14) Miten Patel

Undergraduate Student
From VCU
Aug 2010 – Dec 2010

15) Alessio Brjan Irrera

Pharmacy Research Exchange Student
From University of Messina, Italy
Oct 2010 – Nov 2010
Returned back to Italy to complete Pharmacy
degree

16) Karthik Murthy

Undergraduate Student (Biomedical
Engineering)
From VCU
March 2011 – March 2012

17) Susana Ayad

Undergraduate Student (Biology)
From VCU
July 2011 – December 2011

18) Adriana Merlino

Pharmacy Research Exchange Student
From University of Messina, Italy
Oct 2011 – Nov 2011
Returned back to Italy to complete Pharmacy
degree

19) Dominique White

HERO Program Undergraduate Student
From Norfolk State University
May 2013 – Jun 2013
Returned back to her BS program

20) Giulia Barlow

Pharmacy Research Student
From VCU

June 2014 – June 2017

21) Michael Lee

Pharmacy Research Student
From VCU
June 2014 – Aug 2014
Returned to PharmD program at VCU

22) Yiling Bi

PhD Student from University of Utah
June 2014 – July 2014
Returned to PhD program at Utah

23) Yasser Ali

Pharmacy Research Student
From VCU
Nov 2014 – July 2016
Returned to PharmD program at VCU

24) Megh Kumar

B.S. (Biomedical Engg)
From VCU
July 2016 – Dec 2018

25) Anusha Patterson

9th Grader (BioMedical Sciences Program)
From Godwin High School
Feb 2018 – Apr 2018

26) Jacob Rodriguez

B.S. (Biomedical Engg)

From VCU
May 2018 – Dec 2020

27) Carissa Campbell

B.S. (Biology)
From Virginia Polytechnic
June 2018 – Dec 2018

28) Pratiik Kaushik

B.S. (Biology)
From Virginia Commonwealth Univ.
Jan 2019 – Dec 2019

29) Ricardo Quintanilla, BS

B.S.
... From School of Pharmacy, VCU
October 2021 – present

30) Sophie Diagne

B.S. (Chemistry)
... From College of Humanities and Sciences,
VCU
October 2021 – present

31) Andrew Hadsdy

B.S. (Chemistry)
... From College of Humanities and Sciences,
VCU
May 2023 – present

Technicians Trained

1) Bidisha Bhowmik, Ph.D.

Research Technician
July 2001 – December 2001

2) Mandakini Dantuluri, B.Pharm.

Technician
February 2002 – June 2004

3) Abdul Quadir Khan, B.Pharm.

Technician
March 2005 – July 2006
Moved to University of Arizona as a PhD
student

4) Ji-Yeong Kim

Technician
Nov 2011 – Aug 2012

5) Sathya Karuturi

Technician
Nov 2012 – Jun 2013

6) Huy Huynh

Technician
Jan 2013 – Jun 2013

7) Nirmita Patel, MBBS

Technician
October 2013 – May 2017

8) Morgan Claybrook., M.S.

Research Technician
August 2019 – October 2021

Service on the Student Graduate Advisory Committee

1. Ally Thompson, PhD, Department of Medicinal Chemistry, 2022 – present
2. Rawan Fayyad, PhD, Department of Medicinal Chemistry, 2021 – present
3. Tamim Chiba, PhD, Department of Medicinal Chemistry, 2021 – present
4. Cory Fines, PhD, Pharmaceutical Engineering Program, Schools of Pharmacy and Engineering, 2020 – 2022

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5. Connor O'Hara, PhD, Department of Medicinal Chemistry, 2019 – 2023
 6. Rawan Fayyad, MS, Department of Medicinal Chemistry, 2019 – 2021
 7. John Chittum, PhD, Department of Medicinal Chemistry, 2018 – 2022
 8. Elsamani Abdelfadiel, PhD, Department of Biochemistry, 2017 – 2023
 9. Samuel Holmes, PhD, Department of Medicinal Chemistry, School of Pharmacy, 2018 – 2023
 10. Tamim Chiba, MS, Department of Medicinal Chemistry, 2018 – 2021
 11. Abhinav Mohan, PhD, School of Life Sciences, 2018 – 2021
 12. David Hampton, PhD, Department of Chemistry, College of Humanities and Sciences, 2017 – 2021
 13. Rahaman Navaz Gangji, MD/PhD, Department of Biochemistry, 2016 – 2020
 14. Connor O'Hara, MS, Department of Medicinal Chemistry, 2017 – 2019
 15. Elsamani Abdelfadiel, MS, Department of Biochemistry, School of Medicine, 2016 – 2018
 16. Shravan Morla, PhD, Department of Medicinal Chemistry, School of Pharmacy, 2015 – 2019
 17. Piyusha Pagare, PhD, Department of Medicinal Chemistry, School of Pharmacy, 2015 – 2018
 18. Tien Truong, PharmD/PhD, Department of Pharmaceutics, School of Pharmacy, 2015 – 2016
 19. Alhumaidi Alabbas, PhD, Dept. of Medicinal Chemistry, School of Pharmacy, 2014 – 2018
 20. Wyatt Johnson, PhD, Dept. of Chemistry, College of Humanities and Sciences, 2014 – 2018
 21. Stephen Verespy, PhD, Program on Chemical Biology, Coll. of Humanities and Sci., 2013 – 2016
 22. Bashayer Althufiari, PhD, Dept. of Medicinal Chemistry, School of Pharmacy, 2013 – 2016
 23. Augustine Joseph Pagan, MS, Dept. of Chemistry, Coll. of Humanities & Sciences, 2013 – 2015
 24. Alhumaidi Alabbas, MS, Department of Medicinal Chemistry, School of Pharmacy, 2012 – 2014
 25. Daniel Afosah, PhD, Department of Medicinal Chemistry, School of Pharmacy, 2012 – 2017
 26. Meghan Thompson, PhD, Department of Medicinal Chemistry, School of Pharmacy, 2011 – 2015
 27. Chenxiao Da, PhD, Department of Medicinal Chemistry, School of Pharmacy, 2010 – 2013
 28. Hardik Parikh, PhD, Department of Medicinal Chemistry, School of Pharmacy, 2010 – 2013
 29. Deboleena Mitra, PhD, Dept. of Chemistry, College of Humanities and Sciences, 2010 – 2014
 30. Zafer Ugur, PhD; Department of Chemistry, College of Humanities and Sciences, 2010 – 2012
 31. Jigar Desai, MS; Department of Medicinal Chemistry, School of Pharmacy, 2010 – 2011
 32. Ronak Gandhi, MS; Department of Medicinal Chemistry, School of Pharmacy, 2010 – 2011
 33. Aurijit Sarkar, PhD; Department of Medicinal Chemistry, School of Pharmacy, 2010
 34. Soumya Remesh, MS; Department of Medicinal Chemistry, School of Pharmacy, 2010
 35. Malaika Argade, MS, Department of Medicinal Chemistry, School of Pharmacy, 2010 – 2012
 36. Pooja Ponnusamay, MS, Department of Medicinal Chemistry, School of Pharmacy, 2010 – 2013
 37. Rio S. Boothello, PhD, Department of Medicinal Chemistry, School of Pharmacy, 2009 – 2014
 38. Shrenik Mehta, MS, Department of Medicinal Chemistry, School of Pharmacy, 2009 – 2011
 39. Akul Y. Mehta, PhD, Department of Medicinal Chemistry, School of Pharmacy, 2008 – 2014
 40. Bhawana Saluja, PhD; Department of Pharmaceutics, School of Pharmacy, 2008 – 2010
 41. May H. Abdel Aziz, PhD, Dept. of Medicinal Chemistry, School of Pharmacy, 2008 – 2013
 42. Vivek Kaushik, PhD; Dept. of Chemistry, College of Humanities and Sciences, 2008 – 2011
 43. Preetpal Singh Sidhu, PhD, Dept. of Medicinal Chemistry, School of Pharmacy, 2007 – 2011
 44. Rami Al-Horani, PhD, Department of Medicinal Chemistry, School of Pharmacy, 2007 – 2012
 45. Pooja Desai, PhD; Department of Medicinal Chemistry, School of Pharmacy, 2007 – 2009
 46. Bijoy Desai, MS; Department of Medicinal Chemistry, School of Pharmacy, 2007 – 2009
 47. Jay Thakkar, PhD; Department of Medicinal Chemistry, School of Pharmacy, 2006 – 2011
 48. J. Timothy King, PhD, Department of Medicinal Chemistry, School of Pharmacy, 2006 – 2011
 49. Arjun Raghuraman, PhD; Department of Medicinal Chemistry, School of Pharmacy, 2005 – 2009
 50. Brian Henry, PhD; Department of Medicinal Chemistry, School of Pharmacy, 2005 – 2008
 51. Harmindar Bhatia, MS; Department of Biochemistry, School of Medicine, 2005 – 2007
 52. Chandravel Krishnasamy, PhD; Dept. of Medicinal Chemistry, School of Pharmacy, 2004 – 2009
 53. Jay N. Thakkar, MS; Department of Medicinal Chemistry, School of Pharmacy, 2003 – 2006
 54. Junaid Afridi, MS; Department of Medicinal Chemistry, School of Pharmacy, 2003 – 2005
 55. Mohammed Rahman, MS; Dept. of Medicinal Chemistry, School of Pharmacy, 2003 – 2005

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56. Hsiang Lin, PhD; Department of Medicinal Chemistry, School of Pharmacy, 2002 – 2006
 57. Chaoxuan Li, PhD; Department of Medicinal Chemistry, School of Pharmacy, 2004 – 2005
 58. Jenny Johns, PhD; Department of Biochemistry, School of Medicine, 2002 – 2005
 59. Adnan Kadi, PhD; Department of Medicinal Chemistry, School of Pharmacy, 2003 – 2005
 60. Sarbjot Sachdeva, PhD; Department of Medicinal Chemistry, School of Pharmacy, 2003 – 2004
 61. Gunnar T. Gunnarsson, PhD; Dept. of Medicinal Chemistry, School of Pharmacy, 1998 – 2003

Awards/Honors/Fellowships Received by Desai's Students/Trainees/Postdocs

2000	Undergraduate Research Scholarship	<i>Laura Lahaye</i>
2001	Pre-doctoral Fellowship of the Am. Heart Association	<i>Gunnar Gunnarsson</i>
2002	2 nd Place, FORBES Day Presentations	<i>Gunnar Gunnarsson</i>
2002	J. Doyle Smith Award of the Department of Medicinal Chemistry	<i>Gunnar Gunnarsson</i>
2003	Post-doctoral Fellowship of the Am. Heart Association	<i>Gunnar Gunnarsson</i>
2004	School of Pharmacy Summer Research Fellowship	<i>H. Nguyen</i>
2004	Research Experience for Undergraduates (REU) Scholar	<i>Joanna Adams</i>
2005	Outstanding Tutoring in School of Pharmacy	<i>Arjun Raghuraman</i>
2005	School of Pharmacy Summer Research Fellowship	<i>J. Timothy King</i>
2006	J. Doyle Smith Award of the Department of Medicinal Chemistry	<i>Arjun Raghuraman</i>
2006	Best Poster Award, School of Pharmacy Research Day	<i>Brian L. Henry</i>
2007	Research Experience for Undergraduates (REU) Scholar	<i>Trish Lauck</i>
2007	Finalist, School of Pharmacy Dean's Award	<i>Brian L. Henry</i>
2007	φκφ Graduate Scholarship	<i>Arjun Raghuraman</i>
2007	Best Poster, GSA Research Symposium	<i>Brian L. Henry</i>
2007	School of Pharmacy Dean's Award for Graduate Studies	<i>Arjun Raghuraman</i>
2008	Best Poster Award, School of Pharmacy Research Day	<i>J. Timothy King</i>
2009	Committee on the Advancement of Women Chemists Award	<i>Aiye Liang</i>
2009	Howard Hughes Medical Institute (HHMI) Undergrad Scholar	<i>Ji Yeong Kim</i>
2009	Runner Up, School of Pharmacy Research Day Poster Award	<i>J. Timothy King</i>
2009	Amer. Assoc. of Indian Pharm. Scientist's Student Award	<i>Preetpal S. Sidhu</i>
2010	School of Pharmacy Summer Research Fellowship	<i>Meghan Thompson</i>
2010	Best Poster Award, School of Pharmacy Research Day	<i>Rami Al-Horani</i>
2011	J. Doyle Smith Award of the Department of Medicinal Chemistry	<i>J. Timothy King</i>
2011	Finalist, School of Pharmacy Dean's Award	<i>J. Timothy King</i>
2011	School of Pharmacy Summer Research Fellowship	<i>Biruk Mikru</i>
2011	Runner Up, School of Pharmacy Research Day Poster Award	<i>Rami Al-Horani</i>
2012	J. Doyle Smith Award of the Department of Medicinal Chemistry	<i>Rami Al-Horani</i>
2012	Best Poster Award, Annual Fellows Day, AHA	<i>Brian L. Henry</i>
2012	Third Place, Graduate Research Symposium, VCU	<i>Pooja Ponnusamy</i>
2012	School of Pharmacy Dean's Award for Graduate Studies	<i>Rami Al-Horani</i>
2012	Outstanding Poster Presentation Award, Gordon Research Seminar	<i>Nehru Viji S.</i>
2012	Runner Up, School of Pharmacy Research Day Poster Award	<i>Akul Y. Mehta</i>
2012	VCU Graduate School Dissertation Fellowship	<i>May H. Abdel Aziz</i>
2013	School of Pharmacy Dean's Award for Graduate Studies	<i>May. H. Abdel Aziz</i>
2013	αελ Honor Society Inductee	<i>Akul Y. Mehta</i>
2013	Best Seminar Award, Department of Medicinal Chemistry	<i>Daniel Afosah</i>
2013	VCU Graduate School Dissertation Fellowship	<i>Rio S. Boothello</i>
2013	Runner Up, Postdoctoral Poster Presentation Award	<i>Aurijit Sarkar</i>
2013	αφκ Honor Society Inductee	<i>Daniel Afosah</i>
2014	VCU Graduate School Dissertation Fellowship	<i>Akul Y. Mehta</i>

2014	ASBMB 2014 Graduate/Postdoctoral Travel Award	<i>Aurijit Sarkar</i>
2014	J. Doyle Smith Award of the Department of Medicinal Chemistry	<i>Akul Y. Mehta</i>
2014	Phi Kappa Phi Scholarship	<i>Daniel Afosah</i>
2014	Outstanding Poster Presentation, 3 rd Inter-PEG Meeting, Washington, DC	<i>Akul Y. Mehta</i>
2014	Rho Chi Honor Society Inductee	<i>Meghan Thompson</i>
2014	Finalist, School of Pharmacy Dean's Award	<i>Akul Y. Mehta</i>
2014	International Society of Matrix Biology Young Scientist Award	<i>Aurijit Sarkar</i>
2014	Best Seminar Award, Department of Medicinal Chemistry	<i>Bashayer Althufiari</i>
2014	VCU Postdoctoral Association Research Grant Award	<i>Rami Al-Horani</i>
2014	Outstanding Poster Presentation Award, School of Pharmacy Research Day	<i>Viji Sankaranarayanan</i>
2014	Outstanding Poster Presentation Award, School of Pharmacy Research Day	<i>Michael Lee</i>
2015	Student Inter-Professional Excellence Recognition Award	<i>Meghan Thompson</i>
2015	Travel Award, Gordon Conference on Computer-Aided Drug Design	<i>Aurijit Sarkar</i>
2016	Donald and Nancy Abraham Postdoctoral Grant Award	<i>Rami Al-Horani</i>
2016	Outstanding Poster Presentation Award, VCU 3D Summit	<i>Stephen Verespy</i>
2016	Future GlycoGen Leader, Inter-PEG Annual Meeting	<i>Akul Mehta</i>
2016	Outstanding Poster Presentation Award, VCU 3D Summit	<i>Daniel Afosah</i>
2016	School of Pharmacy Phi Kappa Phi Award	<i>Daniel Afosah</i>
2016	Travel Award, Gordon Research Seminar on Proteoglycans	<i>Viji Sankaranarayanan</i>
2016	Graduate Travel Award, School of Pharmacy	<i>Daniel Afosah</i>
2016	Outstanding Poster Presentation Award, GRC on Proteoglycans	<i>Balaji Nagarajan</i>
2017	Future GlycoGen Leader, Inter-PEG Annual Meeting	<i>Daniel Afosah</i>
2017	J. Doyle Smith Award, Department of Medicinal Chemistry	<i>Daniel Afosah</i>
2017	School of Pharmacy Dean's Award for Graduate Studies	<i>Daniel Afosah</i>
2017	Blake Putney Award	<i>Daniel Afosah</i>
2017	VCU Graduate School Dissertation Fellowship	<i>Al-Humaidi Alabbas</i>
2017	Donald and Nancy Abraham Postdoctoral Grant Award	<i>Rio Boothello</i>
2018	ASBMB 2018 Graduate/Postdoctoral Travel Award	<i>Balaji Nagarajan</i>
2018	Peter and Sian Byron Travel Award	<i>Shravan Morla</i>
2018	Carl Storm Underrepresented Minority Fellowship, Gordon Conferences	<i>Daniel Afosah</i>
2018	J. Doyle Smith Award, Department of Medicinal Chemistry	<i>Alhumaidi Alabbas</i>
2018	Best Student Presentation Award, 2018 VAS Annual Meeting	<i>Shravan Morla</i>
2018	VCU Graduate School Dissertation Fellowship	<i>Shravan Morla</i>
2018	Best Abstract Award, 2018 AAPS Annual Meeting	<i>Shravan Morla</i>
2018	Rector and Rorrer Travel Award	<i>Shravan Morla</i>
2018	Phi Kappa Phi Inductee	<i>Shravan Morla</i>
2019	Spotlight Presentation at the ASBMB 2019, Orlando, FL	<i>Shravan Morla</i>
2019	ASBMB 2019 Graduate/Postdoctoral Travel Award	<i>Daniel Afosah</i>
2019	Spotlight Presentation at the ASBMB 2019, Orlando, FL	<i>Balaji Nagarajan</i>
2019	ASBMB 2019 Graduate/Postdoctoral Travel Award	<i>Viji Sankaranarayanan</i>
2019	Peter and Sian Byron Travel Award	<i>Connor O'Hara</i>
2019	Spotlight Presentation at the ASBMB 2019, Orlando, FL	<i>Daniel Afosah</i>
2019	J. Doyle Smith Award, Department of Medicinal Chemistry	<i>Shravan Morla</i>
2019	Runners-Up, Dean's Award for Graduate Studies	<i>Shravan Morla</i>
2019	Postdoctoral Travel Award, VCU Postdoc Association	<i>Balaji Nagarajan</i>
2019	Postdoctoral Travel Award, VCU Postdoc Association	<i>Jyothi Sistla</i>
2019	Postdoctoral Travel Award, VCU Postdoc Association	<i>Ravikumar Ongolu</i>
2019	Best Abstract Award, 2019 VADDC Symposium	<i>Daniel Afosah</i>
2019	Best Poster Award, 2019 VADDC Symposium	<i>Connor O'Hara</i>
2019	Society for Glycobiology 2019 Travel Award	<i>Daniel Afosah</i>
2019	Graduate Poster Award, 2019 SoP Research & Career Day Symposium	<i>Connor O'Hara</i>

2020	Outstanding Scientist Scholarship, Asso. of Biomol. Resource Facilities	<i>Srinivas Sistla</i>
2020	Rector and Rorrer Travel Award	<i>Connor O'Hara</i>
2020	Poster Presentation Award, 2020 Society for Glycobiology	<i>Daniel Afosah</i>
2021	Best Seminar Award, Department of Medicinal Chemistry	<i>Connor O'Hara</i>
2021	Outstanding Masters' Thesis, School of Pharmacy	<i>Rawan Fayyad</i>
2021	Outstanding Masters' Thesis, The Graduate School, VCU	<i>Rawan Fayyad</i>
2021	Society for Glycobiology 2021 Travel Award	<i>Rawan Fayyad</i>
2021	VCU Graduate School Travel Award	<i>Connor O'Hara</i>
2021	F31 Travel Award from School of Pharmacy	<i>Connor O'Hara</i>
2021	Rector & Rorrer Travel Award	<i>John Chittum</i>
2021	Rector & Rorrer Travel Award	<i>Sam Holmes</i>
2022	K99/R00 Pathway to Independence Award	<i>Daniel Afosah</i>
2022	Excellence in Professionalism Award, School of Pharmacy	<i>Tamim Chiba</i>
2022	VCU Graduate School Dissertation Fellowship	<i>John Chittum</i>
2022	Best Publication Award of the Department of Medicinal Chemistry	<i>John Chittum</i>
2023	ASBMB 2023 Graduate/Postdoctoral Travel Award	<i>Connor O'Hara</i>
2023	ASBMB 2023 Graduate/Postdoctoral Travel Award	<i>Samuel Holmes</i>
2023	Rector & Rorrer Travel Award from School of Pharmacy	<i>Sam Holmes</i>
2023	Rector & Rorrer Travel Award from School of Pharmacy	<i>Tamim Chiba</i>
2023	Rector & Rorrer Travel Award from School of Pharmacy	<i>Connor O'Hara</i>
2023	VCU Graduate School Dissertation Fellowship	<i>Connor O'Hara</i>
2023	2 nd Place Winner, 'Science in a Flash' talk at the ASBMB 2023	<i>Connor O'Hara</i>
2023	Best Teaching Assistant Award, Department of Medicinal Chemistry	<i>Rawan Fayyad</i>
2023	Best Service Award, Department of Medicinal Chemistry	<i>Connor O'Hara</i>
2023	Best Teaching Assistant Award, Department of Medicinal Chemistry	<i>Tamim Chiba</i>

Poster Presentations by Desai's Students/Trainees/Postdocs

1. Rayyad, R. M.; Diagne, S.; Puliafico, V.; Merrell, S.; Langmia, E.; Al-Horani, R. A.; Afosah, D. K.; Desai, U. R. Screening and identification of potent non-saccharide glycosaminoglycan mimetic inhibitors for the pro-inflammatory protease cathepsin G. *Annual Research & Career Day – School of Pharmacy*, Richmond, VA (March 2023).
2. Chiba, T.; Sankaranarayanan, NV.; Desai, U. R. Interaction of glycosaminoglycans with cathepsin D. Annual meeting of the *American Society for Biochemistry and Molecular Biology*, Seattle, WA (March 2023).
3. O'Hara, C. P.; Morla, S.; Ongolu, R.; Sankaranarayanan, NV., Boothello, R. S.; Patel, B. B.; Desai, U. R. Non-saccharide glycosaminoglycan mimetics selectively target certain receptor tyrosine kinases to induce anti-cancer stem cell activity. Annual meeting of the *American Society for Biochemistry and Molecular Biology*, Seattle, WA (March 2023).
4. Holmes, S.; Nagarajan, B.; Desai, U. R. Role of 3-O-sulfation-induced rare and compact topologies of heparan sulfate in selective recognition of proteins. Annual meeting of the *American Society for Biochemistry and Molecular Biology*, Seattle, WA (March 2023).
5. Afosah, D. K.; Puliafico, V.; Merrell, S.; Langmia, E.; Fayyad, R.; Al-Horani, R. A.; Desai, U. R. Non-saccharide GAG mimetics as inhibitors of cathepsin G. *Society for Glycobiology* annual meeting, Amelia Island, FL (October 2022).
6. Rusiniak, M. E.; Sankaranarayanan, NV.; Sistla, S.; Freeland, A.; Chittum, J. E.; Xu, D.; Hoffmeister, K.; Desai, U. R.; Lau, J. T. Y. Glycosaminoglycans direct extracellular ST6Gal1 bioactivity in human monocytic cells. *Society for Glycobiology* annual meeting, Amelia Island, FL (October 2022).
7. Chittum, J.; Sankaranarayanan, NV.; Desai, U. R. Probing GAG interactions with SARS-CoV-2 spike glycoprotein using a synthetic carbohydrate microarray. *Gordon Research Conference – Proteoglycans*, Andover, NH (Jul 2022).
8. Chiba, T.; Sankaranarayanan, NV.; Desai, U. R. Selective recognition of cathepsin D by heparan sulfate glycosaminoglycans. *Gordon Research Conference – Proteoglycans*, Andover, NH (Jul 2022).

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9. Holmes, S.; Nagarajan, B.; Desai, U. R. 3-O-sulfation induces unique local topologies in the heparan sulfate biopolymer. *Gordon Research Conference – Proteoglycans*, Andover, NH (Jul 2022).
 10. Holmes, S.; Nagarajan, B.; Desai, U. R. 3-O-sulfation induces unique local topologies in the heparan sulfate biopolymer. 6th annual *Virginia Drug Discovery Consortium* symposium, Richmond, VA (May 2022).
 11. Chiba, T.; Sankaranarayanan, NV.; Desai, U. R. Glycosaminoglycan modulation of cathepsin D. 6th annual *Virginia Drug Discovery Consortium* symposium, Richmond, VA (May 2022).
 12. Chittum, J. E.; Sankaranarayanan, NV.; Desai, U. R. Construction of a synthetic carbohydrate microarray for screening against SARS-CoV-2 spike glycoprotein. 6th annual *Virginia Drug Discovery Consortium* symposium, Richmond, VA (May 2022).
 13. Roy, S.; Fayyad, R.; Alabbas, A. B.; Hawkridge, A.; Desai, U. R. Glycomics of commercially available oligosaccharides of uniform chain length indicates considerable heterogeneity and polydispersity. 6th annual *Virginia Drug Discovery Consortium* symposium, Richmond, VA (May 2022).
 14. Gunta, R.; Afosah, D.; Desai, U. R. Design and synthesis of a photoaffinity probe of sulfated D-(+)-chiroinositol for identification of protein targets of a promising synthetic glycosaminoglycan-related anticoagulant. 6th annual *Virginia Drug Discovery Consortium* symposium, Richmond, VA (May 2022).
 15. Quintanilla, R., Sankaranarayanan, NV., Desai, U. R. Understanding recognition of factor XIa by non-saccharide glycosaminoglycan mimetics. *Annual Research & Career Day – School of Pharmacy*, Richmond, VA (February 2022).
 16. O'Hara, C. P.; Morla, S.; Ongolu, R.; Patel, N. J.; Boothello, R. S.; Patel, B. B.; Desai, U. R. Synthetic, small molecule glycosaminoglycan mimetics induce novel anti-cancer activity through preferential targeting of a growth factor receptor. *American Association for Cancer Research* annual meeting, Virtual/In-Person Format (www.aacr.org/meeting/aacr-annual-meeting-2022) (April 2022).
 17. O'Hara, C. P.; Morla, S.; Ongolu, R.; Patel, N. J.; Boothello, R. S.; Patel, B. B.; Desai, U. R. Synthetic mimetics of glycosaminoglycans preferentially target insulin-like growth factor – 1 receptor present on colorectal spheroidal surface. *Society for Glycobiology* annual meeting, Virtual/In-Person Format (www.glycobiology.org) (November 2021).
 18. Rayyad, R. M.; Afosah, D. K.; Desai, U. R. Quantitative analysis of sulfated and lipidic mimetics of glycosaminoglycans in human plasma. *Society for Glycobiology* annual meeting, Virtual/In-Person Format (www.glycobiology.org) (November 2021).
 19. Holmes, S.; Nagarajan, B.; Desai, U. R. 3-O-sulfation drives a unique conformational change in the heparan sulfate biopolymer. *Society for Glycobiology* annual meeting, Virtual/In-Person Format (www.glycobiology.org) (November 2021).
 20. Chittum, J. E.; Sankaranarayanan, NV.; O'Hara, C. P.; Desai, U. R. Identification of the pharmacophore defining SARS-CoV-2 spike glycoprotein – heparan sulfate interaction based on microarray and computational studies. *Society for Glycobiology* annual meeting, Virtual/In-Person Format (www.glycobiology.org) (November 2021).
 21. Sharma, P.; Fassero, L. A.; Desai, U. R.; Tiwari, V.; Tandon, R. Inhibition of CMV and SARS-CoV-2 entry into host cells using a synthetic small sulfated molecule. *International Herpesvirus Workshop* annual meeting, Virtual Format (<https://www.herpesvirusworkshop.com/2021/>) (August 2021).
 22. Nagarajan, B.; Sankaranarayanan, NV.; Desai, U. R. Comprehensive screening of the theoretical SARS-CoV-2 spike glycoprotein – heparan sulfate interactome using CVLS and MD strategies reveals a pharmacophore for structure-based drug discovery. 2021 NIH & FDA Glycoscience Research Day (June 2021).
 23. Claybrook, M. L.; O'Hara, C. P.; Patel, B. B.; Desai, U. R. Spheroidal growth inhibition of a panel of NCI-60 cell lines reveals sensitivity of lung cancer lines to synthetic, lipid-modified, sulfate glycosaminoglycan mimetics. 5th annual *Virginia Drug Discovery Consortium* symposium, Virtual Format (www.vaddc.org/) (May 2021).
 24. Gunta, R.; Afosah, D.; Desai, U. R. Design and synthesis of photoaffinity probe of sulfated D-(+)-chiro inositol for identification of its protein targets. 5th annual *Virginia Drug Discovery Consortium* symposium, Virtual Format (www.vaddc.org/) (May 2021).
 25. Chittum, J. E.; Sankaranarayanan, NV.; O'Hara, C. P.; Desai, U. R. Binding of heparan sulfate microarray oligosaccharides to the spike glycoprotein of SARS-CoV-2. 5th annual *Virginia Drug Discovery Consortium* symposium, Virtual Format (www.vaddc.org/) (May 2021).
 26. Holmes, S.; Nagarajan, B.; Desai, U. R. Molecular dynamics simulations indicate that 3-O-sulfation induces unique local topology in the heparan sulfate biopolymer. 5th annual *Virginia Drug Discovery Consortium* symposium, Virtual Format (www.vaddc.org/) (May 2021).
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27. Rayyad, R. M.; Afosah, D. K.; Desai, U. R. Method for quantitative analysis of sulfated and lipidic mimetics of glycosaminoglycans in human plasma. 5th annual *Virginia Drug Discovery Consortium* symposium, Virtual Format (www.vadde.org/) (May 2021).
 28. Sankaranarayanan, NV.; Nagarajan, B.; Desai, U. R. Elucidating heparan sulfate – SARS-CoV-2 spike glycoprotein interaction using combinatorial virtual library screening and molecular dynamics. 5th annual *Virginia Drug Discovery Consortium* symposium, Virtual Format (www.vadde.org/) (May 2021).
 29. Boothello, R. S.; Sistla, J. C.; Sankaranarayanan, NV.; Nagarajan, B.; Sharon, C.; Desai, U. R.; Patel, B. B. Identification of insulin-like growth factor 1 receptor as a novel and specific target of heparin hexasaccharide that selectively inhibits cancer stem cells. *American Association for Cancer Research* annual meeting, Virtual Format (www.aacr.org/meeting/aacr-annual-meeting-2021) (April 2021).
 30. Chittum, J. E.; Sankaranarayanan, NV.; Ohara, C. P.; Desai, U. R. Heparan sulfate microarray lends insight into selective binding of SARS-CoV-2 spike glycoprotein. *Experimental Biology 2021*, Virtual Format (Abstrate ID R1674) (April 2021).
 31. O'Hara, C. P.; Sankaranarayanan, NV.; Boothello, R. S.; Patel, B. B.; Desai, U. R. Structurally defined glycosaminoglycan mimetics exhibit preference for proteins of the growth factor family. *American Association for Cancer Research* annual meeting, Virtual Format (www.aacr.org/meeting/aacr-annual-meeting-2021) (April 2021).
 32. Claybrook, M.; O'Hara, C. P.; Patel, B. B.; Desai, U. R. Spheroidal growth inhibition of cell lines from the NCI-60 panel reveals selectivity of synthetic glycosaminoglycan mimetics. *Annual Research & Career Day – School of Pharmacy*, Richmond, VA (February 2021).
 33. Fayyad, R. M.; Afosah, D. K.; Desai, U. R. Development of a method for quantitative analysis of highly sulfated and lipidified mimetics of glycosaminoglycans in human plasma. *Annual Research & Career Day – School of Pharmacy*, Richmond, VA (February 2021).
 34. Holmes, S.; Nagarajan, B.; Desai, U. R. Molecular dynamics simulations indicate that 3-O-sulfation induces unique local topologies in the heparan sulfate biopolymer. *Annual Research & Career Day – School of Pharmacy*, Richmond, VA (February 2021).
 35. Desai, U. R.; Tiwari, V.; Tandon, R.; Chan, O.; Kuberan, B. SARS-CoV-2 spike glycoprotein – 3-O-sulfated heparan sulfate interaction: Opportunities for inhibitor development. *Cold Spring Harbor Laboratory COVID/SARS CoV2 Rapid Research Reports #5* Virtual Meeting (<https://meetings.cshl.edu/meetings.aspx?meet=covid-r3-5&year=21>; January 2021).
 36. Chan, A.; Ahmed, F.; Elste, J.; Desai, U. R.; Tiwari, V. SARS-CoV-2 dating with heparan sulfate receptor: An opportunity for new interventions to prevent viral spread. *Indian American Medical Association of Illinois* annual meeting (www.IAMAILL.org/GSA) on the web (November 2020).
 37. Afosah, D. K.; Ongolu, R.; Nelson, K. T.; Desai, U. R. A strategy based on photoaffinity and proteomics to identify the interactome of non-saccharide glycosaminoglycan mimetics. *Society for Glycobiology* annual meeting, Virtual Format (www.glycobiology.org) (October 2020).
 38. Nagarajan, B.; Sankaranarayanan, NV.; Desai, U. R. Understanding glycosaminoglycan binding to SARS-CoV-2 spike glycoprotein using computational virtual library screening and molecular dynamics strategy. *Society for Glycobiology* annual meeting, Virtual Format (www.glycobiology.org) (October 2020).
 39. Holmes, S.; Nagarajan, B.; Desai, U. R. Understanding the effects of 3-O-sulfation on local microdomain conformation of heparan sulfate using molecular dynamics simulations. *Society for Glycobiology* annual meeting, Virtual Format (www.glycobiology.org) (October 2020).
 40. Boothello, R. S.; Patel, N. J.; Damle P.K.; Sharon, C.; Vera, A.; Desai, U.R.; Grossman, S. R.; Patel, B. B. A novel therapeutically targetable post-translational modification of p14 ARF, induced by p38 mitogen activated protein kinase, regulates cancer stem cell phenotype. *American Association for Cancer Research* annual meeting, San Diego, CA (April 2020).
 41. O'Hara, O.; Boothello, R. S.; Morla, S.; Vera, A.; Afosah, D. K.; Sankaranarayanan, NV.; Nagarajan, B.; Sharon, C.; Patel, B. B.; Desai, U. R. Cholesterol modification enhances potency and pharmacokinetic properties of a selective cancer stem cell targeting agent. *American Association for Cancer Research* annual meeting, San Diego, CA (April 2020).
 42. Mohan, A.; Morla, S.; Desai, U. R.; Sakagami, M. Effects of RK-TRI-11S on cell death, proliferation and migration: In vitro assessments as an anti-emphysema agent. *Annual Research & Career Day – School of Pharmacy*, Richmond, VA (October 2019).
 43. Chiba, T.; Sankaranarayanan, NV.; Desai, U. R. Glycosaminoglycan modulation of key proteins in Alzheimer's disease. *Annual Research & Career Day – School of Pharmacy*, Richmond, VA (October 2019).
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44. Holmes, S.; Nagarajan, B.; Desai, U. R. Understanding the effects of 3-O-sulfation on local microdomains of heparan sulfate using molecular dynamics simulations. *Annual Research & Career Day – School of Pharmacy*, Richmond, VA (October 2019).
 45. O'Hara, C.; Morla, S.; Afosah, D. K.; Boothello, R.; Sharon, C.; Patel, B. B.; Desai, U. R. Lipidic modification of highly sulfated anti-cancer stem cell agents as a means to enhance potency and selection of inhibition. *Annual Research & Career Day – School of Pharmacy*, Richmond, VA (October 2019).
 46. Afosah, D.; Sankaranarayanan, NV.; Desai, U. R. Many apparently non-selective GAG – protein systems may exhibit interesting selectivity features. The case of human neutrophil elastase. *Society for Glycobiology meeting*, San Diego, CA (October 2019).
 47. Elste, J.E.; Kaltenbach, D.D.; Desai, U.R.; Tiwari, V. Broad spectrum antiviral activity of SPGG analog against multiple herpesviruses in preventing viral entry. 38th annual *American Society for Virology meeting*, Minneapolis, MN (July 2019).
 48. Nagarajan, B.; Desai, U. R. Selectivity of glycosaminoglycan recognition by proteins. Towards understanding the internalization of macromolecules by cell surface glycosaminoglycans. 2nd annual *Great Lakes Translational Glycomics symposium*. Milwaukee, WI (May 2019).
 49. Afosah, D.; Sankaranarayanan, NV.; Kumar, M.; Kummarapurugu, A.; Voynow, J. A.; Desai, U. R. Specificity of glycosaminoglycan interactions with human neutrophil elastase. 2nd annual *Great Lakes Translational Glycomics symposium*. Milwaukee, WI (May 2019).
 50. Holmes, S.; Nagarajan, B.; Desai, U. R.* Reviewing current state-of-art of computational simulations of glycosaminoglycans. 4th annual *Virginia Drug Discovery Consortium symposium*, Roanoke, VA (May 2019).
 51. Chittum, J. E.; Ongolu, R.; Desai, U. R.* Parallel, scaled-up sulfation of phenolic compounds for generation of a library of small sulfated fragments for drug discovery. 4th annual *Virginia Drug Discovery Consortium symposium*, Roanoke, VA (May 2019).
 52. Ongolu, R.; Afosah, D. K.; Sistla, J. C.; Hawkrigde, A. M.; Desai, U. R.* Design and synthesis of photoaffinity probes for identification of protein targets of glycosaminoglycans. 4th annual *Virginia Drug Discovery Consortium symposium*, Roanoke, VA (May 2019).
 53. O'Hara, C.; Morla, S.; Afosah, D. K.; Boothello, R.; Sharon, C.; Patel, B. B.; Desai, U. R. Non-saccharide glycosaminoglycan mimetics selectively target colon cancer stem cell. 4th annual *Virginia Drug Discovery Consortium symposium*, Roanoke, VA (May 2019).
 54. Chiba, T.; Sankaranarayanan, NV.; Desai, U. R.* Glycosaminoglycan modulation of key proteins in Alzheimer's disease. 4th annual *Virginia Drug Discovery Consortium symposium*, Roanoke, VA (May 2019).
 55. Afosah, D. K.; Sankaranarayanan, NV.; Morla, S.; Kumar, M.; Kummarapurugu, A.; Zheng, S.; Voynow, J. A.; Desai, U. R.* A novel glycosaminoglycan mimetic as a neutrophil elastase inhibitor for the management of cystic fibrosis. 4th annual *Virginia Drug Discovery Consortium symposium*, Roanoke, VA (May 2019).
 56. Morla, S.; Afosah, D. K.; O'Hara, C.; Sakagami, M.; Patel, B. B.; Desai, U. R.* Lipophilic modification of an anti-cancer stem cell agent improves pharmacokinetic and anti-cancer properties. 4th annual *Virginia Drug Discovery Consortium symposium*, Roanoke, VA (May 2019).
 57. O'Hara, C.; Morla, S.; Afosah, D.; Sharon, C.; Boothello, R.; Patel, B. B.; Desai, U. R. Selective inhibition of a panel of cancer stem cell lines by novel glycosaminoglycan mimetics. *American Society for Biochemistry and Molecular Biology*, Orlando, FL (April 2019).
 58. Nagarajan, B.; Sepuru, K. M.; Rajarathnam, K.; Desai, U. R. Glycosaminoglycan recognition of neutrophil-activating chemokines. *American Society for Biochemistry and Molecular Biology*, Orlando, FL (April 2019).
 59. Sankaranarayanan, NV.; Desai, U. R.* Towards computational prediction of the heparan sulfate interactome. *American Society for Biochemistry and Molecular Biology*, Orlando, FL (April 2019).
 60. Ongolu, R.; Afosah, D. K.; Sistla, J. C.; Hawkrigde, A. M.; Desai, U. R.* Design and synthesis of photoaffinity probe for identification of protein targets of glycosaminoglycan mimetics. *American Society for Biochemistry and Molecular Biology*, Orlando, FL (April 2019).
 61. Morla, S.; Afosah, D. K.; O'Hara, C.; Sakagami, M.; Patel, B. B.; Desai, U. R.* Lipophilic modification of an anti-cancer stem cell agent improves pharmacokinetic and anti-cancer properties. *American Society for Biochemistry and Molecular Biology*, Orlando, FL (April 2019).
 62. Afosah, D. K.; Sankaranarayanan, NV.; Morla, S.; Kumar, M.; Kummarapurugu, A.; Zheng, S.; Voynow, J. A.; Desai, U. R.* Glycosaminoglycans and glycosaminoglycan mimetics as neutrophil elastase inhibitors for cystic fibrosis management. *American Society for Biochemistry and Molecular Biology*, Orlando, FL (April 2019).
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63. Sistla, J. C.; Afosah, D. K.; Morla, S.; Patel, N.; Patel, B. B.; Desai, U. R.* A small synthetic glycosaminoglycan mimetic as an inhibitor of human heparanase. *American Society for Biochemistry and Molecular Biology*, Orlando, FL (April 2019).
 64. Morla, S.; Afosah, D. K.; Navaz Gangji, R.; Kumar, M.; Desai, U. R.* Targeting human neutrophil elastase through an allosteric, non-anticoagulant, heparin mimetic. *American Association of Pharmaceutical Scientists*, Washington, DC (November 2018).
 65. O'Hara, C.; Morla, S.; Afosah, D. K.; Boothello, R.; Sharon, C.; Patel, B. B.; Desai, U. R. Selective inhibition of a panel of cancer stem cell lines by novel glycosaminoglycan mimetics. *Annual Research & Career Day – School of Pharmacy*, Richmond, VA (October 2018).
 66. Abdelfadiel, E.; Campbell, C.; Afosah, D. K.; Morla, S.; Desai, U. R. Evaluation of anticoagulant properties of anti-cancer glycosaminoglycan mimetics. *Annual Research & Career Day – School of Pharmacy*, Richmond, VA (October 2018).
 67. Ongolu, R. K.; Afosah, D. K.; Sistla, J. C.; Hawkrige, A.; Desai, U. R.* Design and synthesis of photoaffinity probe for identification of protein targets of glycosaminoglycan mimetics. *Annual Research & Career Day – School of Pharmacy*, Richmond, VA (October 2018).
 68. Morla, S.; Kumar, M.; Afosah, D. K.; Sankaranarayanan, NV.; Navaz Gangji, R.; Kummarapuruga, A. B.; Voynow, J.; Desai, U. R.* Glycosaminoglycan mimetics as inhibitors of human neutrophil elastase for the treatment of cystic fibrosis. *Annual Research & Career Day – School of Pharmacy*, Richmond, VA (October 2018).
 69. Afosah, D. K.; Sankaranarayanan, NV.; Morla, S.; Kumar, M.; Kummarapurugu, A.; Zheng, S.; Voynow, J. A.; Desai, U. R.* Inhibition of human neutrophil elastase by glycosaminoglycans and glycosaminoglycan mimetics. *Gordon Research Conference – Medicinal Chemistry*, New London, NH (August 2018).
 70. Elste, J.; Navaz Gangji, R.; Sankaranarayanan, NV.; Al-Horani, R. A.; Afosah, D. K.; Desai, U. R.; Tiwari, V. A heparan mimetic analog SPGG is a potent inhibitor against herpes simplex virus (HSV) infection. 31st Annual Scientific meeting of the *American Society for Pharmacology and Experimental Therapeutics*, Maywood, IL (June 2018).
 71. Morla, S.; Afosah, D. K.; Navaz Gangji, R.; Kumar, M.; Desai, U. R.* Non-anticoagulant heparin mimetic as an inhibitor of human neutrophil elastase. 3rd annual meeting of the *Virginia Drug Discovery Consortium*, Arlington, VA (June 2018).
 72. Afosah, D. K.; Sankaranarayanan, NV.; Morla, S.; Kumar, M.; Kummarapurugu, A.; Zheng, S.; Voynow, J. A.; Desai, U. R.* Non-anticoagulant glycosaminoglycans (GAGs) and non-saccharide GAG mimetics as anti-neutrophil elastase agents in management of cystic fibrosis. 3rd annual meeting of the *Virginia Drug Discovery Consortium*, Arlington, VA (June 2018).
 73. Nagarajan, B.; Sankaranarayanan, NV.; Desai, U. R.* Computational study of glycosaminoglycan K.M. Gallegos, K. M.; Del Toro, R.; Taylor, C.; Rabulinski, D. J.; Girgis, D.; Desai, U. R.; Ramsey, K.H.* In vitro and in vivo evaluation of sulfated glucosides against Chlamydia muridarum. *American Society for Microbiology - Microbe*, Atlanta, GA (June 2018).
 74. Boothello, R. S.; Patel, N. J.; Sharon, C.; Abdelfadiel, E. I.; Morla, S.; Brophy, D. B.; Lippmann, H.; Desai, U. R.; Patel, B. B.* G2.2, a unique non-saccharide mimetic of heparin hexasaccharide selectively inhibits cancerous but protects adult colonic stem/progenitor cells via a common mechanism of induction of p38 mitogen-activated protein kinase. *Digestive Disease Week*, Washington, DC (June 2018).
 75. Morla, S.; Abdelfadeil, E.; Afosah, D. K.; Desai, U. R. Activity, stability and structural studies of G2.2, a small molecule selective inhibitor of cancer stem cells. *Annual Meeting of the Virginia Academy of Sciences*, Farmville, VA (May 2018).
 76. Bi, Y.; Sankaranarayanan, NV.; Desai, U. R.; Kuberan, B.* Predicting heparin/heparan sulfate biosynthetic pathway in the generation of antithrombin binding motif using combinatorial virtual library screening (CVLS) and validating substrate specificity with chemoenzymatically synthesized oligosaccharides on 3-O-sulfotransferases. *American Society for Biochemistry and Molecular Biology*, San Diego, CA (April 2018).
 77. Desai, U. R.* Patel, B. B.* Understanding specificity of glycosaminoglycan interactions with proteins. *American Society for Biochemistry and Molecular Biology*, San Diego, CA (April 2018).
 78. Sankaranarayanan, NV.; Navaz Gangji, R.; Afosah, D. K.; Desai, U. R. Inhibition of herpes simplex virus-1 entry through targeting glycosaminoglycan site of binding on glycoprotein D. 21st *San Diego Glycobiology Symposium*, San Diego, CA (March 2018).
 79. Afosah, D. K.; Kummarapurugu, A. B.; Sankaranarayanan, NV.; Zheng, S.; Kennedy, T.; Rubin, B. K.; Voynow, J. A.; Desai, U. R. Insights into the use of non-anticoagulant heparins as anti-neutrophil elastase
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- agents in the management of cystic fibrosis. *21st San Diego Glycobiology Symposium*, San Diego, CA (March 2018).
80. Morla, S.; Abdelfadeil, E.; Afosah, D. K.; Desai, U. R. Lessons on the Development of Glycosaminoglycan Mimetics as Drugs. *21st San Diego Glycobiology Symposium*, San Diego, CA (March 2018).
 81. Nagarajan, B.; Sankaranarayanan, NV.; Desai, U. R. Conformational space exploration of glycosaminoglycans in solution – A molecular dynamics approach. *21st San Diego Glycobiology Symposium*, San Diego, CA (March 2018).
 82. Afosah, D.K.; Sankaranarayanan, NV.; Kumar, M.; Kummarapurugu, A.; Zheng, S.; Voynow, J. A.; Desai, U. R. Identification of defined glycosaminoglycan sequences for human neutrophil elastase inhibition. *7th Annual Inter-PEG Meeting*, San Diego, CA (March 2018).
 83. Nagarajan, B.; Sankaranarayanan, NV.; Desai, U. R. Dynamical computational studies in elucidating GAG recognition of proteins. A study of transforming growth factor beta-2 – chondroitin sulfate system. *7th Annual Inter-PEG Meeting*, San Diego, CA (March 2018).
 84. Morla, S.; Afosah, D. K.; Kumar, M.; Desai, U. R.* Non-saccharide glycosaminoglycan mimetics are potent human neutrophil elastase inhibitors. *7th Annual Inter-PEG Meeting*, San Diego, CA (March 2018).
 85. Al-Horani, R. A.; Desai, U. R. Sulfated inositol-based glycosaminoglycan mimetics are homogeneous, potent, selective and allosteric inhibitors of factor XIa. *American Heart Association*, Anaheim, CA (November 2017).
 86. Alabbas, A.; Desai, U. R. Immobilized heparinase in preparation of oligosaccharides. *Annual School of Pharmacy Research Day*, Richmond, VA (October 2017).
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 178. “Drug discovery at Virginia Commonwealth University.” Umesh R Desai, Keith C Ellis, Phil Mosier, Rong Huang, Glen E. Kellogg, Darrell Peterson and Martin Safo (2013) *Academic Drug Discovery Conference*, Vanderbilt University, Nashville, TN.
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 181. "Selective targeting of colorectal cancer stem cells with novel non-saccharide glycosaminoglycan mimetics." Nirmita J Patel, Rajesh Karuturi, Jagrut Patel, Somesh Baranwal, Rami Al-Horani, Akul Y Mehta, Umesh R. Desai and Bhaumik B. Patel (2013) *Annual Cancer Research Retreat*, VCU-MCC, Richmond, VA.
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 183. "Regulation of angiogenesis by glycosaminoglycan mimetics." K Raman, R Karuturi, N Masayuki, VP Swarup, TKN Nguyen, Y Tsuzuki, M Koketsu, UR Desai and B Kuberan (2013) *2nd Annual Inter-PEG Meeting*, Cleveland, OH.
 184. "Sulfation patterns determine internalization of heparin-like polysaccharide." C Mencio, K Raman, UR Desai and B Kuberan (2013) *2nd Annual Inter-PEG Meeting*, Cleveland, OH.
 185. "Surface plasmon resonance in the study of glycosaminoglycan – protein interactions." Y Jin, KMM Poluri, K Raman, J April, K Rajarathnam, B Kuberan, and UR Desai (2013) *2nd Annual Inter-PEG Meeting*, Cleveland, OH.
 186. "A novel dual direct and indirect GAG inhibitor of thrombin. RS Boothello, VM Tran, TKN Nguyen, K Raman, A Sarkar, NV Sankaranarayanan, B Kuberan, and UR Desai (2013) *2nd Annual Inter-PEG Meeting*, Cleveland, OH.
 187. "Prophylactic possibilities of sulfated lignin as anticoagulant via heparin-like allosterism against thrombin." AY Mehta, JN Thakkar, EJ Martin, DF Brophy, T Kishimoto, D Gailani, and UR Desai (2013) *2nd Annual Inter-PEG Meeting*, Cleveland, OH.
 188. "Computational investigations into protein – GAG interactions." A Sarkar, NV Sankaranarayanan, and UR Desai (2013) *2nd Annual Inter-PEG Meeting*, Cleveland, OH.
 189. "Toward a more robust combinatorial virtual library screening protocol for studying glycosaminoglycan - protein interactions." NV Sankaranarayanan, A Sarkar, and UR Desai (2013) *2nd Annual Inter-PEG Meeting*, Cleveland, OH.
 190. "Evaluation of synthetic heparan sulfate mimetics in xenogenic-mediated thrombosis." PK Benipal, XF Cheng, AY Mehta, R Karuturi, RA Al-Horani, DG Harris, RN Pierson III, SC Robson, DKC Cooper, UR Desai, and AM Azimzadeh (2013) *2nd Annual Inter-PEG Meeting*, Cleveland, OH.
 191. "Sulfated quinazolin-4(3H)-ones dimers as allosteric inhibitors of human factor XIa." RS Boothello, R Karuturi, and UR Desai (2013) *Drug Discovery and Therapy World Congress*, Boston, MA.
 192. "A dual-element strategy for the discovery of sulfated allosteric modulators of glycosaminoglycan-binding proteins." R Karuturi, RA Al-Horani, RS Boothello and UR Desai (2013) *Drug Discovery and Therapy World Congress*, Boston, MA.
 193. "Chemically synthesized sulfated- β -O-4-lignin (SbO4L) polymer with selective allosteric inhibition of thrombin." AY Mehta, JN Thakkar, EJ Martin, DF Brophy, T Kishimoto and UR Desai (2013) *Drug Discovery and Therapy World Congress*, Boston, MA.
 194. "Thermodynamic specificity factors in highly ionic recognition systems." A Sarkar, NV Sankaranarayanan and UR Desai (2013) *Gordon Research Conference – Computational Aspects – Biomolecular NMR*, Mount Snow Resort, VT.
 195. "Docking highly charged molecules to polar protein sites: monosaccharide localization propensities at polar binding sites." NV Sankaranarayanan, A Sarkar and UR Desai (2013) *Gordon Research Conference – Computational Aspects – Biomolecular NMR*, Mount Snow Resort, VT.
 196. "Novel sulfated dehydropolymer of caffeic acid as an anti-emphysema drug: Attenuation and reversal in three different rat models of emphysema." M Sakagami, B Saluja, H Li, UR Desai and NF Voelkel (2013) *American Thoracic Society annual meeting*, Philadelphia, PA.
 197. "Sulfated beta-O-4 lignin (SbO4L): An anticoagulant with selective allosteric modulation of thrombin." AY Mehta, JN Thakkar, EJ Martin, DF Brophy, T Kishimoto and UR Desai (2012) *29th Annual Daniel E. Watts Research Poster Symposium*, Richmond, VA.
 198. "A 4-step synthesis of bromoacetophenone derivatives as precursors to advanced sulfated beta-O-4 lignins." M Hall, AY Mehta and UR Desai (2012) *Annual Biomedical Research Conference for Minority Students (ABRCMS)*, San Jose, CA.
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199. "Studies on sulfated β -O-4 lignin (SbO4L) as a selective, allosteric modulator of thrombin." AY Mehta, JN Thakkar, EJ Martin, DF Brophy, T Kishimoto and UR Desai (2012) *School of Pharmacy Research Day Meet*, Richmond, VA.
 200. "Discovery of non-heparin, small, allosteric, factor XIa inhibitors." RA Al-Horani and UR Desai (2012) *American Heart Association Scientific Sessions 2012*, Los Angeles, CA.
 201. "Sulfated, small molecule, heparin mimetics as allosteric modulators of coagulation factors." R Karuturi, RA Al-Horani, SC Mehta and UR Desai (2012) 64th *SERMACS (Southeastern Regional Meeting of the American Chemical Society)*, Raleigh, NC.
 202. "Receptor-ligand interactions of thrombin with glycosaminoglycans on self-assembled monolayer platforms." Y Jin, UR Desai and V Yadavalli (2012) 12th annual meeting of the *American Institute of Chemical Engineers (AIChE)*, Pittsburgh, PA.
 203. "Designing promising indirect factor Xa inhibitors as anticoagulants." RA Al-Horani and UR Desai (2012) *The 7th NIH National Graduate Student Research Conference*, Bethesda, MD.
 204. "Protein-ligand interactions of thrombin with glycosaminoglycans by atomic force microscopy." Y Jin, UR Desai and V Yadavalli (2012) *Gordon Research Seminar*, Andover, NH.
 205. "Study of glycosaminoglycans binding to proteins using genetic algorithm-based combinatorial virtual library screening strategy." NV Sankaranarayan, PD Mosier and UR Desai (2012) *Gordon Research Seminar*, Andover, NH.
 206. "Understanding the IL-8/heparan sulfate interaction through virtual screening." PD Mosier and UR Desai (2012) *Gordon Research Conference on Proteoglycans*, Andover, NH.
 207. "Utilizing proteoglycan biology to re-engineer the tumor microenvironment for therapeutic purposes." K Raman, M Ninomiya, R Karuturi, UR Desai, M Koketsu and B Kuberan (2012) *Gordon Research Conference on Proteoglycans*, Andover, NH.
 208. "Inhibition of coagulation cascade enzyme factor XIa by small sulfated molecules." M Argade, AY Mehta and UR Desai (2012) *15th Annual Graduate Research Symposium*, Richmond, VA.
 209. "Development of reverse-phase ion-pairing ultra performance liquid chromatography/mass spectrometry (RPIP-UPLC/MS) methods for fingerprinting sulfated small molecules." P Ponnusamy, AY Mehta, R Karuturi, PS Sidhu, RA Al-Horani and UR Desai (2012) *15th Annual Graduate Research Symposium*, Richmond, VA.
 210. "A general concept for the design of allosteric regulators of coagulation enzymes" R Karuturi, RA Al-Horani, SC Mehta and UR Desai (2012) 236th *Annual Meeting of the American Chemical Society*, Philadelphia, PA.
 211. "Specificity of heparin interaction arises from subtle, but distinct, differences in binding site topography" PD Mosier, C Krishnasamy, GE Kellogg and UR Desai (2012) 15th *Annual San Diego Glycobiology Symposium*, San Diego.
 212. "Nonsaccharide, small molecule mimetics of heparin as allosteric activators of antithrombin." RA Al-Horani and UR Desai (2012) 236th *Annual Meeting of the American Chemical Society*, Philadelphia, PA.
 213. "Design, synthesis and biochemical investigation of six-membered, cyclic dicarboxamides as direct factor Xa inhibitors." RA Al-Horani and UR Desai (2012) *15th Annual Graduate Student Research and Exhibit*, Virginia Commonwealth University, Richmond, VA.
 214. "Sulfated low molecular weight lignins, a novel class of allosteric direct thrombin inhibitors, induce profound changes in the thrombin active site explaining their potent anticoagulant effect." BL Henry and UR Desai (2012) 20th *Annual Fellows Research Day*, American Heart Association, Pittsburgh, PA.
 215. "Selectivity of binding of low molecular weight lignins." MH Abdel Aziz, BL Henry, PD Mosier and UR Desai (2011) 63rd *SERMACS (Southeastern Regional Meeting of the American Chemical Society)*, Richmond, VA.
 216. "Effects of sulfated caffeic acid oligomer on cigarette smoke extract-induced cell death and reduced histone deacetylases activity in alveolar epithelial cells." NL Vo, UR Desai and M Sakagami (2011) *School of Pharmacy Research Day Meet*, Richmond, VA.
 217. "Size-fractionated sulfated caffeic acid oligomers: Towards their anti-oxidative activity assessments." B Mikru, Y Jin, M Sakagami and UR Desai (2011) *School of Pharmacy Research Day Meet*, Richmond, VA.
 218. "Synthesis of sulfated small molecules to study heparin-proteins interactions." R Karuturi, RA Al-Horani, SC Mehta and UR Desai (2011) 63rd *SERMACS (Southeastern Regional Meeting of the American Chemical Society)*, Richmond, VA.
 219. "High-throughput screening and discovery of allosteric factor XIa inhibitors." AY Mehta, MD Argade and UR Desai (2011) 63rd *SERMACS (Southeastern Regional Meeting of the American Chemical Society)*, Richmond, VA.
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220. "Design, synthesis and interaction studies of allosteric modulators of thrombin." PS Sidhu, A Liang, AY Mehta, MH Abdel Aziz, Q Zhou and UR Desai (2011) 63rd *SERMACS (Southeastern Regional Meeting of the American Chemical Society)*, Richmond, VA.
 221. "Design, synthesis and biochemical investigation of six-membered, cyclic dicarboxamides as direct factor Xa inhibitors." RA Al-Horani, AY Mehta and UR Desai (2011) 63rd *SERMACS (Southeastern Regional Meeting of the American Chemical Society)*, Richmond, VA.
 222. "Tetrahydroisoquinoline dicarboxamides as direct factor Xa inhibitors: Design, synthesis, and biochemical investigations." RA Al-Horani, AY Mehta and UR Desai (2011) *School of Pharmacy Research Day Meet*, Richmond, VA.
 223. "The effect of lipids on clotting." M Thompson and UR Desai (2011) *School of Pharmacy Research Day Meet*, Richmond, VA.
 224. "Identification of the site of binding of sulfated low molecular weight lignins on thrombin." MH Abel Aziz, JN Thakkar, BL Henry, A Liang, P Mosier and UR Desai (2011) 89th Annual meeting of the Virginia Academy of Science, University of Richmond, VA.
 225. "Exploring the larger chemical space to design small, aromatic, sulfated allosteric modulators of thrombin." PS Sidhu, A Liang, Q Zhou and UR Desai (2010) 62nd *SERMACS*, New Orleans, LA.
 226. "Rationally designed sulfated, non-saccharide antithrombin activators as indirect factor Xa inhibitors mimicking the anticoagulant activity of heparin." R Al-Horani, A Liang and UR Desai (2010) 62nd *SERMACS*, New Orleans, LA.
 227. "Synthesis and interaction studies of benzofuran-based allosteric modulators of thrombin." PS Sidhu, A Liang, Q Zhou and UR Desai (2010) 62nd *SERMACS*, New Orleans, LA.
 228. "Rapid generation of a large library of sulfated organic molecules." SC Mehta, R Karuturi, UR Desai (2010) *School of Pharmacy Research Day Meet*, Richmond, VA.
 229. "Sulfated, non-saccharide antithrombin activators: Potential indirect FXa inhibitors mimicking the anticoagulant activity of heparin." RA Al-Horani, A Liang, UR Desai (2010) *School of Pharmacy Research Day Meet*, Richmond, VA.
 230. "Conjugation of dextran sulfate with tirofiban." M Thompson and UR Desai (2010) *School of Pharmacy Research Day Meet*, Richmond, VA.
 231. "Novel caffeic acid oligomers for emphysema: Their effects on cigarette smoke extract (CSE)-induced responses of alveolar macrophages." T Truong, M Sakagami and UR Desai (2010) *School of Pharmacy Research Day Meet*, Richmond, VA.
 232. "Exploring the larger chemical space to design small, aromatic, sulfated allosteric modulators of thrombin." PS Sidhu and UR Desai (2010) *School of Pharmacy Research Day Meet*, Richmond, VA.
 233. "Designed allosteric regulators of coagulation enzymes." UR Desai (2010) *Gordon Research Conferences – Hemostasis*, Waterville Valley, NH.
 234. "An analysis of the robustness and fragility of the coagulation system." N Menke, K Ward and U Desai. (2010) *Association for Advancement of Artificial Intelligence Fall Symposium Series*, Arlington, VA.
 235. "Structure-based design of allosteric inhibitors of thrombin." PS Sidhu, PD Mosier and UR Desai (2010) 12th *Annual Graduate Student Symposium*, VCU, Richmond, VA.
 236. "Sulfated β -O4 low molecular weight lignins are potent and specific inhibitors of thrombin." AY Mehta, JN Thakkar and UR Desai (2010) 12th *Annual Graduate Student Symposium*, VCU, Richmond, VA.
 237. "Capillary electrophoretic fingerprinting of glycosaminoglycans." JT King and UR Desai (2010) *PITTCON 2010*, Orlando, FL.
 238. "Structures of novel sulfated chemoenzymatic oligomers of 4-hydroxycinnamic acid through dynamic affinity chromatography and mass spectrometry." A Liang, JN Thakkar, M Hindle and UR Desai (2010) *PITTCON 2010*, Orlando, FL.
 239. "Low molecular weight lignins as potent inhibitors of viral entry into mammalian cells." JN Thakkar, V Tiwari and UR Desai (2009) 10th *Annual Symposium on AntiViral Drug Resistance – Targets and Mechanisms* (Organized by the National Institutes of Allergy and Infectious Diseases), Richmond, VA.
 240. "Novel cinnamic acid based dehydropolymers for emphysema: Triple inhibitors of elastase, inflammation and oxidation." B Saluja, J Thakkar, UR Desai and M Sakagami (2009) *School of Pharmacy Research Day Meet*, Richmond, VA.
 241. "Design synthesis and interaction studies of dual, direct, non-saccharide, allosteric modulators of factor Xa and thrombin." PS Sidhu, Q Zhou and UR Desai (2009) *School of Pharmacy Research Day Meet*, Richmond, VA.
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242. "Isolation and characterization of a novel sulfated low molecular weight lignin through dynamic affinity chromatography and mass spectrometry." A Liang, JN Thakkar and UR Desai (2009) *238th American Chemical Society National Meeting*, Washington, DC.
 243. "Capillary electrophoretic fingerprinting of heparins using linear polyamines." JT King and UR Desai (2009) *School of Pharmacy Research Day Meet*, Richmond, VA.
 244. "A novel triple inhibitor of elastase, inflammation and oxidation: Effects in a rat model of pulmonary emphysema." B Saluja, JN Thakkar, UR Desai, M Sakagami (2009) *Graduate Research Association of Students in Pharmacy (GRASP)*, Mercer University, Atlanta, GA.
 245. "Capillary electrophoretic study of small, highly sulfated, non-sugar molecules interacting with antithrombin" A Liang, A Raghuraman, and UR Desai (2008) *School of Pharmacy Research Day Meet*, Richmond, VA.
 246. "Sulfating organic scaffolds using solid-supported reagents." PA Bowles, J Verghese and UR Desai, (2008) *School of Pharmacy Research Day Meet*, Richmond, VA.
 247. "Towards the crystal structure of thrombin bound to a novel synthetic inhibitor" B Desai, JN Scarsdale, HT Wright and UR Desai (2008) *School of Pharmacy Research Day Meet*, Richmond, VA.
 248. "High resolution fingerprinting of heparins for quality control and structural analysis" JT King and UR Desai (2008) *School of Pharmacy Research Day Meet*, Richmond, VA.
 249. "Molecular modeling of heparin oligomers onto thrombin exosite II" C Krishnasamy, PD Mosier and UR Desai (2008) *60th Southeast Regional Meeting of the American Chemical Society (SERMACS)*, Nashville, TN.
 250. "High resolution fingerprinting of heparins" JT King and UR Desai (2008) *60th Southeast Regional Meeting of the American Chemical Society (SERMACS)*, Nashville, TN.
 251. "A step towards a new class of potent anticoagulants" J Thakkar, BL Henry and UR Desai (2008) *60th Southeast Regional Meeting of the American Chemical Society (SERMACS)*, Nashville, TN.
 252. "Interaction study of synthetic, highly sulfated non-carbohydrate molecules with antithrombin by affinity capillary electrophoresis" A Liang, A Raghuraman and UR Desai (2008) *60th Southeast Regional Meeting of the American Chemical Society (SERMACS)*, Nashville, TN.
 253. "A computational model of the effect of cardiac arrest on the coagulation system" N Menke, UR Desai, LB Kier, C-K Cheng, MA Peberdy, J Ornato and KR Ward (2008) *American Heart Association Resuscitation Science Symposium*, New Orleans, LA.
 254. "High resolution fingerprinting of low molecular weight heparins for sequence analysis" JT King and UR Desai (2008) *2nd Annual Chemical Biology Meet*, Virginia Commonwealth University, Richmond, VA.
 255. "Toward a general approach of designing glycosaminoglycan mimics" A Raghuraman and UR Desai (2007) *5th Annual Research Review*, Center for the Study of Biology Complexity, Richmond, VA.
 256. "Toward a general approach of designing glycosaminoglycan mimics" A Raghuraman and UR Desai (2007) *National Institutes of Health Student Annual Meeting*, Bethesda, MD.
 257. "Sulfated 4-hydroxycinnamic acid oligomers are potent mimics of heparin function, but with a novel mechanism of action" BL Henry and UR Desai (2007) *22nd Annual MD/PhD Student Conference*, Keystone, CO.
 258. "Combinatorial virtual screening based design of potential organic mimics of glycosaminoglycans" UR Desai, A Raghuraman, and C Krishnasamy, (2007) *7th annual conference on Structure-Based Drug Design*, Boston, MA.
 259. "Study of highly sulfated organic molecules binding to antithrombin using GOLD" JN Thakkar, A Raghuraman, and UR Desai (2006) *58th Southeast Regional Meeting of the American Chemical Society (SERMACS)*, Augusta, GA.
 260. "Synthesis of designed bis-flavonoids as novel potential anticoagulants" M Riaz, A Raghuraman, and UR Desai (2006) *58th Southeast Regional Meeting of the American Chemical Society (SERMACS)*, Augusta, GA.
 261. "Rapid, high-yielding microwave-assisted synthesis of per-sulfated organic molecules" A Raghuraman, M Riaz, and UR Desai (2006) *58th Southeast Regional Meeting of the American Chemical Society (SERMACS)*, Augusta, GA.
 262. "Biochemical characterization of novel cinnamic acid oligomers that inhibit coagulation enzymes utilizing antithrombin dependent and independent mechanisms" BL Henry, BH Monien, and UR Desai (2006) *58th Southeast Regional Meeting of the American Chemical Society (SERMACS)*, Augusta, GA.
 263. "Biochemical characterization of novel cinnamic acid oligomers at anticoagulants" BL Henry, EJ Martin, BH Monien, and UR Desai (2006) *Watts Research Day Presentations*, Richmond, VA (October 2006).
 264. "Novel chemoenzymatic oligomers of cinnamic acid that inhibit coagulation enzymes utilizing antithrombin dependent and independent mechanisms" BL Henry, BH Monien, A Raghuraman, M Hindle and UR Desai (2006) *231st ACS National Meeting*, Atlanta, GA.
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265. "Finding a needle in the haystack: Prediction of specific glycosaminoglycan sequences that bind proteins" A Raghuraman, PD Mosier, and UR Desai (2006) *231st ACS National Meeting*, Atlanta, GA.
 266. "Novel chemoenzymatic oligomers of cinnamic acid that inhibit coagulation enzymes utilizing antithrombin dependent and independent mechanisms" BL Henry, BH Monien, A Raghuraman, M Hindle, and UR Desai (2006) *American Physican Scientists Association / American Society for Clinical Investigation / Association of American Physicians Joint National Meeting*, Chicago, IL.
 267. "Computational prediction of glycosaminoglycan sequences that bind to proteins" A Raghuraman, PD Mosier, and UR Desai (2005) *School of Pharmacy Research Day, Virginia Commonwealth University*, Richmond, VA.
 268. "Antithrombin activation with designed small organic activators: The design of a bicyclic – unicyclic isoquinoline based activator" C Krishnasamy, GT Gunnarsson and UR Desai (2005) *School of Pharmacy Research Day, Virginia Commonwealth University*, Richmond, VA.
 269. "Novel synthetic dehydropolymers that utilize both the antithrombin-independent and –dependent anticoagulation mechanisms." BL Henry, BH Monien, A Raghuraman, M Hindle and UR Desai (2005) *School of Pharmacy Research Day, Virginia Commonwealth University*, Richmond, VA.
 270. "Discovery of lignin sulfate as a potent inhibitor of HSV entry into cells." JN Thakkar, A Raghuraman, GT Gunnarsson, M Hindle and UR Desai (2005) *School of Pharmacy Research Day, Virginia Commonwealth University*, Richmond, VA.
 271. "Structural characterization and molecular investigation of a serendipitously discovered bioactive macromolecule, lignin sulfate" A Raghuraman, JN Thakkar, GT Gunnarsson, M Hindle and UR Desai (2005) *230th ACS National Meeting*, Washington, DC.
 272. "Stabilization of conformationally activated antithrombin by networks of amino acid interactions: The importance of tryptophan 49" BH Monien, C Krishnasamy, ST Olson and UR Desai (2005) *230th ACS National Meeting*, Washington, DC.
 273. "Antithrombin activation with designed small organic activators: The design of a bicyclic – unicyclic isoquinoline based activator" C Krishnasamy, GT Gunnarsson and UR Desai (2005) *230th ACS National Meeting*, Washington, DC.
 274. "Synthesis of modular heparan sulfate mimics: Fact or fantasy?" UR Desai (2005) *3rd Annual Cambridge HealthTech Institute Meeting on Glycomics and Drug Discovery*, San Diego, CA.
 275. "Characterization of lignin sulfate using high performance size exclusion chromatography" A Raghuraman, JN Thakkar and UR Desai (2004) *7th Annual School of Pharmacy Research Day*, Richmond, VA.
 276. "Modeling small molecules with multiple sulfate groups" C. Krishnasamy and UR Desai (2004) *7th Annual School of Pharmacy Research Day*, Richmond, VA.
 277. "From non-sulfated polymers towards the design of antithrombin based anticoagulants" B Monien and UR Desai (2004) *7th Annual School of Pharmacy Research Day*, Richmond, VA.
 278. "Binding of fluorophores to serpins" J Afridi, HT Wright and UR Desai (2004) *7th Annual School of Pharmacy Research Day*, Virginia Commonwealth University, Richmond, VA.
 279. "Modeling highly charged sulfated molecules" C. Krishnasamy and UR Desai (2004) *56th Southeast Regional Meeting of the American Chemical Society*, Raleigh-Durham, NC.
 280. "Lignin sulfate – A new potent HSV-1 viral infection inhibitor" A Raghuraman, JN Thakkar, V Tiwari, D Shukla and UR Desai (2004) *56th Southeast Regional Meeting of the American Chemical Society*, Raleigh-Durham, NC.
 281. "Antithrombin activation by non-sulfated, non-polysaccharide organic polymers: Implications for the design of novel antithrombin based protease inhibitors" B Monien and UR Desai (2004) *56th Southeast Regional Meeting of the American Chemical Society*, Raleigh-Durham, NC.
 282. "Synthetic sulfates as biologically important molecules. The case of activated factor Xa inhibition" UR Desai GT Gunnarsson and M Rahman (2003) *American Chemical Society Meeting*, Atlanta, GA.
 283. "Role of hydrophobic amino acids in heparin binding and conformational activation of antithrombin III" MA Jairajpuri, A Lu, U Desai, ST Olson, I Bjork, and SC Bock (2003) *American Heart Association Annual Meeting*, Orlando, FL.
 284. "Interaction of serpin α_1 -antichymotrypsin with amyloid peptide $A\beta_{1-42}$: Implications for Alzheimer's disease" J Afridi, A Ingemansson, S Janciauskiene, HT Wright and UR Desai (2003) *23rd Annual Meeting of Graduate Research Association of Students in Pharmacy*, Virginia Commonwealth University, Richmond, VA.
 285. "Exploring new non-sugar sulfated molecules as activators of antithrombin" GT Gunnarsson and UR Desai (2003) *31st John C. Forbes Graduate Student Honors Colloquium*, Richmond, VA.
 286. "Capillary electrophoretic analysis of sulfated flavanoids" Dantuluri M, Gunnarsson GT and Desai, UR (2002) *5th Annual School of Pharmacy Research Day*, Richmond, VA.
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287. "Designing small organic activators of antithrombin" Desai UR and Gunnarsson GT (2002) *Bioinformatics and Pharmacogenomics Symposium*, Richmond, VA.
 288. "The design of new non-sugar small antithrombin activators based on a natural trisaccharide pharmacophore" Gunnarsson GT and Desai UR (2002) *28th National Medicinal Chemistry Symposium*, San Diego, CA.
 289. "Designing small organic activators of antithrombin: The joys and troubles of digging in the dark" Desai UR and Gunnarsson GT (2002) *3rd International Serpin Symposium*, Chicago, IL.
 290. "Critical interactions mediating heparin activation of antithrombin" Björk I, Schedin-Weiss S, Desai UR, Arocas V, Petitou M, Bock SC and Olson ST (2002) *3rd International Serpin Symposium*, Chicago, IL.
 291. "Contributions of antithrombin III hydrophobic residues Phe121 and Phe122 to heparin binding" Jairajpuri MA, Lu A, Desai UR, Olson ST and Bock SC (2002) *3rd International Serpin Symposium*, Chicago, IL.
 292. "Design and synthesis of a novel antithrombin activator for inhibition of factor Xa" Gunnarsson GT and Desai UR (2001) *29th John C. Forbes Graduate Student Honors Colloquium*, Richmond, VA.
 293. "Synthesis of sulfated flavanoids for biochemical analysis as activators of antithrombin" Gunnarsson GT and Desai UR (2001) *4th Annual School of Pharmacy Research Day*, Richmond.
 294. "Computerized molecular design of a heparin pentasaccharide mimic" Gunnarsson GT and Desai UR (2000) *3th Annual School of Pharmacy Research Day*, Richmond, VA.
 295. "Computerized molecular design of heparin pentasaccharide mimics" Gunnarsson GT and Desai UR (2000) *Virginia Science Academy Annual Meeting*, University of Radford, Radford, VA.
 296. "Role of Arg129 and Lys125 in heparin binding and activation of antithrombin" Desai UR, Petitou M, Björk I, and Olson ST; *XVIIth International Congress of Thrombosis and Hemostasis*, Washington D. C. (August 1999).
 297. "Role of Arg129 and Lys125 in heparin binding and activation of antithrombin" Desai UR, Petitou M, Björk I, and Olson ST; *Ist International Serpin Symposium*; Cambridge (June 1999).