

## Curriculum Vitae

Mohammed Nurul Amin, M.Sc. PhD.  
Research Associate, Center for Vaccine Development.  
University of Maryland School of Medicine, Baltimore.

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### **Contact Information**

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**Languages:** English, Bengali (native). Can speak Japanese.

### **Education**

- June, 2000 B.Sc. (honours), Chemistry, University of Chittagong, Bangladesh.  
(Date of Publication of Results: June 2000; Exam year: 1997, held in Nov. 1999-May 2000)
- Aug, 2002 M.Sc., Organic Chemistry, University of Chittagong, Bangladesh.  
Title of thesis: Synthesis and Biological activities of some selectively acylated derivatives of L- lyxose. Supervisor: Prof. A. K. M. Shahjahan Kabir.  
(Date of Publication of Results: Aug, 2002; Exam. year: 1998, held in Apr. 2001-Aug. 2002)
- Sep, 2007 Ph.D., Carbohydrate Chemistry, Saitama University, Japan  
Title of thesis: Synthesis of N-Glycan from Pathogenic bacterium *Campylobacter Jejuni*.  
(Major department Biological and Environmental Science; Courses: Glycoscience, Chemical Biology, Organometallics, Special studies in Synthetic Carbohydrate Chemistry)  
Supervisor: Prof. Yukishige Ito.

### **Post Graduate Education, Training and Employment**

- Oct, 2007 – Aug, 2008 Contract Researcher, Synthetic Cellular Chemistry Laboratory. Advanced Science Institute, The Institute of Physical and Chemical Research (RIKEN), Japan.  
Supervisor: Prof. Yukishige Ito.
- Sep, 2008 – Jan, 2015 Postdoctoral Researcher, Institute of Human Virology of University of Maryland School of Medicine, Baltimore. MD 21201, USA.  
Supervisor: Prof. Lai-Xi Wang.
- Jan, 2015 – Oct, 2015 Postdoctoral Research Associate, Department of Chemistry and Biochemistry, University of Maryland, College Park. MD 20742.  
Supervisor: Prof. Lai-Xi Wang.
- Oct, 2015 – Sept, 2016 Postdoctoral Fellow, Center for Vaccine Development at University of Maryland School of Medicine. Supervisor: Dr. Raphael Simon.
- Sept, 2016– Present Research Associate, Center for Vaccine Development at University of Maryland School of Medicine.

## **Professional Society Membership**

### **Current Membership**

2009-Present: Member, American Chemical Society (ACS).

2009-Present: Member, Division of Carbohydrate Chemistry (CARB), American Chemical Society.

2009-Present: Member, Chemical Society of Maryland Section of ACS.

### **Past Membership**

2001-2002: Vice President, Chittagong University Chemical Society, Bangladesh.

2005-2007: Member, Japan Society for Carbohydrate Research (JSCR).

2005-2007: Member, Japan Society for Bioscience, Biotechnology and Agrochemistry (JSBBA)

2013-2015: Member, American society for Biochemistry and Molecular Biology (ASBMB)

2013-2014: Member, Society for Glycobiology (SFG)

## **Honors and Awards**

2000 Awards for First class 1<sup>st</sup> position in B.Sc.(Honours) examinations; University of Chittagong, Bangladesh.

2000 Awarded Late Shahidul Latif memorial scholarship for First class 1<sup>st</sup> position in B.Sc.(Honours) examinations; Department of Chemistry, University of Chittagong, Bangladesh

2002 Awards for First class 1<sup>st</sup> position in M.Sc. examinations; University of Chittagong, Bangladesh.

2004-2007 Awarded a “MONBUKAGAKUSHO” (Ministry of Education, Culture and Sports, Government of Japan) scholarship for Doctoral Research.

2014 NIH & FDA Glycosciences Research Day 2014, Best Poster Award.

## **Teaching Service**

2001-2002 Teaching and research advising to the apprentice thesis students during own M. Sc. thesis work (2001-2002), Organic Chemistry Laboratory, Department of Chemistry, University of Chittagong, Bangladesh. Theoretical Organic Chemistry lecture to undergraduate students groups of Department of Chemistry (10-12 students/groups, Private settings).

2008-2014 Teaching and Research advising to the PhD students, other postdoctoral fellows, technical staff and Graduate rotation students in the laboratory while working as Senior fellow. Department of Biochemistry and Molecular Biology, Institute of Human Virology, University of Maryland School of Medicine. Baltimore, MD 21201, USA.

2015 Teaching and Research advising to the PhD students, postdoctoral fellows beside performing own research as a senior postdoctoral Research associate, Department of Chemistry and Biochemistry, University of Maryland, College park, MD 20742.

2016-Present Teaching and Research assisting to technical staff/fellows at current position in Center for Vaccine Development, University of Maryland School of Medicine, Baltimore.

## Publications

### Peer-reviewed journal articles

1. Kabir, A. K. M. S.#; Matin, M. M.; Bhuiyan, M. M. R; **Amin, M. N.\***, Synthesis and characterization of some acylated derivatives of L-Lyxose. *The Chittagong Univ. J. Sci.*, 2001, 25(1), 75-84. (\*Key scientist performed all experiments)
2. Kabir, A. K. M. S.#; **Amin, M. N.\***; Bhuiyan, M. M. R.; Kawsar, S. M. A.; Rahman, M. S., Antimicrobial activities of some acylated derivatives of L-lyxose. *The Chittagong Univ. J. Sci.*, 2003, 27(1 & 2), 53-60. (\*Key scientist performed major experiments)
3. **Amin, M. N.**; Ishiwata, A.; Ito, Y., Synthesis of asparagine-linked Bacillosamine. *Carbohydr. Res.*, 2006, 341, 1922-1929.
4. **Amin, M. N.**; Ishiwata, A.; Ito, Y., Synthesis of N-linked glycan derived from Gram-negative bacterium, *Campylobacter jejuni*. *Tetrahedron* , 2007, 63, 8181-8198.
5. **Amin, M. N.**; Huang, W.; Rahman, M. M.; Wang, L. X., Convergent Synthesis of Homogeneous Glc1Man9GlcNAc2-Protein and Derivatives as Ligands of Molecular Chaperones in Protein Quality Control. *J. Am. Chem. Soc.*, 2011, 133, 14404-14417.
6. **Amin, M. N.**; McLellan, J. M.; Huang, W.; Orwenyo, J.; Kwong, P. D.; Wang, L. X., Synthetic HIV-1 Glycopeptides Enable Characterization of Fine Epitopes of Broadly Neutralizing Antibodies PG9 and PG16. *Nature Chemical Biology*, 2013, 9(8), 521-526.
7. Pancera, M.; Hussan, S. S.; Doria-Rose, N. A.; McLellan, J. S.; Dai, K.; Loesgen, S.; Staupe, R. P.; Yang, Y.; Zhang, B.; Parks, R.; Eudailey, J.; Krissey E. Lloyd, K. E.; Blinn, J.; Alam, S. M.; Haynes, B. F.; **Amin, M. N.**; Wang, L. X.; Burton, D. R.; Koff, W. C.; Nabel, G. J.; John R. Mascola, J. R.; Carole A. Bewley, C. A.; Kwong, P. D., Structural basis for diverse N-glycan recognition by HIV-1–neutralizing V1–V2–directed antibody PG16. *Nature Structural and Molecular Biology*, 2013, 20(7), 804-814. (performed experiments, synthesized glycan and analyzed data)
8. Feng, C.; Ghosh, A.; **Amin, M. N.**, Giomarelli, B., Shridhar, S.; Banerjee, A.; Fernández-Robledo, J. A.; Bianchet, M. A.; Wang, L-X.; Wilson, I. B. H.; Vasta, G. R., The Galectin CvGal1 from the Eastern Oyster *Crassostrea virginica* Binds to Blood Group A Oligosaccharides on the Hemocyte Surface. *J. Biol. Chem.*, 2013, 288, 24394-24440. (did experiments, analyzed data, binding studies)
9. Lomino, J. V. ; Naegeli, A.; Jared Orwenyo, J.; **Amin, M. N.**; Markus Aebi; Wang, L. X., A Two-step Enzymatic Glycosylation of Polypeptides with Complex N-glycans. *Bioorg. Med. Chem.*, 2013, 21, 2262-2270. (performed experiments, analyzed data)
10. Wang, L.X.; **Amin, M. N.** Chemical and Chemoenzymatic Synthesis of Glycoproteins for Deciphering Functions. *Chemistry & Biology*., 2014, 21(1), 51–66. (Review papers)
11. Heredia, A.; Davis, C.; **Amin, M. N.**; Lea, N. M.; Wainberg, M. A.; Oliveira, M.; Deeks, S. G.; Wang, L. X.; Redfield, R. R. Targeting host nucleotide biosynthesis with resveratrol inhibits emtricitabine-resistant HIV-1. *AIDS*, 2014, 28, 317-323. (did experiments, analyzed data)
12. Chiang, MJ, Holbert, MA, Kalin, JH, Ahn, YH, Giddens, J, **Amin, M.N**, Taylor, MS, Collins, SL, Chan-Li, Y, Waickman, A, Hsiao, PY, Bolduc, D, Leahy, DJ, Horton, MR, Wang, LX, Powell, JD, Cole, PA , “An Fc domain protein-small molecule conjugate as an enhanced immunomodulator. *J. Am. Chem. Soc.*, 2014, 136, 3370-3373. (Performed experiments, analyzed data)
13. Feng, C.; Ghosh, A.; **Amin, M. N.**, Bachvaroff, T. R.; Tasumi, S.; Pasek, M.; Banerjee, A.; Shridhar, S.; Wang, L-X.; Bianchet, M. A.; Vasta, G. R.;The Galectin CvGal2 from the Eastern Oyster (*Crassostrea virginica*) Displays Unique Specificity for ABH Blood Group Oligosaccharides and Differentially Recognizes Sympatric *Perkinsus* Species. *Biochemistry*, 2015, 54, 4711-4730. (Performed experiments, analyzed data)
14. Nita-Lazar, M.; Banerjee, A.; Feng, C.; **Amin, M.N.**; Frieman, M. B.; Chen, W. H.; Cross, A. S.; Wang, L-X.; Vasta, G. R.; Desialylation of airway epithelial cells during influenza virus infection

enhances pneumococcal adhesion via galectin binding. *Molecular Immunology*, 2015, 65, 1–16.  
(Performed experiments, analyzed data)

15. John P. Giddens, J.P.; Lomino, J.V.; **Amin, M. N.**; Wang, L. X., Endo-F3 glycosynthase mutants enable chemoenzymatic synthesis of core fucosylated tri-antennary complex-type glycopeptides and glycoproteins. *J. Biol. Chem.*, 2016, 291, 9356-9370. (Performed experiments, analyzed data)
16. Toonstra, C.; **Amin, M. N.**; Wang, L. X., Site-Selective Chemoenzymatic Glycosylation of an HIV-1 Polypeptide Antigen with Two Distinct N-Glycans via an Orthogonal Protecting Group Strategy. *J. Org. Chem.*, 2016, 81 (15), pp 6176–6185. (Performed experiments, synthesis, analyzed data)
17. Yamaguchi, T.; **Amin, M. N.**; Toonstra, C.; Wang, L. X., Chemoenzymatic Synthesis and Receptor Binding of Mannose-6-Phosphate (M6P)-Containing Glycoprotein Ligands Reveal Unusual Structural Requirements for M6P Receptor Recognition. *J. Am. Chem. Soc.*, 2016, 138(38), 12472-12485. (Performed experiments, synthesis, analyzed data)
18. Hsiao, P.-Y., Kalin, J., Sun, I.-H., **Amin, M. N.**, Lo, Y.-C., Chiang, M.-J., Giddens, J., Sysa-Shah, P., Gabrielson, K., Wang, L.-X., Powell, J. and Cole, P. A., An Fc-Small Molecule Conjugate for Targeted Inhibition of the Adenosine 2A Receptor. *ChemBioChem*. 2016, 17, 1951-1960. (Performed experiments, analyzed data)

#### **Patent Publication:**

19. IMMUNOGENS BASED ON AN HIV-1 V1V2 SITE-OF-VULNERABILITY; [US 14/344,589](#); [Publication number US20140348865 A1](#). Inventors: Peter Kwong, Jason McLellan, Marie Pancera, Jason Gorman, Mallika Sastry, Kaifan Dai, Tongqing Zhou, John Mascola, Gary Nabel, Masaru Kanekiyo, Yongping Yang, Jiang Zhu, Lai-Xi Wang, William Schief, Chris Carrico, **Mohammed Amin**.

#### **Published Abstract Associated with invited Speech/oral presentation**

##### **International Oral Presentation with Published Abstracts**

1. **Amin, M. N.**; Ohta, S.; Ishiwata, A.; Ito, Y.; Synthesis of *N*-Asparagine Linked Bacillosamine toward Synthesis of *N*-Glycan Present in Gram-negative Bacterium *Campylobacter jejuni*. *XXIII<sup>rd</sup> International Carbohydrate Symposium*. 2006, Whistler, Canada.
2. **Amin, M. N.**; Kubota, A.; Ishiwata, A.; Ito, Y.; Synthesis of Pseudaminic acid found in Pathogenic Bacteria *Campylobacter jejuni/coli*. *XXIV<sup>th</sup> International Carbohydrate Symposium*. 2008, Oslo, Norway.

##### **National Oral presentation with published Abstracts**

3. **Amin, M. N.**; Ohta, S.; Ishiwata, A.; Ito, Y. Synthetic studies of novel *N*-glycan found in a human pathogenic bacterium *Campylobacter jejuni*: Synthesis of bacillosamine and its derivatives. *JSBBA Symposium*. 2006, Kyoto, Japan.
4. **Amin, M. N.**; Ohta, S.; Ishiwata, A.; Ito, Y. First chemical synthesis of novel *N*-glycan: a heptasaccharide, GlcGalNAc<sub>5</sub>Bac, from *Campylobacter jejuni*. *JSBBA Symposium*. 2007, Tokyo, Japan.
5. **Amin, M. N.**; Huang, W.; Wang, L. X. Chemoenzymatic Assembly of Glc<sub>1</sub>Man<sub>9</sub>GlcNAc<sub>2</sub>-protein for Functional Studies. *241<sup>st</sup> American Chemical Society National Meeting & Exposition*. March 27-31, 2011, Anaheim, California.
6. **Amin, M. N.**; McLellan, J. M.; Huang, W.; Orwenyo, J.; Kwong, P. D.; Wang, L. X. Synthetic HIV-1 V1/V2 Glycopeptides for Characterizing the Glycan Specificity of the Epitope of Broadly Neutralizing Antibody PG9/PG16. *NIH & FDA Glycosciences Day*, May 10, 2013, Bethesda, Maryland, USA.

##### **Others Published Abstracts and poster presentation.**

7. **Amin, M. N.**; Ishiwata, A.; Ohta, S.; Ito, Y. Synthesis of Heptasaccharide from Bacterial *N*-Glycan Containing Rare Sugar Bacillosamine. *XXVI<sup>th</sup> Jap. Carb. Symp.* 2006, Sendai, Japan.
8. **Amin, M. N.**; Ishiwata, A.; Ito, Y. Stereoselective Synthesis of Novel *N*-Glycan from *Campylobacter jejuni*. *XXVII<sup>th</sup> Jap. Carb. Symp.* 2007, Fukuoka, Japan.
9. **Amin, M. N.**, Wang, L. X. Progress in the Chemoenzymatic Synthesis of Glc<sub>1</sub>Man<sub>9</sub>GlcNAc<sub>2</sub>-protein for Functional Studies. *NIH & FDA Glycoscience Research Day*. May 2009, Bethesda, Maryland, USA.

10. **Amin, M. N.**; Huang, W.; Wang, L. X. Chemoenzymatic Synthesis of Homogeneous Glc1Man9GlcNAc2-Protein and Derivatives for Functional Studies. *GLYCOBIOLOGY*, 2010, 20 (11), 1480-1481.
  11. **Amin, M. N.**; Huang, W.; Wang, L. X. Chemoenzymatic Synthesis of Gal1Glc1Man9GlcNAc2-protein for Functional Studies. *NIH & FDA Glycoscience Research Day*. May 2010, Bethesda, Maryland, USA.
  12. **Amin, M. N.**; Huang, W.; Rahman, M. M.; Wang, L. X. Convergent Chemoenzymatic Assembly of Homogeneous Glc1Man9GlcNAc2-RNase Protein and Derivatives as Ligands of Molecular Chaperones in Protein Quality Control. *NIH & FDA Glycosciences Research Day*. June 2011, Bethesda, Maryland, USA
  13. **Amin, M. N.**; McLellan, J. S.; Huang, W.; Orwenyo, J.; Kwong, P. D.; Wang, L. X. Chemoenzymatic Synthesis of HIV-1 V1/V2 Glycopeptides for Charecterizing the Epitope of Broadly Neutralizing Antibody PG9 and PG16. *NIH & FDA Glycosciences Research Day*. June 2012, Bethesda, Maryland, USA.
  14. **Amin, M. N.**; McLellan, J. S.; Huang, W.; Orwenyo, J.; Kwong, P. D.; Wang, L. X. Synthetic HIV-1 Glycopeptides Enable Characterization of Fine Epitopes of Broadly Neutralizing Antibody PG9. *JAIDS Journal of Acquired Immune Deficiency Syndromes*, 2013, 62, S50.
  15. **Amin, M. N.**; Lomino, J.; Wang, L. X Chemoenzymatic synthesis of HIV-1 V1V2 glycopeptide antigens for epitope characterization and neutralizing antibody detection. *The FASEB Journal*, 2014, vol. 28 no. 1 (Supplement page 1004.4)
- Co-authored Published Abstracts**
16. Ishiwata, A.; **Amin, M. N.**; Ohta, S.; Ito, Y. Synthetic studies on a novel N-linked glycan from Gram-negative bacterium, *Campylobacter jejuni*. *48th Symposium on the Chemistry of Natural Products*, 2006, Sendai, Japan.
  17. Ishiwata, A.; Akao, H.; Ohta, S.; **Amin, M. N.**; Ito, Y. Studies on the stereoselective synthesis of glycan having 1,2-*cis* linkage derived from bacterial glycoconjugates. *XXVIth Jap. Carb. Symp.* 2006, Sendai, Japan.
  18. Ishiwata, A.; **Amin, M. N.**; Ohta, S.; Ito, Y. Stereoselective Synthesis of Novel Bacterial N-Glycan. *49th Symposium on the Chemistry of Natural Products*, 2007, Sapporo, Japan.
  19. Orwenyo, J.; Huang, W.; **Amin, M. N.**; Wang, L. X. Chemoenzymatic synthesis and Lectin binding study of selectively fluorinated ribonuclease B. 244<sup>th</sup> *American Chemical Society National Meeting*. August 19-23, 2012, Philadelphia, PA, USA.
  20. Feng, C.; **Amin, M. N.**, Banerjee, A.; Shridhar, S.; Pasek, M.; Satoshi, T.; Wang, L-X.; Bianchet, M. A.; Vasta, G. R. Structural and binding properties of the galectins CvGal1 and CvGal2 from the eastern oyster (*Crassostrea virginica*). *GLYCOBIOLOGY*, 2013, 23 (11), 1385-1385.

### **Invited Speeches\***

**(Not related to publications)\***

1. **Amin, M. N.**; Title: Identifying Glycan Specificity of HIV-neutralizing Antibodies through Synthesis and Binding: An Effective Approach; *GE healthcare(Biacore)*, NIH Bethesda, USA; 22th Oct, 2014.
2. **Amin, M. N.**; Title: Syntheses of glycoconjugates for biological interest. *BD Biosciences*, Cockeysville, MD, 8<sup>th</sup> Aug, 2014.

(\*Invited presentation associated with published abstract mentioned in published abstract section.)