
He, Ke**Education**

Ph.D., Program in Chemical and Biochemical Engineering.....05/2017 (expected)
University of Maryland, Baltimore County (UMBC)
Baltimore, MD

B.S., Biotechnology Engineering.....07/2010
Tianjin University of Science & Technology (TUST)
Tianjin, China

Experience

Graduate Research Assistant.....05/2012 – Present
Department of Chemical, Biochemical and Environmental Engineering, UMBC
Baltimore, MD

- Overall focused on the occurrence, fate, and associated ecological effects of prioritized contaminants (*i.e.*, antibiotics, estrogenic hormones, and UV-filters) of emerging concerns
- Developed efficient pretreatment (*e.g.*, online solid-phase extraction and liquid extraction) and advanced analytical methods (*e.g.*, HPLC-UV/FLD and LC-MS/MS) for determination of more than 60 target compounds in surface water, wastewater, sediment, sludge, and biota samples.
- Studied on the degradation kinetics and sorption isotherms of antibiotics during activated sludge process by laboratory-scale reactor investigation
- Investigated the bioaccumulation and estrogenic effects of estrogens and UV-filters in crayfish (*i.e.*, *Procambarus clarkii*) through long term exposure experiment

Teaching Assistant.....08/2011 – 05/2012
Department of Chemical, Biochemical and Environmental Engineering, UMBC
Baltimore, MD

- Assist for the classes – Chemical Engineering Analysis and Biochemical Engineering Laboratory

GMP Process Operator.....03/2011 – 07/2011
GMP Pilot Plant, Zhongguancun Biomedical Park,
Beijing, China

- Worked on GMP level fermentation of *Haemophilus influenzae* Type b (Hib) and *Corynebacterium diphtheria*
- Contributed to CanSino's first batch production of Hib conjugate vaccine for animal studies

Lab Technician.....08/2010 – 03/2011
R&D center, Tianjin CanSino Biotechnology Inc.
Tianjin, China

- Helped to finalized fermentation conditions of Hib to produce capsular polysaccharide at 50 L level
- Stabilized the productivity of CRM-197 protein in the culture of *Corynebacterium diphtheria*

Undergraduate Research Assistant.....02/2010 – 06/2010
Department of Biotechnology Engineering, TUST
Tianjin, China

- Conducted the study of effects of xylanase, cellulase and acid protease on ethanol fermentation from starch
- Optimized the additive amount and addition time of the three enzymes

- Identified the best ratio of material to water and the suitable pH of the culture medium

Undergraduate Research Assistant07/2009 – 01/2010

Key Laboratory of Industrial Fermentation Microorganisms

Tianjin, China

- Assisted in the study of mixed fermentation of *L. lactis* and *S. cerevisiae* to produce nisin
- Improved the culture condition of *S. cerevisiae* for pH control by consuming the lactic acid produced by *L. lactis*
- Investigated the impact of dissolved oxygen on the growth rate of *L. lactis* and nisin productivity

Honors and awards

- 2016 Outstanding GSA Senator Award, Graduate Student Association at University of Maryland, Baltimore County (May 4, 2016).
- Certificate of Merit Award (co-authored), Division of Environmental Chemistry at the 251th American Chemical Society meeting, 2016.
- Best Poster Award in the “Analytical Methods for Detecting and Prioritizing Contaminants of Concern” symposium at the 248th American Chemical Society meeting (August 12, 2014).
- Certificate of Merit Award (1st author), Division of Environmental Chemistry at the 248th American Chemical Society meeting, 2014.
- Excellent Undergraduate Design in the College of Biotechnology (June 28, 2010).
- Student Scholarship from the College of Biotechnology, TUST (2006 – 2010).

Peer-reviewed publications

Journal Articles:

1. Snowberger, S.; Adejumo, H.; He, K.; Mangalgi, K. P.; Hopanna, M.; Soares, A. D.; Blaney, L. Direct photolysis of fluoroquinolone antibiotics at 253.7 nm: Specific reaction kinetics and formation of equally-potent fluoroquinolone antibiotics, *Environmental Science & Technology*, 50 (17): 9533-9542, 2016.
2. Mangalgi, K; **He, K.**; Blaney, L. Emerging contaminants: A potential human health concern for sensitive populations, *PDA Journal of Pharmaceutical Science and Technology* 69(2): 215-218, 2015.
3. **He, K.**; Soares, A. D.; Adejumo, H.; McDiarmid, M. A; Squibb, K. S; Blaney, L. Detection of a wide variety of human and veterinary fluoroquinolone antibiotics in municipal wastewater and wastewater-impacted surface water, *Journal of Pharmaceutical and Biomedical Analysis* 106: 136-143, 2015.
4. **He, K.**; Blaney, L. Systematic optimization of an SPE with HPLC-FLD method for fluoroquinolone detection in wastewater, *Journal of Hazardous Materials* 282: 96-105, 2015.
5. Zhang, YG; Zhao, SX; **He, K.**; Li, ZY; Zhao, L.; Wang, XL. Research of the effect of dissolved oxygen (DO) on the Nisin production of mixed fermentation, *China Food Additives Journal* 1, 96-99, 2011.
6. Wang, Y.; Xiao, DG; Guo, XW; **He, K.**; Pi, YP. Effects of Xylanase on ethanol fermentation of corn *Liquor-Making Science & Technology* 191(5):17-18, 2010.

Conference Articles:

- 1) Blaney, L.; Snowberger, S.; **He, K.** Determination of fluoroquinolone antibiotics in wastewater and transformation by UV and UV-H₂O₂ processes, *Proceedings of the Water Environment Federation Technical Exhibition and Conference*. Chicago, IL, October 5 – 9, 2013.
- 2) Li, Y.; Kong, DJ; Lu, FP; Niu, T.; Jia, HH; **He, K.** Synthesis of GDP-Mannose in Recombinant *Escherichia coli*. *Proceedings of the 4th International Conference on Bioinformatics and Biomedical Engineering* (Chengdu, China). Jun. 18-20, 2010.

Presentations

1. Adejumo, H.; **He, K.**; Mangalgi, K.; Blaney, L. Identifying implications of antibiotics during ultraviolet disinfection: antimicrobial activity and antimicrobial resistance in wastewater treatment. Tri-Association Conference (Ocean City, MD), August 31, 2016.
2. Blaney, L.; Mangalgi, K.P.; Adejumo, H.A.; Ocasio, D.; **He, K.** Transformation of fluoroquinolone, tetracycline, and sulfonamide antibiotics at 253.7 nm: Generation of antimicrobially active transformation products. Gordon Research Conference (Holderness, NH), Poster Presentation, June 26, 2016.
3. **He, K.**; Timm, A.; Welty, C.; Blaney, L. Analysis of multiple estrogens and UV filters in biota tissue samples by a simple liquid extraction followed by SPE-LC-MS/MS. The 38th UMBC Annual Graduate Research Conference (Baltimore, MD), March 23, 2015.
4. Hopanna, M.; **He, K.**; Mangalgi, K.; Steinly, S.; Blaney, L. Development of novel LC-DAD-MS/MS analytical methods for organometallic chemicals. The 38th UMBC Annual Graduate Research Conference (Baltimore, MD), Poster Presentation, March 23, 2016.
5. **He, K.**; Timm, A.; Welty, C.; Blaney, L. Multi-residue analysis of contaminants of emerging concern (CECs) in water and tissue samples from a freshwater environment by modified QuEChERS extraction followed by SPE-LC-MS/MS (Poster). The 251th American Chemical Society Annual Meeting (San Diego, CA), March 16, 2016.
6. Adejumo, H.; **He, K.**; Blaney, L. Antimicrobial activity of fluoroquinolone, sulfonamide, and tetracycline antibiotics: Implications for environmental relevance (Poster). The 251th American Chemical Society Annual Meeting (San Diego, CA), March 16, 2016.
7. Mangalgi, K; Adejumo, H.A.; Ocasio, D.; **He, K.**; Blaney, L. Transformation of fluoroquinolone, tetracycline, and sulfonamide antibiotics at 253.7 nm: Generation of antimicrobially active transformation products. The 251th American Chemical Society Annual Meeting (San Diego, CA), March 14, 2016.
8. Adejumo, H.; **He, K.**; Blaney, L. Fluoroquinolone-resistant bacteria and gene distribution in a Maryland wastewater treatment plant and receiving water. Naval Academy Science and Engineering Conference, November 8-10, 2015.
9. **He, K.**; Timm, A.; Welty, C.; Blaney, L. Occurrence of estrogenic hormones and UV filters in an urban watershed in Baltimore, Maryland. Baltimore Ecosystem Study Annual Meeting (Baltimore, MD), October 20, 2015.

10. Adejumo, H.; **He, K.**; Blaney, L. Fluoroquinolone-resistant bacteria and gene distribution in a Maryland wastewater treatment plant and receiving water. 18th Annual Undergraduate Research Symposium in the Chemical and Biological Sciences (Baltimore, MD), Poster Presentation, October 3, 2015.
11. Rogers, N.; **He, K.**; Welty, C.; Blaney, L. Using EEM analysis to identify and characterize the impacts of leaking wastewater infrastructure on urban water resources (Poster). International Water Association Natural Organic Matter 6 Conference (Malmo, Sweden), September 7 – 10, 2015.
12. **He, K.**; Timm, A.; Welty, C.; Blaney, L. Determination of antibiotics, estrogenic hormones, and UV filters in water, sediment, and crayfish from an urban watershed. The 250th American Chemical Society National Meeting (Boston, MA), August 18, 2015.
13. Adejumo, H.A.; **He, K.**; Blaney, L. Fluoroquinolone-resistant bacteria and gene distribution in a Maryland wastewater treatment plant and receiving water (Poster). UMBC Summer Undergraduate Research Fest (Baltimore, MD), August 5, 2015.
14. Adejumo, H.A.; **He, K.**; Blaney, L. Occurrence and distribution of quinolone resistance in Baltimore wastewater. BEACON Center for the Study of Evolution in Action seminar (video conference), July 10, 2015.
15. Adejumo, H.A.; **He, K.**; Blaney, L. Occurrence and distribution of quinolone resistance in Baltimore wastewater. UMBC Undergraduate Research and Creative Achievement Day (Baltimore, MD), April 22, 2015.
16. **He, K.**; Blaney, L. Simultaneous determination of antibiotics, estrogens, and UV filters in a watershed near Baltimore. The 37th UMBC Annual Graduate Research Conference (Baltimore, MD), March 25, 2015.
17. Adak, A.; Mangalgiri, K.; **He, K.**; Blaney, L. Photochemical UV-H₂O₂ system for oxidation of organoarsenicals in agricultural wastewater (Poster). The 248th American Chemical Society Annual Meeting (San Francisco, CA), August 13, 2014.
18. **He, K.**; Blaney, L. Determination of fluoroquinolone antibiotics in wastewater by solid-phase extraction high performance liquid chromatography with fluorescence detection (Poster). The 248th American Chemical Society National Meeting (San Francisco, CA). August 13, 2014.
19. **He, K.**; Snowberger, S.; Blaney, L. Occurrence and elimination of fluoroquinolone antibiotics in an advanced water reclamation plant. The 248th American Chemical Society Annual Meeting (San Francisco, CA), August 12, 2014.
20. Snowberger, S.; **He, K.**; Soares, A.D.; Blaney, L. Identification of potent transformation products of fluoroquinolone antibiotics formed during water treatment. UMBC Undergraduate Research and Creative Achievement Day (Baltimore, MD), April 23, 2014.
21. **He, K.**; Blaney, L. Adsorption and biodegradation of fluoroquinolone antibiotics in the activated sludge treatment. The 36th UMBC Annual Graduate Research Conference (Baltimore, MD), March 16, 2014.

22. **Shah, A.; He, K.;** Blaney, L. Moxifloxacin in wastewater: Detection and treatment using powdered activated carbon. Annual Biomedical Research Conference for Minority Students (Nashville, TN), November 16, 2013.
23. **Snowberger, S.; He, K.;** Blaney, L. UV-based treatment of fluoroquinolone antibiotics in wastewater. American Institute of Chemical Engineers Annual Meeting (San Diego, CA), November 11, 2013.
24. **He, K.;** L. Blaney, Solid-phase extraction and HPLC determination of fluoroquinolones in Baltimore area wastewater. Baltimore Ecosystem Study Annual Meeting (Baltimore, MD). October 22, 2013.
25. **Rosi-Marshall, E.J.;** Bechtold, H.A.; Shogren, A.; Kelly, J.J.; Rojas, M.; Snow, D.; Blaney, L.; **He, K.** Occurrence and ecological effects of pharmaceuticals in BES streams (Poster). Baltimore Ecosystem Study Annual Meeting (Baltimore, MD), October 22, 2013.
26. **He, K.;** Snowberger, S.; **Blaney, L.** Determination of fluoroquinolone antibiotics in wastewater and transformation by UV and UV-H₂O₂ processes. The 86th Annual Water Environment Federation Technical Exhibition and Conference (Chicago, IL), Special AEESP Session, October 9, 2013.
27. **He, K.;** Perera, S.; **Blaney, L.** Adsorption of antibiotics onto activated sludge solids and powdered. Tri-Association Annual Conference (Ocean City, MD), August 30, 2013.
28. **Shah, A.;** **He, K.;** Blaney, L. Moxifloxacin in wastewater: Detection and treatment using powdered activated carbon (Poster). UMBC Summer Undergraduate Research Fest (Baltimore, MD), August 7, 2013.
29. **He, K.;** Perera, S.; Blaney, L. Adsorption of fluoroquinolone antibiotics onto powdered activated carbon and activated sludge. The 35th UMBC Annual Graduate Research Conference (Baltimore, MD), February 20, 2013.
30. **He, K.;** Blaney, L. Adsorption of fluoroquinolone antibiotics onto activated sludge: Implications for biological wastewater treatment (Poster). The 2012 American Institute of Chemical Engineers Annual Meeting (Pittsburgh, PA), October 30, 2012.

Mentorship

- **Master's students:**
Shreemal Perera, 09/2012 – 12/2013
- **Undergraduate students:**
Hollie Adejumo, 5/2013 – present
Jason Hughes, 12/2015 – 5/2016
Apurva Shah, 5/2013 – 5/2015
- **Visiting students:**
Rita Costa, 02/2015 – 07/2015
Ana Dulce Soares, 02/2014 – 07/2014

Departmental/University Service

- Chair in Chinese Student and Scholar Association at UMBC, 9/2015 – 9/2016
- Senator in Graduate Student Association at UMBC, 8/2013 – 8/2016
- Executive Board Member in Biochemical Engineering Graduate Students in CBEE Department, 9/2013 – 08/2016

- Teaching Assistant in CBEE Department, 9/2011 – 5/2012

Organization memberships

American Chemical Society (ACS)

American Institute of Chemical Engineers (AIChE)

Society of Environmental Toxicology and Chemistry (SETAC)