

ALICIA K. MICHAEL

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EDUCATION

JUNE 2017 **UNIVERSITY OF CALIFORNIA, SANTA CRUZ**
Program in Biomedical Science and Engineering
Ph.D., Chemistry

DECEMBER 2010 **WESTERN WASHINGTON UNIVERSITY**
Bachelor of Science, Biochemistry

RESEARCH EXPERIENCE

FEBRUARY 2023- **UNIVERSITY OF BASEL - BIOZENTRUM** - POSTDOCTORAL FELLOW
Advisor: Dr. Ben Engel

AUGUST 2017 - **FRIEDRICH MIESCHER INSTITUTE FOR BIOMEDICAL RESEARCH** - POSTDOCTORAL FELLOW
DECEMBER 2022 *Advisor: Dr. Nicolas Thomä*

APRIL 2011 - **UNIVERSITY OF CALIFORNIA, SANTA CRUZ** - PH.D. THESIS RESEARCH
JUNE 2017 *Advisor: Dr. Carrie Partch*

SEPTEMBER 2011 - **UNIVERSITY OF CALIFORNIA, SANTA CRUZ** - 1ST YEAR PH.D. STUDENT
MARCH 2012 *Advisors: Dr. Scott Lokey, Dr. Roger Linington*

JANUARY 2008 - **WESTERN WASHINGTON UNIVERSITY** - UNDERGRADUATE HONOR'S THESIS
DECEMBER 2010 *Advisor: Dr. Timothy Clark*

TEACHING EXPERIENCE

UNIVERSITY OF BASEL
2022 Guest Lecturer - DNA damage and repair mechanisms (graduate lecture)
2021 Guest Lecturer - Structural Epigenetics (graduate lecture)

UNIVERSITY OF CALIFORNIA, SANTA CRUZ
2012 - 2014 Teaching Assistant in Principles of Biochemistry I and II (undergraduate lecture)
 Organic Medicinal Chemistry (undergraduate lecture)

WESTERN WASHINGTON UNIVERSITY
2009 Study Group Leader, General Chemistry and Introduction to Biology
2009-2010 Tutor of Chemistry, Physics and Calculus

CERTIFICATIONS AND TRAININGS

NOVEMBER 2021 *EMBO Laboratory Leadership Course, Leimen, Germany*
NOVEMBER 2018 *Thermo Fisher Titan Krios TEM training, Novartis Campus, Basel, Switzerland*
OCTOBER 2016 *Light Scattering University, Wyatt Technology, Santa Barbara, California*

SELECTED PUBLICATIONS AND HONORS

Michael AK*, Stoos L*, Crosby P, Eggers N, Xinyu N, Makasheva K, Minnish M, Healy KL, Weiss J, Kempf G, Cavadini S, Kater L, Seebacher J, Vecchia L, Chakraborty D, Isbel L, Grand RS, Andersch F, Fribourgh, JL, Schübeler D, Zuber J, Liu AC, Becker PB, Fierz B, Partch CL, Menet JS, Thomä N† (2023) "Basic helix-loop-helix transcription factors MYC-MAX and CLOCK-BMAL1 associate with histones for E-box access" *Nature*, Accepted.

Michael AK, Thomä N[†] (2021) "Reading the chromatinized genome" *Cell* 184(14):3599-3611.

Michael AK^{*}, Grand RS^{*}, Isbel L^{*}, Cavadini S, Kozicka Z, Kempf G, Bunker RD, Schenk AD, Graff-Meyer A, Pathare GR, Weiss J, Matsumoto S, Burger L, Schübeler D[†], Thomä N.[†] (2020) "Mechanisms of OCT4-SOX2 motif readout on nucleosomes" *Science* 368 (6498):1460-1465.

Michael AK, Harvey SL, Sammons PJ, Anderson AP, Kopalle HM, Banham AH, Partch CL[†]. (2015) "Cancer/testis antigen PASD1 silences the circadian clock" *Molecular Cell* 58(5):743-54.

2018 - 2020 HFSP Long-Term Fellowship

2017 - 2019 EMBO Long-Term Fellowship

2014 - 2017 Ruth L. Kirschstein Individual Predoctoral Fellowship (Parent F31) F31CA189660

COMPLETE LIST OF PUBLICATIONS

Michael AK^{*}, Stoos L^{*}, Crosby P, Eggers N, Xinyu N, Makasheva K, Minnesh M, Healy KL, Weiss J, Kempf G, Cavadini S, Kater L, Seebacher J, Vecchia L, Chakraborty D, Isbel L, Grand RS, Andersch F, Fribourgh, JL, Schübeler D, Zuber J, Liu AC, Becker PB, Fierz B, Partch CL, Menet JS, Thomä N[†] (2023) "Basic helix-loop-helix transcription factors MYC-MAX and CLOCK-BMAL1 associate with histones for E-box access" *Nature*, Accepted.

Isbel L, Iskar M, Durdu S, Grand RS, Weiss J, Pfeiffer EH, Kozicka K, Michael AK, Burger L, Thomä NH, Schübeler D (2022) "Readout of histone methylation by Trim24 locally restricts chromatin opening by p53" *Nature Structural and Molecular Biology* (NSMB), accepted: *BioRxiv* <https://doi.org/10.1101/2022.08.23.504916>

Michael AK, Thomä N[†] (2021) "Reading the chromatinized genome" *Cell* 184(14):3599-3611.

Grand RS^{*}, Burger L^{*}, Gräwe C, Michael AK, Isbel L, Hess D, Hoerner L, Iesmantavicius V, Durdu S, Pregnotato M, Krebs AR, Smallwood SA, Thomä N, Vermeulen M, Schübeler D[†] (2021) "BANP opens chromatin and activates CpG island regulated genes" *Nature* 596, 133-137.

Michael AK^{*}, Grand RS^{*}, Isbel L^{*}, Cavadini S, Kozicka Z, Kempf G, Bunker RD, Schenk AD, Graff-Meyer A, Pathare GR, Weiss J, Matsumoto S, Burger L, Schübeler D[†], Thomä N[†] (2020) "Mechanisms of OCT4-SOX2 motif readout on nucleosomes" *Science* 368 (6498):1460-1465.

Fribourgh JL^{*}, Srivastava A^{*}, Sandate CR^{*}, Michael AK, Hsu PL, Rakers C, Nguyen LT, Torgrimson MR, Parico GCG, Tripathi S, Zheng N, Lander GC, Hirota T, Tama F[†], Partch CL[†] (2020) "Dynamics at the serine loop underlie differential affinity of cryptochromes for CLOCK:BMAL1 to control circadian timing" *Elife* 9:e55275 doi: 10.7554/eLife.55275.

Fong JCN, Rogers A, Michael AK, Parsley N, Cornell WC, Lin YC, Vinogradov E, Dietrich L, Partch CL[†], Yildiz FH[†] (2017) "Structural dynamics of RbmA governs plasticity of *Vibrio cholerae* biofilms" *Elife* 6:e26163 doi:10.7554/eLife.26163.

Gustafson CL, Parsley NC, Asimgil H, Lee HW, Ahlback C, Michael AK, Xu H, Williams OL, Davis TL, Liu AC, Partch CL[†]. (2017) "A Slow Conformational Switch in the BMAL1 Transactivation Domain Modulates Circadian Rhythms" *Molecular Cell* 66(4):447-457.

Tseng R^{*}, Goularte NG^{*}, Chavan A^{*}, Luu J, Cohen SE, Chang YG, Heisler J, Li S, Michael AK, Tripathi S, Golden S, Liwang A[†], Partch CL[†] (2017) "Structural Basis of Day/Night Transition in the Cyanobacterial Circadian Clock" *Science* 355(6330):1174-1180.

Michael AK, Fribourgh JL, Chelliah Y, Sandate C, Tripathi S, Hura G, Takahashi JS, Partch CL[†] (2017) "Formation of a repressive complex in the mammalian circadian clock is mediated by the secondary pocket of CRY1" *Proc Natl Acad Sci USA* 114(7):1560-1565.

Michael AK, Fribourgh JL, Van Gelder R, Partch CL (2017) "Animal cryptochromes: divergent roles in light perception, circadian timekeeping and beyond" *Photobiology and Photochemistry* 93(1):128-140.

Michael AK, Harvey SL, Sammons PJ, Anderson AP, Kopalle HM, Banham AH, Partch CL[†]. (2015) "Cancer/testis antigen PASD1 silences the circadian clock" *Molecular Cell* 58(5):743-54.

Michael AK, Asimgil H, Partch CL (2015) "Cytosolic BMAL1 moonlights as a translation factor" *Trends Biochem Sci.* 40(9):489-90.

Michael AK, Partch CL (2013) "bHLH-PAS proteins: functional specification through modular domain architecture" *OA Biochemistry* 1(2):16.

Woehrmann MH, Bray WM, Durbin JK, Nisam SC, Michael AK, Glassey E, Stuart JM, Lokey RS[†] (2013) "Large-scale cytological profiling for functional analysis of bioactive compounds" *Mol Biosyst.* 9(11):2604-17.

Guan W, Michael AK, McIntosh ML, Koren-Selfridge L, Scott JP, Clark TB[†]. (2014) "Stereoselective formation of trisubstituted vinyl boronate esters by the acid-mediated elimination of α -hydroxyboronate esters." *J Org Chem.* 79(15):7199-204. *equal contribution, [†]corresponding author

LICENSES AND PATENTS

October 2016 *mPASD1 and mBMAL1 polyclonal antibodies*
EMD Millipore

January 2017 Provisional patent entitled: 'CRY1-CLOCK-BMAL1 COMPLEX-DISRUPTING AGENTS AND METHODS OF USING SAME' Serial No. 62/444,691

HONORS

Awards

2023 Eppendorf Award for Young European Investigators (Finalist)

2022 Pls of Tomorrow Jury Prize - LS2 Annual Meeting - Switzerland

2022 Merit Award - European Biological Rhythms Society

2019 Ruth Chiquet Originality Prize (Friedrich Miescher Institute)

2017 West Coast Protein Crystallography Workshop Best Poster

2016 Tony Fink Memorial Student Award

2014, 2016 Society for Research in Biological Rhythms Merit Award

2014 Center for Chronobiology Symposium Best Poster

2013 UCSC Program in Biomedical Science and Engineering Best Poster

2010 NASA Space Grant Consortium Summer Research Award

2007 Western Washington University Honor Roll

Fellowships

2023- 2024 University of Basel - Research Funds for Excellent Junior Researchers (80,000 CHF)

2018 - 2020 HFSP Long-Term Fellowship

2017 - 2019 EMBO Long-Term Fellowship

2017 Koret Scholar Graduate Mentor Fellowship (\$2,000)

2017	Santa Cruz Cancer Benefit Group Fellowship (\$12,500)
2014 - 2017	Ruth L. Kirschstein National Research Service Award (NRSA) Individual Predoctoral Fellowship (Parent F31) F31CA189660 - <i>3 years of tuition and stipend</i>
2013 - 2014	Paul and Anne Irwin Graduate Fellowship in Cancer Research (\$10,000)
2010	Western Washington University Rathmann Scholarship
2009	WWU Research and Creative Opportunities for Undergraduates Grant

INVITED AND SELECTED TALKS

"CLOCK-BMAL1 and MYC-MAX leverage histone contacts for DNA motif recognition" European Biological Rhythms Society Meeting, Zurich, Switzerland, July 2022

"Strategies for DNA readout in a chromatinized genome" Chromatin Structure and Dynamics Workshop, Telluride, Colorado, USA, June 2022

"How do transcription factors interpret and shape the structure of genes?" Life Sciences 2 Annual Meeting, Pls of Tomorrow session, Zurich, Switzerland, April 2022 *selected jury prize*

"How do transcription factors interpret and shape the structure of genes?" Young Investigator Symposium, IMP and IMBA, Vienna, Austria, Virtual, March 2022

"How do transcription factors interpret and influence chromatin structure?" Next Generation in Biomedicine Symposium, Broad Institute of MIT and Harvard, Virtual, November 2021

"Strategies for DNA readout in a chromatinized genome" 3DEM Gordon Research Conference, Waterville Valley, NH, USA November 2021 *selected poster presentation*

"Transcription factors interface with histones to specify DNA engagement in chromatin" Cold Spring Harbor Laboratories - Mechanisms of Eukaryotic Transcription, Virtual, August 2021

"Transcription factors interface with histones to specify DNA engagement in chromatin" Fragile Nucleosome Seminar Series, Virtual, August 2021

"Strategies for DNA readout in a chromatinized genome" HFSP 20th Annual Meeting, Virtual, July 2021

"How do transcription factors bind their motif hidden in nucleosomes" 2020 EMBL Transcription and Chromatin, Virtual, August 2020

"A new assay to probe high-resolution engagement of transcription factors with nucleosomes" Friedrich Miescher Institute for Biomedical Research Annual Meeting. Ruth Chiquet Prize short talk, Grindelwald, CH, September 2019

"Molecular clockwork: integrative approaches unveil the first picture of a critical circadian transcriptional repressive complex" Center for Circadian Biology Symposium "From Cells to Clinic", San Diego, CA, February 2017

"Molecular clockwork: integrative approaches unveil the first picture of a critical circadian transcriptional repressive complex" Center for Circadian Biology Fall Workshop on Biological Timing, San Diego, CA, November 2016 *First place winner - best trainee talk*

"Cancer/testis antigen PASD1 silences the circadian clock" Chemical Biology in the Bay Area, UCSF, San Francisco, CA, June 2015

"Silencing the molecular timekeeper" UCSC Three Minute Thesis Grad Slam, Santa Cruz, CA, March 2015
Top 10 finalist

“Silencing the cellular timekeeper: disruption of the circadian clock by a cancer/testis antigen” UCSC Chemistry and Biochemistry Departmental Conference, UC Santa Cruz, CA, September 2013

“Disruption of the circadian clock by a cancer/testis antigen” UCSC Chemistry and Biochemistry Departmental Conference (chalk talk), UC Santa Cruz, CA, September 2012

COLLABORATIONS

- MAY 2018 *École polytechnique fédérale de Lausanne*, laboratory of Dr. Beat Fierz
- training in preparation of histone variants using chemical biology methods
- JUNE - JULY 2014 *University of Oxford, John Radcliffe Hospital, Nuffield Department of Medicine*
Worked with Dr. Alison Banham on our joint publication, Michael et al. *Mol Cell* (2015)
- training in immunohistochemistry and cell culture techniques for 3D tumor models

MENTORSHIP

- DEYASINI CHAKRABORTY, THOMÄ LAB, PHD STUDENT, OCTOBER 2020 - DECEMBER 2022
- LISA STOOS, THOMÄ LAB, PHD STUDENT, MAY 2020 - DECEMBER 2022
- JOSCHA WEISS, THOMÄ LAB, PHD STUDENT, JANUARY 2020 - DECEMBER 2022
- IVETTE PEREZ, PARTCH LAB, UNDERGRADUATE, JUNE 2016 - JUNE 2017 (NOW PHD STUDENT AT VANDERBILT)
- LESLEE NGUYEN, PARTCH LAB, UNDERGRADUATE, SEPTEMBER 2015 - JUNE 2017 (NOW PHD STUDENT AT STANFORD)
- HEMA KOPALLE, PARTCH LAB, UNDERGRADUATE, SEPTEMBER 2012 - JUNE 2013 (NOW PHD STUDENT AT SALK)

SERVICE, LEADERSHIP AND OUTREACH

- 2018 - 2022 *Postdoc Representative*, Friedrich Miescher Institute for Biomedical Research
- 2019 - present *Active member*, Towards more Women in Science and Technology (TWIST Basel)
- 2014 - 2017 *President*, UC Santa Cruz, Women in Science and Engineering (WiSE)