

Curriculum Vitae
Christopher Matthew Byrd, Ph.D.
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Summary:

Senior executive with extensive scientific, organizational leadership, strategic planning, academic, and program management experience. Expertise in biotechnology, chemistry, and life science research and development efforts, ventures and processes. Areas of focus:

- Biotechnology/Bioengineering
- Life Sciences
- Chemistry/Biology
- Program Management
- Government/Department of Defense
- Strategic Analysis
- Research and Development
- Interdisciplinary Research

Education:

University of Maryland College Park, MD
Ph.D., Bioengineering, 2011
Dissertation Title: *Local and Global Gene Regulation Analysis of the Autoinducer-2 Mediated Quorum Sensing Mechanism in Escherichia coli*

University of Central Florida Orlando, FL
B.S., Design Engineering, 1995

Professional Experience:

B² Consulting Group Bethesda, MD
Managing Director/Chief Scientist 05/2017-Present

- Provide expert research plan and feasibility review for biological device and new drug development Small Business Innovation Research (SBIR) proposals to the National Institutes of Health.
- Provide guidance and direct oversight on immunoengineered approaches for cancer research at the George Washington University Cancer Center.
- Lead organizational training development and strategic system enhancement for the Commonwealth of Virginia on scientific and technical education and career pathways for Veterans.
- Provide subject matter expertise in chemical, biological, radiological defense strategy to the Office of the Chief of Staff of the Army.
- Provide direct science content production, writing, and editing for Macmillan Science and Education Publishing.

United States Military Academy at West Point
Deputy Director, Center for Molecular Sciences, USMA
Assistant Professor, Department of Chemistry and Life Science

West Point, NY
06/2014-12/2016

- Coordinate and enhance strategic partners for research collaborations and funding opportunities within the Center for Molecular Sciences and the Department of Chemistry and Life Sciences.
- Manage and oversee all research programs in the Department and provide instruction to all levels of undergraduate student in Chemistry, Biology, Biochemistry, and Bioengineering courses.
- Promote and cultivate collaborations between the Academy and the extended Army research community as well as sister service, academia, and governmental research organizations.

Office of the Chief of Staff of the Army
Science and Technology Lead Advisor/ Military Fellow

Pentagon, VA
07/2013-06/2014

- Directly advise the highest-ranking general officer in the U.S. Army on a highly diverse set of topics including strategy development, policy analysis, science and technology plans and programs, disruptive technologies, and more.
- Lead the Science and Technology Research Team, ascertaining global and strategic challenges facing the Department of Defense and the U.S. Army over the next 20+ years and recommending tangible and actionable courses of action to optimize outcomes.

U.S. Army Research Laboratory (ARL)
Director of Biosciences

Adelphi, MD
07/2012-07/2013

- Moderate the ARL biosciences prospect and research function, coordinating and reviewing all basic and advanced biological research programs valued in excess of \$35M.
- Work closely with developmental leads as a partner in helping to achieve research goals, incorporating organizational goals with the Defense Laboratory Network Joint Science and Technology Office strategy.
- Augment ARL Chief Scientist in multiple arenas including international relations and Department of Defense Laboratory Commanders' assemblies.

401st Army Field Support Brigade
Deputy Director, Acquisition, Logistics, and Technology Directorate

Afghanistan
06/2011-06/2012

- Direct, coordinate and support the battlefield delivery, training, and employment of all Program/Product managers and their personnel throughout Afghanistan, including approximately 70 different systems and technologies valued at over \$10 billion and 4,000 support representatives.
- Advise the commander of all U.S. forces in Afghanistan on filling critical operational and strategic technological capability gaps, increasing maneuverability, operability and safety for nearly 100,000 soldiers as well as Coalition partners.

U.S. Army Research Laboratory
Team Leader and Scientist, Chemical and Biological Detection

Adelphi, MD
07/2004-06/2011

- Design and lead biological engineering research focused on understanding the genetic mechanisms involved in bacterial proliferation and sudden changes in pathogenicity based upon local population of cells (Quorum Sensing).

- Lead the rapid delivery, training, and field support efforts in southern Afghanistan for BeachComber, a developmental explosives detection device program valued at over \$24 million.
- Serve as liaison between the Army Research Laboratory, the Institute for Collaborative Biotechnologies (ICB), Edgewood Chemical and Biological Center (ECBC), and the United States Military Academy (USMA) at West Point for the coordinated development of chemical and biological technologies.

Sample of Professional Publications and Invited Talks:

"Directed assembly of a bacterial quorum", Servinsky M, Terrell J, Tsao CY, Wu HC, Quan D, Zargar A, Allen P, Byrd C, Sund C and Bentley W., The ISME Journal, 2015; doi:10.1038/ismej.2015

"Construction of a Cell Based Sensor for the Detection of Autoinducer-2" Servinsky M, Allen P, Tsao CY, Byrd C, Sund C, Bentley W, SPIE - Defense, Security, Sensing, 2012; doi:10.1117/12.977869.

"Developing a Cell-Based Sensor for the Detection of Bacterial Contamination of Fuel." Servinsky M, Allen P, Byrd C, Bentley WE, Sund C, Sumner J. (ARL DRI) (U) - FY11 04/15/2012.

"Understanding intercellular signaling of biofilms in logistics fluids." Servinsky, M, Byrd, C, Sumner, J, & Bentley, WE. Abstracts of Papers of the American Chemical Society. Vol. 241. 1155 16th St, NW, Washington, DC 20036 USA: Amer Chemical Soc., 2011.

"Microfluidic Electrochemical Sensor Array for Characterizing Protein Interactions with Various Functionalized Surfaces" Dykstra PH, Roy V, Byrd CM, Bentley WE, Ghodssi R, Analytical Chemistry, 2011.

"Local and Global Gene Regulation Analysis of the Autoinducer-2 Mediated Quorum Sensing Mechanism in Escherichia coli", Byrd CM, Dissertation, DRUM, 2011.
(<http://hdl.handle.net/1903/11554>)

"Materiel Enterprise Integration and Transition during Surge Recovery in Afghanistan" Byrd CM, AMC LogCAP Pubs, 2011.

"Understanding mechanistic basis for QS signaling via CHIP-Chip analysis." Byrd, C, Zhiqiang X, Tsao, CY and Bentley, WE. Abstracts of Papers of the American Chemical Society. Vol. 239. 1155 16th St, NW, Washington, DC 20036 USA: Amer Chemical Soc., 2010.

"Quieting cross talk--the quorum sensing regulator LsrR as a possible target for fighting bacterial infections." Byrd CM, Bentley WE, Cell Research, 2009.

"LsrR-mediated switching of gene expression in E-coli based upon phosphorylation of the quorum-sensing signal molecule AI-2". Byrd C, Tsao CY, Sumner J, Bentley WE. Abstracts of Papers of the American Chemical Society (Vol. 236). 1155 16th St, NW, Washington, DC 20036 USA: Amer Chemical Soc., 2008

Invited Talks and Posters

H.C. Wu, C.Y. Tsao, M.D. Servinsky, B. Adams, C.M. Byrd, J.J. Sumner, J.J. Valdes, G.F. Payne and W.E. Bentley. “*Rewiring Quorum Sensing Signaling Yields Autonomous Localization and Actuation of Engineered Cells*”. Invited Presentation, Society for Industrial Microbiology 2011 Annual Meeting.

M.D. Servinsky, C.Y. Tsao, C.M. Byrd, W.E. Bentley. “*Detection of Microbial Induced Corrosion through Quorum Sensing*”. American Chemical Society General Meeting 2011.

M. D. Servinsky, J.T. Kiel, P. C. Allen, C.Y. Tsao, C.M. Byrd, C.J. Sund, W.E. Bentley. “*Enhancement of a Cell-based AI-2 Sensor*” 2011 DTRA CBD S&T.

Additional Information, Awards, and Memberships:

- Bronze Star, Legion of Merit, Meritorious Service Medal (x4), Army Commendation Medal (x2), Army Achievement Medal (x2), NATO medal, various other service awards (1996-2016)
- Army Centralized Selection List command selectee (2014)
- Winner of an Army Research Laboratory Director's Research Initiative award and funding for innovation in research (2011)
- Board selected for one of three positions in the U.S. Army Acquisitions Corps Uniformed Army Scientist and Engineer PhD Program (2006)
- Distinguished Honor graduate, TC Officer Basic Course (1996)
- Distinguished Military Graduate, University of Central Florida (1995)

- Member, American Chemical Society
- Member, American Society for Microbiology
- Volunteer Pilot, Pilots N’ Paws 501(c)(3)
- Volunteer Pilot, Angel Flight Mid-Atlantic