Brett K. Kaiser, Ph.D.

Assistant Professor of Biology | College of Science and Engineering
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EDUCATION

Stanford University	**Ph.D. in Cancer Biology** Ph.D. advisor: Peter K. Jackson Dissertation title: Regulation of the centrosome and DNA replication cycles by the human Cdc14A and B phosphatases.	2002
University of California, Davis	**B.S. in Biochemistry (with honors)** Minor in Spanish Advisor: Dr. Michael Dahmus Honors Research Project: Identification of proteins that interact with the CTD of RNA Polymerase II using a photoactivatable cross-linking approach.	1996

APPOINTMENTS

SEATTLE UNIVERSITY | Seattle, WA

Assistant Professor | Biology Department 2012–present

- Research: Structure/function relationships of proteins using biochemical and biophysical approaches.

PREGENEN INC. *(acquired by Bluebird Biotech)* | Seattle, WA 2012

Principal Scientist

- Research: Development of Pregenen's protein engineering platform.

TARGETED GROWTH INC. *(now Matrix Genetics)* | Seattle, WA 2010-2012

Scientist

- Research: Genetic engineering of cyanobacteria (*S. elongatus* PCC7942) for increased hydrocarbon production.

FRED HUTCHINSON CANCER RESEARCH CENTER | Seattle, WA 2008-2010

Staff scientist | Basic Sciences, Stoddard Lab

- Research: Biochemical and biophysical characterization of the WhiA family of proteins present in all gram-positive bacteria.

FRED HUTCHINSON CANCER RESEARCH CENTER | Seattle, WA 2002-2008

Postdoctoral Fellow | Basic Sciences, Strong Lab

- Research: Biophysical characterization of human immune receptors.

PUBLICATIONS (Peer-reviewed)

H-index=12 | Research Gate score: 26.18. | Total citations: 1,641

Kaiser, B.K., Carleton, M., Hickman, J.W., Miller, C., Lawson, D., Budde M., Warrener, P., et al. (2013) "Fatty aldehydes in Cyanobacteria are a metabolically flexible precursor for a diversity of biofuel products." *PloS one* 8(3), e58307.

Hickman, J.W., Kotovic K.M., Miller, D., Warrener, P., **Kaiser, B.K.,** Jurista, T., Budde, M., Cross, F., Roberts, J.M., and Carleton, M. (2013) "Glycogen synthesis is a required component of the nitrogen stress response in *Synechococcus elongatus* PCC 7942." *Algal Research*, 2, 98-106.

Correnti, C., Richardson, V., Sia, A. K., Bandaranayake, A. D., Ruiz, M., Rahmanto, Y. S., Žaklina Kovačević, Clifton, M.C., Holmes, M.A., **Kaiser, B.K**. Barasch, J., Raymond, K.N., Richardson, D.R., and Strong, R. K. (2012). Siderocalin/Lcn2/NGAL/24p3 does not drive apoptosis through gentisic acid mediated iron withdrawal in hematopoietic cell lines. *PloS one*, *7*(8), e43696.

Kaiser B.K., Stoddard B.L. (2011). DNA recognition and transcriptional regulation by the WhiA sporulation factor. Scientific Reports, 1, 156; DOI:10.1038/srep00156.

Kaiser B.K., Clifton, M.C., Shen, B.W., Stoddard B.L. (2009). The structure of a bacterial Duf199 / WhiA transcription factor: domestication of an invasive endonuclease. Structure, 17, 1368-76.

Kaiser B. K. Pizarro, J. C., Kerns, J., Strong, R.K. (2008). Structural basis for recognition of HLA-E by NKG2A/CD94. PNAS 105 (18): 6696-701.

Kaiser B. K.*, Yim D.*, Chow I*, Gonzalez S., Dai Z., Mann, H.H., Strong, R.K., Groh, V., Spies, T. (2007) Disulphide-isomerase-enabled shedding of tumour-associated NKG2D ligands. Nature 447, 482-486. * equal authorship

Korotkova, N., Chattopadhyay, S., Tabata, T. A., Beskhlebnaya, V., Vigdorovich, V., **Kaiser, B. K**., Strong, R. K., Dykhuizen, D. E., Sokurenko, E. V., and Moseley, S. L. (2007). Selection for functional diversity drives accumulation of point mutations in Dr adhesins of *Escherichia coli*. Mol Microbiol 64, 180-194.

Kaiser, B. K., Barahmand-Pour, F., Paulsene, W., Medley, S., Geraghty, D. E., and Strong, R. K. (2005). Interactions between NKG2x immunoreceptors and HLA-E ligands display overlapping affinities and thermodynamics. J Immunol 174, 2878-2884.

Kaiser, B. K., Nachury, M. V., Gardner, B. E., and Jackson, P. K. (2004). Xenopus Cdc14 alpha/beta are localized to the nucleolus and centrosome and are required for embryonic cell division. BMC Cell Biol 5, 27.

Kaiser, B. K., Zimmerman, Z. A., Charbonneau, H., and Jackson, P. K. (2002). Disruption of centrosome structure, chromosome segregation, and cytokinesis by misexpression of human Cdc14A phosphatase. Mol Biol Cell 13, 2289-2300.

Mailand, N., Lukas, C., **Kaiser, B. K**., Jackson, P. K., Bartek, J., and Lukas, J. (2002). Deregulated human Cdc14A phosphatase disrupts centrosome separation and chromosome segregation. Nat Cell Biol 4, 317-322.

Hansen, D. V., Hsu, J. Y., **Kaiser, B. K**., Jackson, P. K., and Eldridge, A. G. (2002). Control of the centriole and centrosome cycles by ubiquitination enzymes. (Review) Oncogene 21, 6209-6221.

Furstenthal, L., Swanson, C., **Kaiser, B. K**., Eldridge, A. G., and Jackson, P. K. (2001). Triggering ubiquitination of a CDK inhibitor at origins of DNA replication. Nat Cell Biol 3, 715-722.

Furstenthal, L., **Kaiser, B. K**., Swanson, C., and Jackson, P. K. (2001). Cyclin E uses Cdc6 as a chromatin-associated receptor required for DNA replication. J Cell Biol 152, 1267-1278.

Jackson, P. K., Eldridge, A. G., Freed, E., Furstenthal, L., Hsu, J. Y., **Kaiser, B. K**., and Reimann, J. D. (2000). The lore of the RINGs: substrate recognition and catalysis by ubiquitin ligases. (Review) Trends Cell Biol 10, 429-439.

Patent Applications:

Hickman, Jason W., James Roberts, Kimberly Marie Kotovic, Cameron Miller, Michael Carleton, Mark Budde, Fred Cross, **Brett K. Kaiser**, and Paul Warrener. "Modified photosynthetic microorganisms for continuous production of carbon-containing compounds." WIPO Patent Application PCT/US2013/024142, filed January 31, 2013.

James Roberts, Fred Cross, Margaret Mary McCormic, Ernesto Javier Muñoz, **Brett K. Kaiser**, and Michael Carleton. "MODIFIED PHOTOSYNTHETIC MICROORGANISMS FOR PRODUCING LIPIDS." WIPO Patent 2012087982, issued June 29, 2012.

James Roberts, Fred Cross, and **Brett K. Kaiser**. "MODIFIED PHOTOSYNTHETIC MICROORGANISMS FOR PRODUCING LIPIDS." WIPO Patent 2012087963, issued June 29, 2012.

RESEARCH GRANTS AND FUNDING

External Research Funding

Murdock College Research Program for Life Sciences.
"Characterization of WhiA, a bacterial transcriptional regulator with a unique evolutionary history."
Awarded March, 2014 for 2 years. $32, 200

Other financial support obtained

- Cancer Research Institute (CRI) Post-doctoral Fellowship | 2004-2006
- University of Washington Dept. of Immunology, Post-doctoral Pediatric Immunology Fellowship 2004
- Lieberman Fellowship, Stanford University 2001-2002

PRESENTATIONS

Since arriving at Seattle U:

"A study of the structure and function of WhiA, a bacterial transcriptional regulator". 2014
Brad Walker (Seattle U undergrad) and Brett Kaiser
Murdock Undergraduate Research Symposium, Vancouver, WA
Poster presentation

"Engineered Nucleases: the cutting edge in genome engineering". 2014
Brett Kaiser
Seattle U
Oral presentation to Bannan Scholars

"Turning selfish proteins into programmable genome editors". 2014
Jazmine Richter*, Betty Shen, Abbie Lambert, Barry Stoddard, Brett Kaiser
Experimental Biology conference, San Diego, CA.
Poster presentation

"Turning selfish proteins into programmable genome editors". 2013
Jazmine Richter*, Betty Shen, Abbie Lambert, Barry Stoddard, Brett Kaiser
Murdock Undergraduate Research Symposium, Vancouver, WA
*Oral presentation by Jazmine Richter (Seattle U undergrad)

"Taming the beast: domestication of a selfish protein". 2013
Brett Kaiser
Natural Science Seminar, Seattle U
Oral presentation

Selected Honors, Awards and Fellowships

- Summer 1996 Post-graduate Research Fellowship, Northern California Biochemical Association
- 1996 Presidential Undergraduate fellowship, UC Davis
- 1995-96 Luther D. and Marie M. Davis Scholarship, UC Davis
- 1994-95 Gail E. and Ruth M. Oliver Scholarship, UC Davis
- June 1996 Phi Beta Kappa

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TEACHING

Classes at Seattle U:

BIOL4750 and 4751 (formerly BIOL 455/456)
Cell Biology (Lecture + Lab)
F12, F13, W14, F14, W15

BIOL1610 and 1611 (formerly BIOL 161/171)
Biology I, emphasis on cell and molecular biology (Lecture + Lab)
W13, F13, F14.

BIOL 2750 and 2751 (formerly BIOL 285/286)
Biotechnology (Lecture + Lab)
S13, S14, S15

UW Extensions College
Winter, 2004: Biochemistry I (BIOC405)
Spring, 2004: Biochemistry II (BIOC406)

SERVICE

- Bannan Scholarship Selection Committee 2014-present
  --selected recipients of the Bannan Scholarship awarded to ~15 students in the College of Science and Engineering.

- Department of Biology 2012-present
  --Advisor to 18 Biology Majors
  --Recruitment of prospective students
  --Hiring committee for two new faculty members (2013).