

BRIAN KLAHN

RESEARCH SCIENTIST

608.347.4393 | BLACKSBURG, VA | BRIAN.KLAHN@KLAHNPAGES.NET

Objective

Work on interesting and challenging large-scale research questions, in a collaborative environment.

Skills & abilities

Proficient in multiple programming languages, including (but not limited to) Python, C++, Bash, Julia, SQL, JavaScript, HTML, CSS, Markdown, R, Clojure.

Knowledge in internals of various operating systems: GNU/Linux, MacOSX, Windows, FreeBSD.

Experience integrating large software systems, writing in many languages, by many people.

Work with cloud and containerization: AWS, Docker, Apptainer (Singularity), GCE. Development work on complex web services.

Hands-on knowledge of genetics, biochemical systems, electrophysiology, wet lab management.

Hands-on experience operating and maintaining naval nuclear propulsion plants, during high stakes situations (first Gulf War).

Experience

UNIVERSITY OF VIRGINIA BIOCOMPLEXITY INSTITUTE

Research Scientist | October 2018 - present

- Data collection and organization architectures.
- Continued support of COPASI-related software and services development.
- Software and infrastructure activities in support of government policy decision-making for the COVID-19 pandemic response.
- Software infrastructure support for massive, large-scale simulations and analysis.
- Development and maintenance of federal Biological Resource Center (BV-BRC).
- Software support and consultation for novel cancer patient monitoring and care devices (BESI-C).
- Help set division-wide software practices and guidelines.

VIRGINIA TECH BIOCOMPLEXITY INSTITUTE

Research Scientist | 2013 - 2018

- Software developer for biological simulation and analysis software (COPASI).
 - Developer and maintainer of large-scale simulation software and infrastructure.
-

MICHIGAN STATE UNIVERSITY

Data Integration and Computer Support | 2011 - 2012

- Integrated data from diverse data sources into local database service.
- Server maintenance tasks.
- Tool and operating system support for local researchers.

INDEPENDENT WORK

Property Investment, Lab Equipment Resale | 2006 - 2011

- Buy, remodel, sell properties.
- Purchase, refurbish, and sell used lab equipment.
- Self-teach programming (C++, etc.) and OS design.

UNIVERSITY OF WISCONSIN DEPARTMENT OF PHYSIOLOGY

Research Assistant | 2003 - 2006

- Teaching Assistant for Medical School Physiology course. 2004
- Electrophysiological research on hippocampal memory networks.

UNIVERSITY OF WISCONSIN DEPARTMENT OF MEDICINE

Research Specialist (lab manager) | 1999 -2003

- Managed the lab and taught students, M.D.s, and other specialists.
- Numerous biochemical techniques and assays.
- Human and cell tissue culture.
- Lab equipment maintenance.

UNIVERSITY OF WISCONSIN DEPARTMENT OF MEDICINE BONE MARROW TRANSPLANT DIVISION

Associate Research Specialist | 1998 -1999

- Developed HIV-1-based vectors for gene therapy.
- Performed transfection experiments and other lab duties.

UNIVERSITY OF WISCONSIN GENETICS BIOTECHNOLOGY CENTER

Laboratory Student Hourly | 1998

- Plant Biotechnology Lab
- Gene transfer into tobacco and potato plants.

UNITED STATES NAVY U.S.S. LONG BEACH

Reactor Training Instructor | 1994

- Taught new transfers about the local reactor and engine room systems.
- Recognized for updating teaching materials, and being an exceptionally effective teacher.

UNITED STATES NAVY U.S.S. LONG BEACH

Engine Room Supervisor | 1990 - 1994

- First in my cohort to qualify on this top level watch station.
- Took many opportunities to teach and mentor officers and colleagues.

UNITED STATES NAVY U.S.S. LONG BEACH

Nuclear Plant Operator | 1990 - 1994

- General operation and maintenance of nuclear propulsion systems.
 - Recognized for innovative solutions and dynamic teaching.
 - Served on active duty, in the Persian Gulf, during the first Gulf War.
-

Education

VIRGINIA TECH

Blacksburg, VA | Genetics Bioinformatics and Computational Biology graduate courses | 2013 -2018

C.S. and Biology courses taken towards PH.D.

MICHIGAN STATE UNIVERSITY

East Lansing, MI | Lifelong Education Courses | 2009

C.S. Department courses. Skipped over first, to take second semester programming course. Was the first/only person to get 100% on the first exam. Recommended for research programming position.

UNIVERSITY OF WISCONSIN

Madison, WI | MS in [Neuro]Physiology | 2003 -2006

Used advanced (and challenging) electrophysiological techniques to elucidate the important cells and circuits in the neuronal network important for memory formation in the hippocampus.

UNIVERSITY OF WISCONSIN

Madison, WI | BS in Molecular Biology | 1994 -1998

Many chemistry and biochemistry-related courses. Took math and physics track level math and physics courses.

EXCELSIOR COLLEGE

U.S.S Long Beach | AS (Associate of Science) | 1994

Shipboard courses administered via land-based institution. Straight A's, over nine courses.

Publications

Bhattacharya, P.; Chen, J.; Hoops, S.; Machi, D.; Lewis, B.; Venkatramanan, S.; Wilson, M. L.; Klahn, B.; Adiga, A.; Hurt, B.; Outten, J.; Adiga, A.; Warren, A.; Baek, Y. Y.; Porebski, P.; Marathe, A.; Xie, D.; Swarup, S.; Vullikanti, A.; Mortveit, H.; Eubank, S.; Barrett, C. L.; Marathe, M. Data-Driven Scalable Pipeline Using National Agent-Based Models for Real-Time Pandemic Response and Decision Support. *The International Journal of High Performance Computing Applications* **2023**, 37 (1), 4–27. <https://doi.org/10.1177/10943420221127034>.

Borchering, R. K.; Mullany, L. C.; Howerton, E.; Chinazzi, M.; Smith, C. P.; Qin, M.; Reich, N. G.; Contamin, L.; Levander, J.; Kerr, J.; Espino, J.; Hochheiser, H.; Lovett, K.; Kinsey, M.; Tallaksen, K.; Wilson, S.; Shin, L.; Lemaitre, J. C.; Hulse, J. D.; Kaminsky, J.; Lee, E. C.; Hill, A. L.; Davis, J. T.; Mu, K.; Xiong, X.; Pastore y Piontti, A.; Vespignani, A.; Srivastava, A.; Porebski, P.; Venkatramanan, S.; Adiga, A.; Lewis, B.; Klahn, B.; Outten, J.; Hurt, B.; Chen, J.; Mortveit, H.; Wilson, A.; Marathe, M.;

Hoops, S.; Bhattacharya, P.; Machi, D.; Chen, S.; Paul, R.; Janies, D.; Thill, J.-C.; Galanti, M.; Yamana, T.; Pei, S.; Shaman, J.; España, G.; Cavany, S.; Moore, S.; Perkins, A.; Healy, J. M.; Slayton, R. B.; Johansson, M. A.; Biggerstaff, M.; Shea, K.; Truelove, S. A.; Runge, M. C.; Viboud, C.; Lessler, J. Impact of SARS-CoV-2 Vaccination of Children Ages 5–11 Years on COVID-19 Disease Burden and Resilience to New Variants in the United States, November 2021–March 2022: A Multi-Model Study. *The Lancet Regional Health - Americas* 2023, 17, 100398. <https://doi.org/10.1016/j.lana.2022.100398>.

Truelove, S.; Smith, C. P.; Qin, M.; Mullany, L. C.; Borchering, R. K.; Lessler, J.; Shea, K.; Howerton, E.; Contamin, L.; Levander, J.; Kerr, J.; Hochheiser, H.; Kinsey, M.; Tallaksen, K.; Wilson, S.; Shin, L.; Rainwater-Lovett, K.; Lemaitre, J. C.; Dent, J.; Kaminsky, J.; Lee, E. C.; Perez-Saez, J.; Hill, A.; Karlen, D.; Chinazzi, M.; Davis, J. T.; Mu, K.; Xiong, X.; Pastore y Piontti, A.; Vespignani, A.; Srivastava, A.; Porebski, P.; Venkatramanan, S.; Adiga, A.; Lewis, B.; Klahn, B.; Outten, J.; Orr, M.; Harrison, G.; Hurt, B.; Chen, J.; Vullikanti, A.; Marathe, M.; Hoops, S.; Bhattacharya, P.; Machi, D.; Chen, S.; Paul, R.; Janies, D.; Thill, J.-C.; Galanti, M.; Yamana, T. K.; Pei, S.; Shaman, J. L.; Healy, J. M.; Slayton, R. B.; Biggerstaff, M.; Johansson, M. A.; Runge, M. C.; Viboud, C. Projected Resurgence of COVID-19 in the United States in July–December 2021 Resulting from the Increased Transmissibility of the Delta Variant and Faltering Vaccination. *eLife* 2022, 11, e73584. <https://doi.org/10.7554/eLife.73584>.

(1)

Winger, A. Computational Modeling of Immune System Interactions during Cytokine Release Syndrome (CRS) and Immune Effector Cell Associated Neurotoxicity Syndrome (ICANS) after Chimeric Antigen Receptor (CAR) T-Cell Therapy, 2022. Poster presented by Aubrey Winger, at ASTCT and CIBMTR combined conference. <https://tandem.confex.com/tandem/2022/meetingapp.cgi/Paper/19321> https://www.biocomplexity.virginia.edu/system/files/publications/2022-08/Aubrey.Winter_ICANS.pdf

(1)

Bhattacharya, P.; Machi, D.; Chen, J.; Hoops, S.; Lewis, B.; Mortveit, H.; Venkatramanan, S.; Wilson, M. L.; Marathe, A.; Porebski, P.; Klahn, B.; Outten, J.; Vullikanti, A.; Xie, D.; Adiga, A.; Brown, S.; Barrett, C.; Marathe, M. AI-Driven Agent-Based Models to Study the Role of Vaccine Acceptance in Controlling COVID-19 Spread in the US. In *2021 IEEE International Conference on Big Data (Big Data)*; IEEE: Orlando, FL, USA, 2021; pp 1566–1574. <https://doi.org/10.1109/BigData52589.2021.9671811>.

Borchering RK, Viboud C, Howerton E, Smith CP, Truelove S, Runge MC, Reich NG, Contamin L, Levander J, Salerno J, van Panhuis W, Kinsey M, Tallaksen K, Obrecht RF, Asher L, Costello C, Kelbaugh M, Wilson S, Shin L, Gallagher ME, Mullany LC, Rainwater-Lovett K, Lemaitre JC, Dent J, Grantz KH, Kaminsky J, Lauer SA, Lee EC, Meredith HR, Perez-Saez J, Keegan LT, Karlen D, Chinazzi M, Davis JT, Mu K, Xiong X, Pastore Y Piontti A, Vespignani A, Srivastava A, Porebski P, Venkatramanan S, Adiga A, Lewis B, Klahn B, Outten J, Schlitt J, Corbett P, Telionis PA, Wang L, Peddireddy AS, Hurt B, Chen J, Vullikanti A, Marathe M, Healy JM, Slayton RB, Biggerstaff M, Johansson MA, Shea K, Lessler J. Modeling of Future COVID-19 Cases, Hospitalizations, and Deaths, by Vaccination Rates and Nonpharmaceutical Intervention Scenarios - United States, April-September 2021. *MMWR Morb Mortal Wkly Rep.* 2021 May 14;70(19):719-724. doi: 10.15585/mmwr.mm7019e3. PMID: 33988185; PMCID: PMC8118153.

Shaun Truelove, Claire P Smith, Michelle Qin, Luke C Mullany, Rebecca K Borchering, Justin Lessler, Katriona Shea, Emily Howerton, Lucie Contamin, John Levander, Jessica Kerr, Harry Hochheiser, Matt Kinsey, Kate Tallaksen, Shelby Wilson, Lauren Shin, Kaitlin Rainwater-Lovett, Joseph C Lemaitre, Juan Dent, Joshua Kaminsky, Elizabeth C Lee, Javier Perez-Saez, Alison Hill, Dean Karlen, Matteo Chinazzi, Jessica T Davis, Kungpeng Mu, Xinyue Xiong, Ana Pastore y

Piontti, Alessandro Vespignani, Ajitesh Srivastava, Przemyslaw Porebski, Srinivasan Venkatramanan, Aniruddha Adiga, Bryan Lewis, Brian Klahn, Joseph Outten, Mark Orr, Galen Harrison, Benjamin Hurt, Jiangzhuo Chen, Anil Vullikanti, Madhav Marathe, Stefan Hoops, Parantapa Bhattacharya, Dustin Machi, Shi Chen, Rajib Paul, Daniel Janies, Jean-Claude Thill, Marta Galanti, Teresa K Yamana, Sen Pei, Jeffrey L Shaman, Jessica M Healy, Rachel B Slayton, Matthew Biggerstaff, Michael A Johansson, Michael C Runge, Cecile Viboud (2022) Projected resurgence of COVID-19 in the United States in July—December 2021 resulting from the increased transmissibility of the Delta variant and faltering vaccination eLife 11:e73584 <https://doi.org/10.7554/eLife.73584>

Peddireddy, A. S.; Xie, D.; Patil, P.; Wilson, M. L.; Machi, D.; Venkatramanan, S.; Klahn, B.; Porebski, P.; Bhattacharya, P.; Dumbre, S.; Raymond, E.; Marathe, M. From 5Vs to 6Cs: Operationalizing Epidemic Data Management with COVID-19 Surveillance. In 2020 IEEE International Conference on Big Data (Big Data); IEEE: Atlanta, GA, USA, 2020; pp 1380–1387. <https://doi.org/10.1109/BigData50022.2020.9378435>.

Adiga, A.; Venkatramanan, S.; Schlitt, J.; Peddireddy, A.; Dickerman, A.; Bura, A.; Warren, A.; Klahn, B. D.; Mao, C.; Xie, D.; Machi, D.; Raymond, E.; Meng, F.; Barrow, G.; Mortveit, H.; Chen, J.; Walke, J.; Goldstein, J.; Wilson, M. L.; Orr, M.; Porebski, P.; Telionis, P. A.; Beckman, R.; Hoops, S.; Eubank, S.; Baek, Y. Y.; Lewis, B.; Marathe, M.; Barrett, C. *Evaluating the Impact of International Airline Suspensions on the Early Global Spread of COVID-19*; preprint; Epidemiology, 2020. <https://doi.org/10.1101/2020.02.20.20025882>.

Bergmann, F. T.; Hoops, S.; Klahn, B.; Kummer, U.; Mendes, P.; Pahle, J.; Sahle, S. COPASI and Its Applications in Biotechnology. *Journal of Biotechnology* **2017**, 261, 215–220. <https://doi.org/10.1016/j.jbiotec.2017.06.1200>.

Jerome, J. P.; Klahn, B. D.; Bell, J. A.; Barrick, J. E.; Brown, C. T.; Mansfield, L. S. Draft Genome Sequences of Two *Campylobacter* Jejuni Clinical Isolates, NW and D2600. *Journal of Bacteriology* **2012**, 194 (20), 5707–5708. <https://doi.org/10.1128/jb.01338-12>.

Graven, K. K.; Bellur, D.; Klahn, B. D.; Lowrey, S. L.; Amberger, E. HIF-2 α Regulates Glyceraldehyde-3-Phosphate Dehydrogenase Expression in Endothelial Cells. *Biochimica et Biophysica Acta (BBA) - Gene Structure and Expression* **2003**, 1626 (1–3), 10–18. [https://doi.org/10.1016/S0167-4781\(03\)00049-6](https://doi.org/10.1016/S0167-4781(03)00049-6).

Graven, K. K.; Molvar, C.; Roncarati, J. S.; Klahn, B. D.; Lowrey, S.; Farber, H. W. Identification of Protein Disulfide Isomerase as an Endothelial Hypoxic Stress Protein. *American Journal of Physiology-Lung Cellular and Molecular Physiology* **2002**, 282 (5), L996–L1003. <https://doi.org/10.1152/ajplung.00359.2001>.

Leadership

Lead efforts to standardize and use collaborative practices in software development. Mentor students and colleagues.

References

Available upon request.