

Curriculum Vitae

Bum Jin Kim, Ph. D.

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Education

**Graduate School of Analytical and Science Technology,
Chungnam National University** Daejeon, Korea
2013 – 2018

Ph. D. (Research Advisor: Hyun Joo An, Ph.D.)

Studies on glycomics-based forensic applications by mass spectrometry

**Graduate School of Analytical and Science Technology,
Chungnam National University** Daejeon, Korea
2011 – 2013

M.S. (Research Advisor: Hyun Joo An, Ph.D.)

Monitoring of age-related O-glycosylation in mouse skin tissues

Kyonggi University Suwon, Korea
B.S. in Chemistry 2003 – 2011

Research and Professional Experience

Positions

- Postdoctoral Scholar, Nutrition Program, School of Biological and Population Health Sciences, College of Public Health and Human Sciences, Oregon State University.
(Principal Investigator: David C. Dallas, Ph.D. / July, 2018 – present)

Professional activities

- Memberships in the American Society for Mass Spectrometry and Human Proteome Organization

Teaching experience

- Mentoring undergraduate and graduate students (2013 – 2017 in Dr. An Lab & 2018 – Present in Dr. Dallas Lab)
- Training researcher and postdoctoral scholar (2013 – 2017 in Dr. An Lab & 2018 – Present in Dr. Dallas Lab)
- Teaching graduate students in the experiment classes (2013 – 2017 in Dr. An Lab)

Research assistant

- Collaboration studies with OHSU and University of Idaho (2018 – Present in Dr. Dallas Lab)

- Laboratory safety manager (2019 – Present in Dr. Dallas Lab)
- Set-up and maintenance the laboratory and instruments (2011 – 2017 in Dr. An Lab)
- Facilitate the international glycomics symposium and assist the hands-on glycomics workshop (2011 – 2017 in Dr. An Lab)

Research Skills

Research and laboratory skills

- LC/MS-based identification and relative quantitation of glycans, glycopeptides, peptides and proteins
- PRM- and MRM-based absolute quantitation of proteins
- Manual interpretation of tandem MS spectra of glycans and peptides
- Bottom-up and Top-down proteomics
- Peptidomics (from di- and tri-peptides to macropeptides)
- N- and O-glycan release (using PNGase F and β -elimination)
- Site-specific profiling of N- and O-glycopeptides (using protease)
- TMT labeling
- Monosaccharide, O-GlcNAcylation and phosphopeptide analyses
- Assay kits and ELISA

Operation, trouble shooting, and basic maintenance of analytical instruments

- Nano-LC/Orbitrap MS (Fusion Lumos Tribrid / Thermo Fisher Scientific) *Operation only
- LC/Q-TOF MS (Agilent 6530, 6540, 6550 / Agilent Technologies)
- LC/QQQ MS (Agilent 6460 / Agilent Technologies)
- MALDI-TOF/TOF MS (Ultraflexxtreme / Bruker)
- HPLC (Agilent 1100 / Agilent Technologies)

Software and statistics

- LC and MS operating software (Thermo Fisher Scientific, Agilent Technologies, Bruker and Waters)
- Byonic & Byologic, Proteome Discoverer, Skyline, MaxQuant, Expasy-Glycomics, MassHunter, Mascot, ChemDraw, Various online services and software for analyzing LC/MS results
- SPSS, MetaboAnalyst, Various online services and software for statistical analysis
- Microsoft Office (Word, Excel, PowerPoint)

Language

- Fluent in English & Native speaker of Korean

Publications

- J Koh, **BJ Kim**, Y Qu, H Huang, DC Dallas, “Top-Down Glycopeptidomics Reveals Intact

Glycomacropeptide Is Digested to a Wide Array of Peptides in Human Jejunum”, *The Journal of nutrition*, **2022**, 152 (2), 429-438

- **BJ Kim**, J Koh, N Liang, J Yang, G Ozturk, D Barile, DC Dallas, “Survival of the intact proteins in donor human milk treated by holder pasteurization, ultra-high temperature processing, retort sterilization and homogenization”, *Food Chemistry*, **2022**, *in progress*
- J Koh, **BJ Kim**, Y Qu, DC Dallas, “Mass spectral profiling of caseinomacropeptide extracted from feeding material and jejunal fluid using three methods—ethanol precipitation, perchloric acid precipitation, and ultrafiltration”, *Food Chemistry*, **2022**, *submitted*
- N Liang, J Koh, **BJ Kim**, G Ozturk, D Barile, DC Dallas, “Structural and functional changes of bioactive proteins in donor human milk treated by vat-pasteurization, retort sterilization, ultra-high-temperature sterilization, freeze-thawing and homogenization”, *The American Journal of Clinical Nutrition*, **2022**, *submitted*
- Y Chen, **BJ Kim**, DC Dallas, “Proteomics analysis reveals digestion-resistant proteins from colostrum are associated with inflammatory and cytotoxic responses in intestinal epithelial cells”, *Journal of Parenteral and Enteral Nutrition*, **2021**
- Y Qu, **BJ Kim**, J Koh, DC Dallas, “Analysis of bovine kappa-casein glycomacropeptide by liquid chromatography–tandem mass spectrometry”, *Foods*, **2021**, 10 (9), 2028
- J Lueangsakulthai, **BJ Kim**, V Demers-Mathieu, BNP Sah, Y Woo, A Olyaei, M Aloia, A O’Connor, B Scottoline, DC Dallas, “Effect of digestion on stability of palivizumab IgG1 in the infant gastrointestinal tract”, *Pediatric Research*, **2021**, 90 (2), 335-340
- **BJ Kim**, DC Dallas, “Systematic examination of protein extraction, proteolytic glycopeptide enrichment and MS/MS fragmentation techniques for site-specific profiling of human milk N-glycoproteins”, *Talanta*, **2021**, 224, 121811
- BNP Sah, J Lueangsakulthai, **BJ Kim**, BR Hauser, Y Woo, A Olyaei, M Aloia, A O’Connor, B Scottoline, MK Pastey, DC Dallas, “Partial degradation of recombinant antibody functional activity during infant gastrointestinal digestion: implications for oral antibody supplementation”, *Frontiers in Nutrition*, **2020**, 7, 130
- **BJ Kim**, J Lueangsakulthai, BNP Sah, B Scottoline, DC Dallas, “Quantitative analysis of antibody survival across the infant digestive tract using mass spectrometry with parallel reaction monitoring”, *Foods*, **2020**, 9 (6), 759
- F Maixner, **BJ Kim**, and 40 others., “The Iceman’s Last Meal Consisted of Fat, Wild Meat, and Cereals”, *Current Biology*, **2018**, 28, 2348–2355.
- **BJ Kim**, CY Han, HT Moon, J Kwon, IS Jang, SK Lim, KW Park, JS Choi, HJ An, “Monitoring of post-mortem changes of saliva N-glycosylation by nano LC/MS”, *Analytical and Bioanalytical Chemistry*, **2018** (Paper in forefront)
- S Ozcan*, **BJ Kim***, G Ro, JH Kim, TL Bereuter, C Reiter, L Dimapasoc, D Garrido, DA Mills, R Grimm, CB Lebrilla, HJ An, “Glycosylated proteins preserved over millennia: N-glycan analysis of Tyrolean Iceman, Scythian Princess and Warrior”, *Scientific Reports*, **2014**, 4, 4963
*These authors contributed equally to co-first authors
- S Hua, M Saunders, LM Dimapasoc, SH Jeong, **BJ Kim**, S Kim, M So, KS Lee, JH Kim, KS Lam, CB Lebrilla, HJ An, “Differentiation of cancer cell origin and molecular subtype by plasma membrane N-glycan profiling”, *Journal of Proteome Research*, **2014**, 13(2), 961–968

- JM Ahn, HJ Sung, YH Yoon, BG Kim, WS Yang, C Lee, HM Park, **BJ Kim**, BG Kim, SY Lee, HJ An, JY Cho, “Integrated glycoproteomics demonstrates fucosylated serum paraoxonase 1 alterations in small cell lung cancer”, *Molecular & cellular proteomics*, **2014**, 13(1), 30–48
- S Hua, CY Hu, **BJ Kim**, SM Totten, MJ Oh, NY Yun, CC Nwosu, JS Yoo, CB Lebrilla, HJ An, “Glyco-analytical multispecific proteolysis (Glyco-AMP): a simple method for detailed and quantitative Glycoproteomic characterization”, *Journal of Proteome Research*, **2013**, 12(10), 4414–4423
- MJ Oh, S Hua, **BJ Kim**, HN Jeong, SH Jeong, R Grimm, JS Yoo, HJ An, “Analytical platform for glycomic characterization of recombinant erythropoietin biotherapeutics and biosimilars by MS”, *Bioanalysis*, **2013**, 5(5), 545–559

Grants Received and Involved

- NIH - Child Health & Human Development. Can high pressure processing (HPP) and ultraviolet-C irradiation (UV-C) treatment preserve donor milk bioactive protein structure and function better than holder pasteurization?. Role: Investigator (involved) (09/01/2021 – 06/30/2026).
- Tatua Co-operative Dairy Co., Ltd. Peptide profile and immunomodulatory activity of Tatua ingredients (Phase II). Role: Investigator (08/01/2021 – 07/31/2022).
- Prolacta Bioscience, Inc. Structural and functional changes of bioactive protein in human milk treated. Role: Investigator (involved) (04/01/2021 – 05/31/2022).
- Morinaga Milk Industry Co., Ltd. Analysis of glycopeptides of Morinaga infant formula across the infant in vitro digestion. Role: Investigator (02/08/2021 – 02/01/2022).
- Phibro Animal Health Corporation. Analysis of proteins in blood and milk samples collected from cows fed with and without Phibro’s supplement. Role: Investigator (01/01/2021 – 06/30/2022).
- Tatua Co-operative Dairy Co., Ltd. Analysis of peptides in casein phosphopeptide products from Tatua Dairy Cooperative. Role: Investigator (11/24/2020 – 12/31/2020).
- Arla Foods a.m.b.a. Determine the extent to which GMP and GMP-derived peptides survive in the adult small intestine, feces and bloodstream. Role: Investigator (involved) (7/1/2019 – 10/31/2020).
- Bill and Melinda Gates Foundation. Immunoglobulin Stability in the Infant Gut. Role: Investigator (involved) (10/24/2017 – 10/31/2019).

Awards

- **B.J. Kim** and H.J. An, Stability of N-glycans Found in Human Saliva using Nano LC chip/Q-TOF MS, *Poster Award for Korean Chemical Society*, Kintex, Goyang, Korea, Apr. **2017**.
- **B.J. Kim** and H.J. An, *Award for Analytical Chemistry of Korean Chemical Society*, Kintex, Goyang, Korea, Apr. **2017**.
- **B.J. Kim** and H.J. An, Altered O-glycosylation during Natural Aging, *Poster award for 15th Korean Human Proteome Organization*, Seoul National University, Seoul, Korea, Mar. **2015**.

- **B.J. Kim** and H.J. An, A novel forensic approach for post-mortem interval estimation using saliva glycosylation, *Poster award for 2014 Summer Conference of Korean Society for Mass Spectrometry*, Jeju international convention center, Jeju, Korea, Aug. **2014**.
- **B.J. Kim** and H.J. An, Glycosylated proteins preserved over millennia: N-glycan analysis of Tyrolean Iceman, Scythian Princess and Warrior, *Excellent oral presentation award for Korean Chemical Society*, Changwon convention center, Changwon, Korea, Oct. **2013**.
- **B.J. Kim** and H.J. An, Sugar decoration of mummy: Detection of glycome in Ötzi, *Poster award for 2013 Summer Conference of Korean Society for Mass Spectrometry*, Jeju international convention center, Jeju, Korea, Aug. **2013**.
- **B.J. Kim** and H.J. An, Tissue O-glycans change during natural mouse aging, *Excellent Poster award for 4th Asia Oceania Mass Spectrometry Conference*, Taipei international convention center, Taipei, Taiwan, Jul. **2013**.
- **B.J. Kim** and H.J. An, Monitoring of Age-related O-glycosylation in Mouse Skin Tissues, *Poster award for 2012 Summer Conference of Korean Society for Mass Spectrometry*, Gyeongju center, Gyeongju, Korea, Aug. **2012**.

Patents

- H.J. An, J.H. Kim, **B.J. Kim**, Method for human saliva identification, **2017**, KR/10-2017-0143035.
- H.J. An, J.H. Kim, **B.J. Kim**, J.S. Choi, D.G. Lee, J. Kwon, Verifying method for human saliva using human saliva-specific glycan, **2016**, PCT/KR2016/005907 & KR/10-1672717.

Oral Presentations

- B.J. Kim and D. Dallas, Systematic Examination of Glycoprotein/Glycopeptide Extraction Methods and MS/MS Fragmentation Techniques for Human Milk Glycoproteomics, *11th Asia Community of Glycoscience and Glycotechnology*, Busan, Korea, 2019. (Brief Oral/Poster)
- B.J. Kim and H.J. An, Stability of N-glycans found in human saliva using nano LC chip/Q-TOF MS, *119th Korean Chemical Society*, Kintex, Goyang, Korea, 2017. (Brief Oral/Poster)
- B.J. Kim and H.J. An, Characterization of highly fucosylated N-glycans found in human saliva using LC-MS and LC-MS/MS, *117th Korean Chemical Society*, Kintex, Goyang, Korea, 2016. (Brief Oral/Poster)
- B.J. Kim and H.J. An, Altered O-glycosylation during natural aging, *Summer Symposium of Korean Human Proteome Organization*, KIST, Gangneung, Korea, 2015. (Oral)
- B.J. Kim and H.J. An, A novel forensic approach for post-mortem interval estimation using saliva glycosylation, *2014 Summer Conference of Korean Society for Mass Spectrometry*, Jeju international convention center, Jeju, Korea, 2014. (Oral/Poster)
- B.J. Kim and H.J. An, A novel forensic approach towards determining time of death utilizing saliva glycosylation, *62nd American Society for Mass Spectrometry*, Baltimore convention center, Baltimore, USA, 2014. (Oral)
- B.J. Kim and H.J. An, Glycosylated proteins preserved over millennia: N-glycan analysis of Tyrolean Iceman, Scythian Princess and Warrior, *112th Korean Chemical Society*, Changwon

convention center, Changwon, Korea, 2013. (Oral)

- B.J. Kim and H.J. An, Mummy stomach glycosylation, *2nd Iceman Stomach Content Meeting*, Ancient DNA lab, Bolzano, Italy, 2013. (Oral)
- B.J. Kim and H.J. An, Monitoring of age-related O-glycosylation in mouse skin tissues, *2012 Summer Conference of Korean Society for Mass Spectrometry*, Gyeongju center, Gyeongju, Korea, 2012. (Brief Oral/Poster)

Poster Presentations (regarding proteomics/glycomics and mass spectrometry)

- B.J. Kim and D. Dallas, Survival of infant formula N-glycoproteins across simulated infant gastrointestinal digestion, *70th American Society for Mass Spectrometry*, Online, 2022. (Poster)
- B.J. Kim and D. Dallas, Systematic examination of protein/glycopeptide extraction methods and MS/MS fragmentation techniques for monitoring intact human milk glycoproteins survival across infant digestion, *68th American Society for Mass Spectrometry*, Online, 2020. (Poster)
- B.J. Kim and H.J. An, The study of variations of N-glycan profiles in human saliva, *2017 Winter Conference of Korean Society for Mass Spectrometry*, KIST, Seoul, Korea, 2017. (Poster)
- B.J. Kim and H.J. An, Insights into saliva fucosylated glycans as a novel post-mortem interval (PMI) marker, *2016 Summer Conference of Korean Society for Mass Spectrometry*, HICO, Gyeongju, Korea, 2016. (Poster)
- B.J. Kim and H.J. An, In-depth analysis of saliva N-glycans found in live human and corpse: Post-mortem interval (PMI) marker discovery, *64th American Society for Mass Spectrometry*, González Convention Center, San Antonio, Texas, USA, 2016. (Poster)
- B.J. Kim and H.J. An, Prediction of post mortem interval using human salivary glycome, *2015 Summer Conference of Korean Society for Mass Spectrometry*, Bexco, Busan, Korea, 2015. (Poster)
- B.J. Kim and H.J. An, Altered O-glycosylation during natural aging, *15th Korean Human Proteome Organization*, Seoul National University, Seoul, Korea, 2015. (Poster)
- B.J. Kim and H.J. An, Characterization of novel fucosylated N-glycans from human saliva using structure-specific LC/MS, *2015 Winter Conference of Korean Society for Mass Spectrometry*, Alpensia convention center, Pyeongchang, Korea, 2015. (Poster)
- B.J. Kim and H.J. An, Glycosylated proteins preserved over millennia: N-glycan analysis of Tyrolean Iceman, Scythian Princess and Warrior, *112th Korean Chemical Society*, Changwon convention center, Changwon, Korea, 2013. (Oral)
- B.J. Kim and H.J. An, Tissue O-glycans change during natural mouse aging, *4th Asia Oceania Mass Spectrometry Conference*, Taipei international convention center, Taipei, Taiwan, 2013. (Poster)
- B.J. Kim and H.J. An, Age-related changes in the composition and structure of glycan released from mouse skin tissues, *19th International Mass Spectrometry Conference*, Kyoto international conference center, Kyoto, Japan, 2012. (Poster)
- B.J. Kim and H.J. An, Monitoring of the alteration of O-glycans during aging, *60th American Society for Mass Spectrometry*, Vancouver convention centre, Vancouver, Canada, 2012. (Poster)

A handwritten signature in black ink that reads "Bum Jin Kim". The letters are cursive and connected.

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Oregon State University