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# Alexander Hoffmann

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## University of California, Los Angeles

Department of Microbiology, Immunology, and Molecular Genetics  
Institute for Quantitative and Computational Biosciences  
Bioinformatics Graduate Program  
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### EDUCATION

- 1988      B.A., Physics and Molecular Biology  
            Cambridge University, England
- 1995      Ph.D., TFIID and cloning of TBP and TAFs  
            Adviser: Robert G. Roeder  
            The Rockefeller University, NY

### Post-doctoral

- 1995-1998    HIV gene regulation  
            Adviser: David Baltimore  
            Massachusetts Institute of Technology, MA
- 1998-2003    NF $\kappa$ B/I $\kappa$ B specificity and dynamics of function  
            Adviser: David Baltimore  
            California Institute of Technology, CA

### EMPLOYMENT

- 2003 - 2008    Assistant Professor, University of California, San Diego
- 2008 - 2010    Associate Professor, University of California, San Diego
- 2008 - 2011    Associate Director of the Bioinformatics and Systems Biology Graduate Program
- 2009 - 2013    Associate Director of the BioCircuits Institute (BCI), UCSD
- 2010 - 2013    Professor, University of California, San Diego
- 2010 - 2013    Director of the San Diego Center for Systems Biology (SDCSB)
- 2011 - 2013    Director of the Bioinformatics and Systems Biology Graduate Program, UCSD
- 2013 -         Adjunct Professor, University of California, San Diego
- 2013 -         Professor of Microbiology, Immunology, and Molecular Genetics, UCLA
- 2014 -         Director of the Institute for Quantitative and Computational Biosciences (QCB)

### PROFESSIONAL SERVICE

- 1999 - 2002    Associate Director, Young Engineering and Science Scholars (YESS) Program at Caltech
- 2002 - 2003    Associate Director, Freshman Summer Institute (FSI) at Caltech
- 2004 - 2006    Organizer of Fall Biochemistry Seminar Series
- 2005            Undergraduate Research Award Committee, UCSD Chemistry and Biochemistry

2005 - 2006 Graduate Admissions Committee, UCSD Chemistry and Biochemistry  
 2005 - 2007 Diversity Officer, UCSD Chemistry and Biochemistry  
 2005 - 2007 UCSD Oversight Committee, California Institute for Regenerative Medicine  
 2006 - 2009 Associate Director, San Diego Consortium for Systems Biology (SDCSB)  
 2006 - 2013 Steering Committee, San Diego Consortium/Center for System Biology (SDCSB)  
 2006 Chair, Kamen Prize Committee  
 2007 Organizer of Departmental Retreat, UCSD Chemistry and Biochemistry  
 2007 - 2013 Steering Committee, Bioinformatics Graduate Training Program  
 2007 - 2011 UCSD Senate Committee on Diversity and Equity (CDE)  
 2008 - 2009 UCSD Representative, UC Committee for Affirmative Action and Diversity (UCAAD)  
 2008 - 2010 Program Committee, q-Bio national conference  
 2008 - 2013 Chair, Graduate Admissions in Chemistry and Biochemistry, UCSD  
 2009 - 2014 Steering Committee Member, MIT's Cell Decision Process (CDP) Center  
 2011 - 2013 UCSD Council for Graduate Affairs  
 2011 - 2012 Organizer of Systems Biology area of ASBMB Annual Meeting  
 2011 - 2014 Chair of External Advisory Board of UCSD's Center for Chronobiology (CCB)  
 2011 - 2013 UCSD Inter-departmental qBio Initiative  
 2011 - 2013 Chair of Chancellor's Diversity Council, UCSD  
 2011 - 2013 UCSD Research Council  
 2012 - 2014 Organizer of Keystone conference: The NF $\kappa$ B System in Health and Disease  
 2013 - 2014 DGSOM task force: Human Genetics  
 2013 - 2014 DGSOM task force co-chair: Biomath and Biomedical Informatics

## HONORS AND AWARDS

1987 Johns Hopkins Summer Research Award (Laboratory of William C Earnshaw)  
 1998 Institut Jacques Monod Research Award (Laboratory of Marcel Mechali)  
 1990 - 1992 Boehringer Ingelheim doctoral Fellowship  
 1992 - 1994 Arnold and Mabel Beckman graduate fellowship  
 1996 - 1998 Jane Coffin Childs Foundation post-doctoral fellow  
 1999 - 2000 Gordon Ross Medical Foundation post-doctoral fellow  
 2005 - 2009 The Ellison Medical Foundation New Scholar in Aging Research  
 2007 Keynote Speaker, Foundations of Systems Biology and Engineering  
 2007 - 2008 Hellman Fellow  
 2009 The Wedding Keynote Speaker, UCR  
 2012 Keynote Speaker, Systems Biology and Medicine, St. Petersburg, Russia  
 2013 Keynote Speaker, Harvard Digestive Diseases Center Symposium  
 2014 - Thomas M. Asher Professor of Microbiology

## RESEARCH PROJECTS

### CURRENT

#### 2P01 GM071862 (PI Komives) NIH/NIGMS

03/01/2012 – 02/28/2017

"I $\kappa$ B/NF $\kappa$ B Recognition in Silico, In Vitro, and In Vivo"

The major goal of the Program Project is develop a predictive understanding of how biophysical characteristic of the NF $\kappa$ B and I $\kappa$ B proteins result in the dynamical properties of the NF $\kappa$ B Signaling System, including the cell type-specific generation of NF $\kappa$ B dimers and their stimulus-specific activation. Role: Project 5 leader

**1R01 ES024996 (PI Xing/Hoffmann) NIEHS****09/05/2014 – 08/31/2016**

“Epigenomic control of mRNA splicing”

The major goals of this collaborative project (also with Jason Ernst) is to examine correlations within the NIH Epigenome Roadmap data between chromatin marks (Ernst) and splice patterns (Xing) and to develop hypotheses about potential mechanistic links (Hoffmann).

**1U01HG007912 (PI Hoffmann/Black) NHGRI****12/01/2014 – 11/30/2017**

“Ribonomics of Gene Regulation to predict Innate Immune Responses.”

The major goal of this project is to develop a predictive model for post-initiation gene expression events during the macrophage response to pathogens.

**3R01CA166450-02S1 (PI Rao/Hoffmann) NCI****12/01/2014 – 11/30/2016**

Single cell analysis supplement for “Characterizing tumor suppressive functions of microRNAs in B-cell neoplasia” The major goal of this project is to undertake single cell microscopy tracking and RNAseq analysis to characterize the B-cell proliferation phenotype of miR146a knockouts.

**1T32CA201160-01 (PI Pellegrini/Hoffmann/Bui) NCI****05/01/2015 – 04/30/2020**

“Biomedical Big Data Training Grant”

The major goal of this project is to provide graduate training in the area of biomedical big data and biomedical informatics to Bioinformatics PhD students and others at UCLA.

**COMPLETED****3T32 GM008806 (MPI Hoffmann/Pevzner/Subramaniam)****07/01/2011 – 06/30/2016**

NIH/NIGMS

\$360,000

“Training Grant for Bioinformatics”

This goal of this grant is to support the training of Graduate Students in the Bioinformatics and Systems Biology Graduate Program.

**P50 GM085764 (PI: Hoffmann)****09/15/2010 – 08/31/2015**

NIH/NIGMS

\$2,000,000

“Center for Systems Biology of Cellular Stress Responses”

The major goals of this project are to establish a Center of Excellence for Systems Biology at UCSD that is devoted to the study of dynamical cellular regulatory events that control responses to stresses and pathogens.

**P01 AI090935-01 (PI: Young)****08/01/2010 – 07/31/2015**

NIAID

\$2,500,000

“Global innate immune responses to HIV-1 infection”

Project 6 (Hoffmann): “Mathematically modeling the regulation of innate immune responses to HIV infection”

The major goals of this project are to leverage the experimental data in other projects to construct an experimentally valuated mathematical model that captures the dynamic control of innate immune responses to HIV and their impact on viral replication.

**R01 AI083453 (Hoffmann)****12/15/2009 – 11/30/2014**

NIH/NIAID

\$250,000

The NF $\kappa$ B Signaling System as a regulator in B-cell activation

The major goals of the proposal is to develop a multi-scale mathematical model of the multi-dimeric NF $\kappa$ B signaling system and its regulation of cell survival and division in B-cells. We will then explore NF $\kappa$ B’s role in B-cell activation and expansion at the population level, and its misregulation in B-cell cancers.

- R01 CA141722 (MPI with Ghosh)** **06/01/2009 – 05/30/2014**  
 NIH/NCI \$360,000 (Hoffmann: \$180,000)  
 IKK: Biophysical basis of dynamic regulation  
 This project combines biophysical and structural studies with kinetic modeling and cell biological approaches to examine the dynamic regulation of the IKK activation, inactivation, regeneration cycle.
- R01 GM085490 (Ghosh)** **07/01/2009 – 06/30/2013**  
 NIH/NIGMS \$200,000 (Hoffmann: \$50,000)  
 Investigation of Gene Regulation by NF-kappaB Transcription Factors  
 This project focuses on the ability of NF- $\kappa$ B dimers to recruit coactivators to activate gene expression. Biophysical and structural studies are complemented by genetic, and genome-wide transcription studies to understand the mechanism and function of RelA interactions with CBP, and p50/p52 interaction with Bcl3.
- R01 GM089976 (MPI with Tsimring, Hasty)** **04/01/2010 – 03/31/2014**  
 NIH/NIGMS \$330,000 (Hoffmann: \$130,000)  
 “Delays and Variability in single cell NF $\kappa$ B signaling”  
 The major goals of this project are to examine the extent and possible functional role of cell-to-cell variability in the dynamic regulation of NF $\kappa$ B. Live cell reporters and microfluidic devices will be used to probe and produce dynamic conditions.
- 2R01 GM071573 (Hoffmann)** **04/01/2010 – 03/31/2014**  
 NIH/NIGMS \$188,000  
 “TLR signaling to NF $\kappa$ B”  
 The major goals of this project are to investigate the signaling network that TLRs engage to activate NF $\kappa$ B. Activation of NF $\kappa$ B involves numerous feedback and crosstalk mechanisms including autocrine cytokine signaling by TNF and IFN.
- 2R01 GM072024 (Levchenko)** **08/01/2010 – 07/31/2014**  
 NIH/NIGMS \$250,000 (Hoffmann: \$70,000)  
 “NF $\kappa$ B and MAPK Signaling”  
 The goal of this project is to understand the coordinated regulation and crosstalk between NF $\kappa$ B and MAPK Signaling System during inflammatory cytokine and TLR stimulation.
- R01 GM085325 (Ponomarenko)** **08/01/2008 – 07/31/2012**  
 NIH/NIGMS \$200,000 (Hoffmann: \$100,000)  
 Transcription Factor DNA Interaction: Structural Classifications and Predictions  
 This project focuses on developing and validating mathematical models of transcription factor interactions with their *in vivo* cognate binding sites.
- R01 GM069811 (Hasty)** **08/01/2008 – 07/31/2012**  
 NIH/NIGMS \$370,000 (Hoffmann: \$50,000)  
 Development and Validation of Models for Gene Regulation  
 This project focuses on developing synthetic circuits and mathematical models to examine the dynamic and stochastic regulation of gene regulation.
- P01 GM071862 (Komives)** **04/01/2006 - 03/31/2011**  
 NIH/NIGMS \$850,000 (Hoffmann: \$165,000)  
 I $\kappa$ B/NF- $\kappa$ B Recognition *in silico*, *in vitro*, and *in vivo*  
 Hoffmann Project: *In vivo* signal transduction control by the I $\kappa$ B family members  
 This project focuses on the regulation of NF- $\kappa$ B activity by I $\kappa$ B proteins.

**1R01 GM071573 (Hoffmann)****04/01/2005 – 03/31/2010**

NIH/NIGMS

\$160,000

Regulation of Signaling via the I $\kappa$ B/NF $\kappa$ B interactionThis project focuses on the regulation of I $\kappa$ B degradation pathways.**TEACHING****UNDERGRADUATE COURSES**

Freshman Summer Institute, Caltech: summers 2001

Freshman Summer Institute, Caltech: summers 2002

**chem91:** sporadic Lectures**chem114C:** Synthesis of Macromolecules, Spring 2005**chem114C:** Synthesis of Macromolecules, Spring 2006**chem114C:** Synthesis of Macromolecules, Spring 2007**chem114C:** Synthesis of Macromolecules, Spring 2008

180 students, 95% Rcmd Instr

**chem114C:** Synthesis of Macromolecules, Spring 2009

201 students, 99% Rcmd Instr

**chem114C:** Synthesis of Macromolecules, Spring 2010

201 students, 90% Rcmd Instr

**chem114C:** Synthesis of Macromolecules, Spring 2011

196 students, 92% Rcmd Instr

**MIMG 180A:** Scientific Analysis and Communication

16 students

**CS184:** sporadic lectures

24 students

**GRADUATE COURSES****chem219A:** Selected Topics in Biochemistry: with P.Jennings, Fall 2004**chem219A:** Selected Topics in Biochemistry; with P.Jennings, Fall 2005**bggn230:** Signal Transduction, with M.David, Winter 2006**bms254:** Regulation of Transcription, with B.Ren, D.Cleveland, C.Glass, Spring 2006**chem219A:** Selected Topics in Biochemistry; with T.Nakagawa, Fall 2006**bggn220:** Molecular Biology core class (2 lectures), Fall 2006**chem221/bggn230:** Signal Transduction, with M.David, Winter 2007**bggn220:** Molecular Biology core class (2 lectures), Fall/Winter 2007/08**chem221/bggn230:** Signal Transduction, with M.David, Winter 2008**bms254:** Regulation of Transcription, with B.Ren, Spring 2008**bggn220:** Molecular Biology core class (2 lectures), Fall/Winter 2008/09**chem221/bggn230:** Signal Transduction, with M.David, Winter 2009**chem219C:** Applied Bioinformatics, with G. Ghosh, Winter 2009**bggn220:** Molecular Biology core class (2 lectures), Fall/Winter 2009/10**chem221/bggn230:** Signal Transduction, with M.David, Winter 2010**chem219C:** Applied Bioinformatics (2 weeks), Winter 2010**bggn220:** Molecular Biology core class (3 lectures), Fall/Winter 2010/11**chem221/bggn230:** Signal Transduction, with M.David, Winter 2011**bggn220:** Molecular Biology core class (3 lectures), Fall/Winter 2011/12

<b>bnfo281:</b>	Seminars in Bioinformatics, Winter 2012
<b>chem280:</b>	Applied Bioinformatics (2 weeks), Winter 2012
<b>chem221/bggn230:</b>	Signal Transduction, with M.David, Winter 2012
<b>bnfo281:</b>	Seminars in Bioinformatics, Spring 2012
<b>chem280:</b>	Applied Bioinformatics (2 weeks), Winter 2013
<b>chem221/bggn230:</b>	Signal Transduction, with M.David, Winter 2013
<b>bnfo281:</b>	Seminars in Bioinformatics, Winter 2013
<b>bnfo281:</b>	Seminars in Bioinformatics, Spring 2013
<b>BIOINFO M202:</b>	Interdisciplinary Research Seminar

## RESEARCH INSTRUCTION: POSTDOCTORAL FELLOWS

- Soumen Basak (2003-07), Faculty at National Institute of Immunology, Dehli, India
- Oliver Schmah (2004-06), physician-scientist in Freiburg, Germany
- Hana Kim (2004-07), Research Professor, KAIST, Seoul, Korea
- Marcelo Behar (2008 - 2014), Assistant Professor, UT Austin
- Bärbel Schröfelbauer (2009- 2013), Editor at Cell Press
- Zhang Cheng (2010 - 2015), Project Scientist UCLA
- Riku Fagerlund (2009 - 2013), Scientist in Finland
- Bryce Alves (2010 - 2013), Scientist at Active Motif
- Gajendra Suryavanshi (2012 - 2015), Project Scientist UCLA
- Yi Liu (2011 - )
- Roberto Spreafico (2014 - )
- Simon Mitchell (2014 - )
- Koushik Roy (2014 - )
- Chen Seng Ng (2015 - )
- Sho Ohta (2015 - )
- Marie Metzigg (2015 - )

## RESEARCH INSTRUCTION: GRADUATE STUDENTS

- Derren Barken (2004 – 07), bioinformaticist at Prometheus Labs
- Shannon Werner (2004 – 09), Scientist at Merrimack Pharmaceuticals
- Jeffrey Keanrs (2005 – 2009), Scientist at Merrimack Pharmaceuticals
- Ellen, O’Dea (2005 – 2010), postdoc at UCSF
- Christine Cheng (2006 -2011), postdoc at Broad Institute
- Vincent Shih (2006 - 2011). Postdoc at Genentech, Immunologist, Seattle Genetics
- Paul Loriaux (2007 - 2013), bioinformaticist
- Jon Almaden (2008 - 2014), scientist at Pfizer
- Kristyn Feldman (2008 - 2014), postdoc at UCSF
- Andrew Caldwell (2009 - 2014), postdoc at UCSD
- Diana Rios (2009 - 2014)
- Max Shokhirev (2009 - 2014), scientist at Salk
- Rachel Tsui (2010 - 2014)
- Karen Schuerenberg (2010 - 2014), postdoc at start-up
- Jeremy Davis-Turak (2010 - 2014), bioinformaticist
- Jenny Huang (2011 - 2013), PhD student UCSD
- Brooks Taylor (2012 - 2015)
- Kim Ngo (2012 - )

- Eason Lin (2012 - )
- Adewunmi Adelaja (2015 - )

### **RESEARCH INSTRUCTION: THESIS COMMITTEES**

I am on a large number of student thesis committees, reflecting the interdisciplinary nature of my interests and my laboratory's research. Over the past four years, the students' home departments have been in Chemistry and Biochemistry, Bioinformatics and Systems Biology, Bioengineering, Molecular Biology/Immunology, Molecular Pathology, Biomedical Sciences, and Visual Arts. Over the course of my faculty career, I have been a member of 82 thesis committees for students not my own. Currently, I am a member of 7 student committees.

### **RESEARCH INSTRUCTION: UNDERGRADUATE RESEARCH CREDIT (199)**

- Raechel Quiambao (Winter and Summer 2004; Raechel presented her work at the 17<sup>th</sup> annual UCSD Undergraduate Research Conference, May 15, 2004; graduate school UCI)
- Candace Lynch (Fall 2004, Winter 2005), Honors Thesis Defense 3/9/2005
- Joshua Regal (Winter and Spring 2005), Honors Thesis Defense 6/8/2005
- Christine Ng (Fall 2005, Winter 2006)
- Christine Huang (Fall 2004, Winter, Spring, Fall, 2005)
- Victoria Zadorozhnaya (Fall 2005, Winter, Spring 2006; Victoria presented her work at the 19<sup>th</sup> annual UCSD Undergraduate Research Conference, May 20, 2006)
- Breena Fraga (Summer 2006 STARS student)
- Rebecca Delker (Summer, Fall 2006, Winter, Spring 2007)
- David Zhang (Spring, Summer 2007)
- Duc Nguyen (Summer, Fall 2007, Winter, Spring, Summer, Fall 2008; David presented his work at the 21<sup>st</sup> annual UCSD Undergraduate Research Conference, May 2008)
- Tania Riveros (Summer STARS student, Fall 2008)
- Daniel Roach (Spring, Fall 2008)
- John Chen (Winter and Spring 2009)
- Joy Jiang (Fall 2009)
- Tony Yu (Fall 2010, Winter, Spring 2011)
- Tenaya Siva (Fall 2010, Winter, Spring, Fall 2011)
- Zachary Hann (Fall 2011, Winter 2012)
- Rusty Lewis (Winter, Spring, Fall 2012) Amgen Scholar
- Douglas Meyer (Fall 2015)
- Alyssa Pizarro (Fall 2015)

### **RESEARCH INSTRUCTION: OTHER UNDERGRADUATE RESEARCHERS**

There are 4-5 undergraduate volunteers in my laboratory at any one time. Over the past 10 years, about 32 undergraduates have found research training in my laboratory.

### **OTHER TEACHING: HIGH SCHOOL STUDENT INSTRUCTION**

- Young Engineering Science Scholars (YESS) Program (30 students), Caltech, Summers 1998 – 2002
- July 13, 2004: Guest Seminar for the Caltech YESS Program
- HHMI funded program: High school Juniors (3), Summer projects in my laboratory, June-Sept 2008

- Jasmine Dibazar, Summer 2012

## PUBLICATIONS

**H-index: 56. Total number of citations: about 12,000.**

<http://scholar.google.com/citations?user=Vj55OEUAAA&hl=en>

## RESEARCH PAPERS

### RESEARCH PAPERS (PEER REVIEWED)

#### A. RESEARCH PAPERS – PEER REVIEWED

1. **Hoffmann, A.**, Heck, M.M.S., Bordwell, B.J., Rothfield, N.F., Earnshaw, W.C. 1989. Human autoantibody to topoisomerase II. *Exp. Cell Res.* **180**, pp. 409-418.
2. **Hoffmann, A.**, Horikoshi, M., Wang, C. K., Schroeder, S., Weil, P.A., Roeder, R.G. 1990. Cloning of the *Schizosaccharomyces pombe* TFIID gene reveals a strong conservation of functional domains present in *Saccharomyces cerevisiae* TFIID. *Genes & Development* **4**, pp. 1141-1148.
3. **Hoffmann, A.**, Sinn, E., Yamamoto, T., Wang, J., Roy, A., Horikoshi, M., Roeder, R.G. 1990. Highly conserved core domain and unique N-terminus with presumptive regulatory motifs in a human TATA factor (TFIID). *Nature* **346**, No.6282, pp.387-390.
4. Gasch, A., **Hoffmann, A.**, Horikoshi, M., Roeder, R.G., Chua, N.H. 1990. Arabidopsis thaliana contains two genes for TFIID. *Nature* **346**, No.6282, pp.390-394.
5. Tamura, T., Sumita, K., Fujino, I., Aoyama, A., Horikoshi, M., **Hoffmann, A.**, Roeder, R.G., Mikoshiba, K. 1991. Striking homology of the 'variable' N-terminal as well as the 'conserved core' domains of the mouse and human TATA-factors (TFIID). *Nucleic Acids Research* **19**, No.14, pp. 3861-3865.
6. **Hoffmann, A.** and Roeder, R.G. 1991. Purification of his-tagged proteins in non-denaturing conditions suggests a convenient method for protein interaction studies. *Nucleic Acids Research* **19**, No.22, pp. 6337-6338.
7. Ohkuma, Y., Sumimoto, H., **Hoffmann, A.**, Shimazaki, S., Horikoshi, M., Roeder, R.G. 1991. Structural motifs and potential homologies in the large subunit of human general transcription factor TFIIE. *Nature* **354**, pp. 398-401.
8. Nikolov, D.B., Hu, S.-H., Lin, J., Gasch, A., **Hoffmann, A.**, Horikoshi, M., Chua, N.-H., Roeder, R.G., Burley, S.K. 1992. Crystal structure of TFIID TATA-box binding protein. *Nature* **360**, pp. 40-46.
9. Takada, R., Nakatani, Y., **Hoffmann, A.**, Kokubo, T., Hasegawa, S., Roeder, R.G., Horikoshi, M. 1992. Identification of human TFIID components and direct interaction between a 250-kDa polypeptide and the TATA box-binding protein (TFIIDt). *Proc. Natl. Acad. Sci. USA* **89**, pp. 11809-11813.

10. Chiang, C.-M., Ge, H., Wang, Z., **Hoffmann, A.**, Roeder, R.G. 1993. Unique TATA-binding protein-containing complexes and cofactors involved in transcription by RNA polymerases II and III. *EMBO J.* **12**, pp. 2749-2762.
11. Xie, X.-L., Kokubo, T., Cohen, S., Mirza, U.A., **Hoffmann, A.**, Chait, B.T., Roeder, R.G., Nakatani, Y., Burley, S.K. 1996 Structural similarity between TAFs and the heterotetrameric core of the histone octamer. *Nature* **380**, No.6572, pp. 316-322.
12. **Hoffmann, A.**, Chiang, C.-M., Oelgeschläger, T., Burley, S.K., Nakatani, Y., Roeder, R.G. 1996 A histone octamer-like structure within TFIID. *Nature* **380**, No.6572, pp. 356-359.
13. Nikolov, D.B., Chen, H., Halay, E.D., **Hoffmann, A.**, Roeder, R.G., Burley, S.K. 1996. Crystal structure of a human TATA box-binding protein/TATA element complex. *Proc. Natl. Acad. Sci. USA* **93**, pp. 4862-4867.
14. **Hoffmann, A.** and Roeder, R.G. 1996 Cloning and characterization of human TAF20/15: multiple interactions suggest a central role in TFIID complex formation. *J. Biol. Chem.* **271**, pp. 18194-18202.
15. Segil, N., Guermah, M., **Hoffmann, A.**, Roeder, R.G., Heintz, N. 1996 Mitotic regulation of TFIID: Inhibition of activator-dependent transcription and changes in sub-cellular localization. *Genes & Development* **10**, pp. 2389-2400.
16. Sachdev, S., **Hoffmann, A.**, Hannink, M. 1998 Nuclear localization of I  $\kappa$ B $\alpha$  is mediated by the second ankyrin repeat: The I $\kappa$ B $\alpha$  ankyrin repeats define a novel class of cis-acting nuclear import sequences. *Mol. Cell. Biol.* **18**, pp. 2524-2534.
17. Lin, K.-I., DiDonato, J.A., **Hoffmann, A.**, Hardwick, J.M., Ratan, R.R. 1998 Suppression of steady-state, but not stimulus-induced NF- $\kappa$ B activity inhibits alphavirus-induced apoptosis. *J. Cell Biol.* **141**, pp. 1479-1487.
18. Kinoshita, K., Kaneda, Y., Sato, M., Saeki, Y., Wataya-Kaneda, M., **Hoffmann, A.**, Kaneda, Y. 1998 LBP-p40 binds DNA tightly through associations with histones H2A, H2B, and H4. *Biophys. Biochem. Res. Commun.* **253**, pp. 277-282.
19. Sanjabi, S., **Hoffmann, A.**, Liou, H.C., Baltimore, D., Smale, S.T. 2000 Selective requirement for c-Rel during IL-12 P40 gene induction in macrophages. *Proc. Natl. Acad. Sci. USA* **97**, pp. 12705-12710.
20. Georganas, C., Liu, H., Perlman, H., **Hoffmann, A.**, Thimmapaya, B., Pope, R.M. 2000 Regulation of IL-6 and IL-8 expression in rheumatoid arthritis synovial fibroblasts: the dominant role for NF- $\kappa$ B but not C/EBP or c-Jun. *J. Immunol.* **165**, pp. 7199-7206
21. Weinmann, A.S., Mitchell, D.M., Sanjabi, S., Bradley, M.N., **Hoffmann, A.**, Liou, H.C., Smale, S.T. 2001 Nucleosome remodeling at the IL-12 p40 promoter is a TLR-dependent, Rel-independent event. *Nat. Immunol.* **2**, pp. 51-57.
22. Dragneva, Y., Anuradha, C.D., Valeva, A., **Hoffmann, A.**, Bhakdi, S., Husmann, M. 2001 Subcytotoxic attack by staphylococcal alpha-toxin activates NF- $\kappa$ B and induces interleukin-8 production. *Infect. Immun.* **69**, pp.2630-2635.
23. Dadgostar, H., Zanegar, B., **Hoffmann, A.**, Qin, X-F., Truong, U., Rao, G., Baltimore, D.,

- Cheng, G. 2002 Cooperation of multiple signaling pathways in CD-40-regulated gene expression in B lymphocytes. *PNAS* **99**, pp.1497-1502.
24. **Hoffmann, A.**, Levchenko, A., Scott, M., Baltimore, D. 2002 The NF- $\kappa$ B/I $\kappa$ B signaling module: temporal control and selective gene activation *Science* **298**, pp.1241-1245.
25. Zhao, M., Tang, D., Lechpammer, S., **Hoffmann, A.**, Asea, A., Stevenson, M.A., Calderwood, S.K. 2002 Double stranded RNA-dependent protein kinase (pkr) is essential for thermotolerance, accumulation of HSP70 and stabilization of ARE containing HSP70 mRNA during stress. *J. Biol. Chem.*, **277**, pp. 44539-47.
26. **Hoffmann, A.**, Leung, T.H., Baltimore, D. 2003 Genetic analysis of NF-  $\kappa$ B/Rel transcription factors reveals molecular specificities. *EMBO J.*, vol.22, pp.5530-5539.
27. Kato, T., Delhase, M., Hoffmann, A., Karin, M. 2003 CK2 is a C-terminal I  $\kappa$ B kinase responsible for NF-  $\kappa$ B activation during the UV response. *Mol. Cell*, **12**, pp.829-839.
28. Zarnegar, B., He, J., Oganessian, G., **Hoffmann, A.**, Baltimore, D., Cheng, G. Unique CD40-mediated biological program in B cell activation requires both type 1 and type 2 NF-  $\kappa$ B activation pathways *Proc. Natl. Acad. Sci. USA*, **101**: 8108-8113
29. Leung, T.H., **Hoffmann, A.**, Baltimore, D. 2004 One nucleotide in a  $\kappa$ B site can determine cofactor specificity for NF-  $\kappa$ B dimers. *Cell*, **118**: 453-464.
30. Barken, D, Wang, C.J., Kearns, J., Cheong, R., **Hoffmann, A.**, Levchenko, A. 2005 Comment on "Oscillations in NF-  $\kappa$ B Signaling Control of Dynamics of Gene Expression" *Science* **308**: 52a.
31. Shapira, S., Harb, O.S., Margarit, J., Matrajt, M., Han, J., **Hoffmann, A.**, Freedman, B., May, M.J., Roos, D.S., Hunter, C.A. 2005 Initiation and termination of NF-  $\kappa$ B signaling by the intracellular protozoan parasite *Toxoplasma gondii*. *J. Cell Sci.* **118**: 3501-3508.
32. Pei, L., Castrillo, A., Chen, M., **Hoffmann, A.**, Tontonoz, P. 2005 Induction of NR4A orphan nuclear receptor expression in macrophages in response to inflammatory stimuli. *J. Biol. Chem.*, **280**: 29256-62.
33. Ogawa, S., Lozach, J., Benner, C., Pascual, G., Tangirala, R.K., Westin, S., **Hoffmann, A.**, Subramaniam, S., David, M., Rosenfeld, M.G., Glass, C.K. 2005 Molecular determinants of crosstalk between nuclear receptors and Toll-like Receptors. *Cell*, **122**: 707-21.
34. Beisner, D.R., Ch'en, I.L., Kolla, R.V., **Hoffmann, A.**, Hedrick, S.M. 2005 Cutting Edge: Innate immunity conferred by B cells is regulated by caspase-8. *J. Immunol.* **175**: 3469-73.
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93. Ourthiague, D.N., Birnbaum H., Ortenl f, N., Vargas, J.D., Wollman, R., **Hoffmann, A.** 2015 Limited specificity of IRF3 and ISGF3 in the transcriptional innate –immune response to double –stranded RNA. *Journal of Leukocyte Biology*, **98**, pp.119-28. PMID: 25896227
94. Cheng, Z., Taylor, B., Ourthiague, D.N., **Hoffmann, A.** 2015 Distinct Single Cell Signaling Characteristics Conferred by the MyD88 and TRIF Pathways in TLR4 Activation. *Science Signaling*, **8**, ra69. PMID: 26175492
95. Lee, D.-J., Du, F., Chen, S.-W., Nakasako, M., Rana, I., Shih, V. F.-S., **Hoffmann, A.**, Jamora, C. 2015. Regulation and Function of the Caspase-1 in an Inflammatory Microenvironment. *J. Investigative Dermatology*, **135**, pp.2012-20. PMID: 25815426

## B. RESEARCH PAPERS – PEER REVIEWED (IN PRESS)

1. Fortmann, K.T., Lewis, R.D., Ngo, K.A., Fagerlund, R., **Hoffmann, A.** 2015 A regulated, ubiquitin-independent degron in I $\kappa$ B $\alpha$ . *J. Molecular Biology*, in press.

## REVIEWS

1. **Hoffmann, A.**, Oelgeschläger, T., Roeder, R.G. 1997 Considerations of transcriptional control mechanisms: Do TFIIID-core promoter complexes recapitulate nucleosome-like functions? *Proc. Natl. Acad. Sci. USA* **94**, pp. 8928-8935.
2. **Hoffmann, A.**, Baltimore, D. 2006 Circuitry of Nuclear Factor- $\kappa$ B Signaling. *Immunological Reviews*, 210: 171-186.
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5. **Hoffmann, A.**, Xia, Y., Verma, I.M. 2007. Inflammatory Tales of Liver Cancer. *Cancer Cell*, 11: 99-101.
6. Cheng, C.S., Johnson, T.J., **Hoffmann, A.** 2008. Epigenetic control: slow and global, nimble and local. *Genes Dev.*, 22, pp.1110-1114.
7. Cheong, R., **Hoffmann, A.**, Levchenko, A. 2008. Understanding NF- $\kappa$ B Signaling via Mathematical Modeling. *Molecular Systems Biology*, 4:192, pp.1-11.
8. Ch'en, I.L., Hedrick, S.M., **Hoffmann, A.** 2008. NF- $\kappa$ B as a determinant of distinct cell death pathways. *Methods in Enzymology*, 146, pp.175-187.
9. Loriaux, P., **Hoffmann, A.** 2009. Of Elections and Cell Death Decisions. *Molec Cell*, 257, pp.257-8.
10. O'Dea, E., **Hoffmann, A.** 2009. NF- $\kappa$ B Signaling. *Interdisciplinary Reviews in Systems Biology and Medicine*, 1, pp.107-115.
11. Behar, M., **Hoffmann, A.** 2010 Understanding the Temporal Codes of Intra-Cellular Signals. *Current Opinion in Genetics and Development*, 20, pp.684-693.
12. Huxford, T., **Hoffmann, A.**, Ghosh, G. 2011 Understanding the Logic of I $\kappa$ B:NF- $\kappa$ B Regulation in Structural Terms. *Current Topics in Microbiology and Immunology*, 349, pp.1-24
13. Shih, V. F.-S., Tsui, R., Caldwell, A., **Hoffmann, A.** 2011 A single NFB system for both canonical and non-canonical signaling. *Cell Research*, 21, pp.86-102.
14. Schröfelbauer, B., **Hoffmann, A.** 2011. How do pleiotropic kinase hubs mediate specific signaling by TNFR superfamily members? *Immunological Reviews*, 244, pp.29-43.
15. Basak, S., Behar, M., **Hoffmann, A.** 2012 Lessons from mathematically modeling the NFB pathway. *Immunological Reviews*, 246, pp.221-38.
16. Mitchell, S., Tsui, R., **Hoffmann, A.** 2015 Studying NF $\kappa$ B Signaling with mathematical models. *Methods in Molecular Biology*, **1280**, pp.647-661. PMID: 25736777

## EDITORIALS

1. Hasty, J., **Hoffmann, A.**, Golden, S. 2010 Systems Biology of cellular rhythms: from cacophony to symphony. *Current Opinion in Genetics and Development*, 20, pp.571-3.
2. Spreafico, R., Mitchell, S., **Hoffmann, A.** 2015 Training the 21<sup>st</sup> Century Immunologist. *Trends in Immunology*, **1280**, pp.647-61. PMID: 25736777

## OTHER WORK

1. **Hoffmann, A.** and Roeder, R.G. 1994 A molecular characterization of the general transcription factor IID. Ph.D. Thesis, The Rockefeller University.
2. Marshall, C.P., **Hoffmann, A.**, Errico, J.P., Marshall, P.B. Stabilized Proteins. awarded May 2, 2006 Patent number 7,037,894

## INVITED PAPERS & PRESENTATIONS

### SEMINAR PRESENTATIONS AT CONFERENCES (since July 1, 2003)

- FASEB Immunology Meeting: July 2, 2003
- La Jolla Immunology Meeting, Oct 10, 2003
- Keystone Meeting: NF- $\kappa$ B from Bench to Bedside, Jan 14, 2004
- Cold Spring Harbor Meeting: Systems Biology, Apr 7, 2004
- 6<sup>th</sup> EMBL Meeting: Transcription Meeting, Aug 31, 2004
- Institute for Complex Adaptive Matter, ICAM, Kinase Workshop, July 12, 2005
- Annual Colloquium on the Biology of Aging, Aug 18-20, 2005
- Keystone Meeting: NF- $\kappa$ B: 20 Years, Mar 26, 2006
- CTBP Workshop: Gene Regulatory Systems, UCSD, July 20, 2006
- IGERT Plant Systems Biology Workshop, UCSD, Nov 3, 2006
- 10<sup>th</sup> International Transcription Assembly Meeting, Kolkata, Dec 15, 2006
- 11<sup>th</sup> TNF Superfamily Conference, Asilomar, May 14, 2007
- FASEB Meeting on Immunology, July 10-12, 2007
- 4<sup>th</sup> q-bio Conference on Cellular Information Processing, Aug 3-7, 2007
- FOSBE (Foundations of Systems Biology in Engineering), Stuttgart Sept 9, 2007
- Biophysics Society Annual Meeting, Long Beach, CA, Feb 2, 2008
- Keystone Meeting: NFB, Feb 14, 2008
- Symposium for David Baltimore's 70<sup>th</sup> birthday, March 1, 2008
- American Society for Biochemistry and Molecular Biology, San Diego, CA, April 9, 2008
- European Science Foundation, Systems Biology Meeting, Barcelona, April 14, 2008
- Cold Spring Harbor Meeting on Immunology and Gene Expression, April 25, 2008
- 20<sup>th</sup> Symp, Inflammatory and Immune Responses, Penn State University, June 19, 2008
- International Conference of Biomedical Engineering, Singapore, Dec 5, 2008
- Mathematical Modeling of Regulatory Biology, Rice University, Houston, CA, Dec 7, 2008
- BIOINF Expo, UCSD, Feb 27, 2009
- Systems to Synthesis Symposium, Salk Institute, April 10, 2009
- 12<sup>th</sup> TNF Superfamily Conference (session chair), Madrid, April 27, 2009

- Systems Biology and Steroid Receptors in Human Disease Workshop, NCI, Sept 22, 2009
- NCI-Japan Cancer Systems Biology Workshop, Riken-Yokohama, Japan, Oct 28, 2009
- Boston area Immunology Workshop, Nov 13, 2009
- Keystone Meeting: NFB, Jan 6, 2010
- 2<sup>nd</sup> Systems Biology of Human Disease Meeting, Harvard, June 16, 2010
- Ellison Meeting on Aging, Woods Hole, Aug 13, 2010
- Sanford-Burnham Systems Biology Meeting, Sept 29, 2010
- SoCal Systems Biology Meeting, UCI, Jan 30, 2010
- NFB Meeting, Cincinnati, May 2, 2011
- Sanford-Burnham Systems Biology Meeting, June 6, 2011
- Annual Meeting, Center for Cell Decision Processes, June 21, 2011
- 7<sup>th</sup> qBio Meeting, Santa Fe, Aug 13, 2011
- Chromatin Regulation Workshop, Spetses, Sept 20, 2011
- Leukocyte Society Annual Meeting, Kansas City, Sept 23, 2011
- Annual Meeting, NY Systems Biology Center, Nov 12, 2011
- Keystone Meeting; NF $\kappa$ B, Mar 19, 2012
- Cold Spring Harbor: Systems Biology of Gene Expression, Mar 23, 2012
- 4<sup>th</sup> Systems Biology of Human Disease Meeting, Heidelberg, May 4, 2012
- Systems Biology and Medicine, Keynote speaker, St Petersburg, Sept 14, 2012
- EMBL Graduate Program Symposium, Heidelberg, Oct 23, 2012
- Harvard Digestive Diseases Center Symposium, Keynote speaker, April 2, 2013
- Gordon Conference on Innate Immunity, June 10, 2013
- Computational Immunology Workshop, NIH, Aug 5, 2013
- CSHL Asia, Suzhou, Sep 3, 2013
- Japan Society for Biochemistry Annual Meeting, Sept 12, 2013
- Keystone Meeting: NF $\kappa$ B Feb 26, 2014
- Systems Biology Conference, Beijing University, Sept 8, 2014
- La Jolla Immunology Conference, Sept 30, 2014
- Molecular Biology Retreat, UCLA, Apr 25, 2015
- International TNF Conference, May 22, 2015
- Switch Workshop, UCLA, June 3, 2015
- FASEB Meeting, Immunology, Aug 16, 2015

### **SEMINAR PRESENTATIONS AT UNIVERSITIES AND RESEARCH INSTITUTES (since July 1, 2003)**

- University of Washington, Seattle, Nov 19, 2003
- Amgen, at Tularik Research facility, San Francisco, May 5, 2004
- UCSD Biochemistry Faculty Seminar, May 17, 2004
- UCSD Mammal Club, June 11, 2004
- UCSD Center for Theoretical Biological Physics, Oct 22, 2004
- UCSD Moore Cancer Center Lunch, July 6, 2005
- Harvard University Medical School, Department for Systems Biology, Aug 16, 2005
- University of Texas SouthWestern Medical School, Dallas, Sept 22, 2005
- University of Kentucky, Lexington, Nov 1, 2005
- Amersham/GE Healthcare, HTP screening research facility, Phoenix Nov 16, 2005
- Massachusetts General Hospital, Nov 21, 2005
- Max Delbrück Center, Berlin, June 21, 2006
- Max Planck Institute for Infection Biology, Berlin, June 22, 2006

- La Jolla Institute for Immunology and Allergy, Oct 17, 2006
- Laboratory of Genetics, Salk Institute, Nov 14, 2006
- Immune Signaling Laboratory, Burnham Institute, Dec 7, 2006
- Institute for Molecular and Cell Biology, Singapore, Dec 12, 2006
- Bioinformatics, Singapore, Dec 13, 2006
- Bose Institute, Kolkata, Dec 15, 2006
- UCLA, Immunology Forum, March 12, 2007
- Yale, Immunobiology, Sept 27, 2007
- Max Planck Institute for Genetics, Berlin, October 1, 2007
- University of Missouri, October 10, 2007
- Institute for Advanced Studies, Princeton, Nov 26, 2007
- Salk Institute, Gene Expression Laboratory, Dec 20, 2007
- University of Utah Medical Center, Sept 22, 2008
- NIH, Hormone Action and Oncogenesis Section, Oct 8, 2008
- UT SouthWestern, Dallas, Department of Biochemistry, Oct 10, 2008
- UCSD Bioinformatics, Oct 23, 2008
- UCSF Immunology Seminar Series, Nov 3, 2008
- UCSD Pharmacology Seminar Series, Jan 27, 2009
- Boston University, Systems Biology Seminars, Feb 12, 2009
- Merrimack Pharmaceuticals, Feb 13, 2009
- UCSD Rheumatology Seminar Series, Feb 24, 2009
- Regulus Pharmaceuticals, April 16, 2009
- The Wedding Keynote Speaker Biochem/Mol Bio Symposium UC Riverside, Sept 18, 2009
- UCSD Bioengineering Department, Oct 16, 2009
- UCSD Atherosclerosis and Vascular Biology seminar series, Nov 4, 2009
- Rockefeller University, Feb 16, 2010.
- UCI Computational Biology Seminar Series, April 12, 2010
- BioCircuits Institute Seminar Series, April 14, 2010
- SDCSB Seminar Series, Oct 19, 2010
- Cal State University San Marcus, Oct 6, 2011
- BIOCUM – Nov 09, 2011
- Memorial Sloan Kettering Cancer Center, Computational Biology, Dec 02, 2011
- UCLA Computational Biology Seminar Series, Feb 13, 2012
- SDCSB Seminar Series, April 04, 2012
- UCLA Invited Seminar, May 18, 2012
- qBio Summer School, La Jolla, Aug 02, 2012
- Gene Center, Ludwig Maximilian University, Munich, Sept 24, 2012
- Department of Biophysics, Humboldt University, Berlin, Oct 04, 2012
- Department of Biophysics, Humboldt University, Berlin, Oct 23, 2012
- Deutsches Krebsforschungszentrum, Heidelberg, Oct 30, 2012
- Institute for Theoretical Biophysics, Nov 2, 2012
- Cambridge University, Cambridge, Nov 15, 2012
- Max Delbruck Center, Nov 22, 2012
- Humboldt University, Biophysics, Nov 23, 2012
- Institut Louis Pasteur, Paris, Nov 25, 2012
- Max Planck Institut Dresden, Dec 4, 2012
- Center for Complex Biological Systems, Feb 13, 2013
- Kyoto University Sept 6, 2013
- Tokyo University Sept 10, 2013
- Tokyo Dental and Medical School, Sept 11, 2013

- San Diego Center for Systems Biology, Oct 2, 2013
- Harvard Theory Lunch Oct 4, 2013
- Molecular Biology Institute, UCLA, Oct 15, 2013
- Bioinformatics Seminars, UCLA, Oct 18, 2013
- Biomath Seminar Series, UCLA, Oct 24, 2013
- UCSF Biochemistry and Systems Biology, Apr 24, 2014
- Broad Stem Cell Center, UCLA, Apr 30, 2014
- Jonsson Cancer Center Seminar Series, UCLA, May 8, 2014
- ETH Systems Biology, Basel, Oct 28, 2014
- Broad Institute Seminar Series, Cambridge, Nov 3, 2014
- Quantitative and Computational Biosciences, UCLA, Jan 16, 2015
- Buck Institute for Aging Seminar Series, Mar 6, 2015
- Immunology Forum, UCLA, March 17, 2015
- Biobasic Seminars, UCLA, May 13, 2015

## **EDITORIAL BOARD & REVIEWING ACTIVITIES**

### **CONFERENCE ORGANIZER**

SDCSB Workshops (3-5 per year) 2007-2013  
SDCSB Annual S2S Symposia 2007-2013  
MIA Workshop in Madison 2008  
ASBMB: Systems Biology 2012  
Keystone: NF $\kappa$ B 2014  
Immunology LA Meeting 2015

### **EDITORIAL BOARD**

- Cell Research 2010 –
- Molecular Systems Biology 2014 –

### **REVIEWER FOR SCIENTIFIC JOURNALS**

- Cell and all Cell affiliated journals
- Science and Science Signaling
- Nature and all Nature affiliated journals
- PLOS journals
- Proceedings of the National Academy of Sciences (PNAS)
- Molecular Systems Biology (MSB)
- Molecular and Cellular Biology (MCB)
- Journal of Biological Chemistry (JBC)
- Journal of Immunology (JI)
- plus many others

### **REVIEWER FOR GRANT APPLICATIONS**

- Biotechnology and Biological Sciences Research Council, UK: Systems Approaches 2007
- NIH – study section Nuclear Dynamics and Transport 2007/8

- Austrian Science Foundation 2008
- NIH, Multiscale predictive modeling of the Physiome 2009
- NIH, Program Projects in Immunology/Oncology 2009
- NIH, K01/K99 awards 2012
- NIH Pioneer Awards 2011/12
- NIH – study section MABS
- NIH – Special Emphasis panel CSRS
- German Systems Medicine Centers 2013

## **OTHER PROFESSIONAL ACTIVITIES**

### **REVIEWER FOR ACADEMIC PERSONNEL ADVANCEMENT DECISIONS**

- LIAI (Assistant Professor) 2008
- UCI (Associate Professor with tenure) 2009
- UCR (Full Professor) 2009
- U Mass (Associate Professor) 2010
- Mt Sinai (Associate Professor with tenure) 2012
- UCLA (Professor) 2013
- UC Davis (Professor) 2013
- Stanford (Professor) 2014
- U Mass (Professor) 2014
- Chicago (Associate Professor) 2014

### **CORPORATE AND OTHER PROFESSIONAL ACTIVITIES**

- Consultant, Investment Bank/Venture Capital: Robinson Stephens, Atlas Ventures, 1998
- Chief Academic Consultant, Biology Students Web Resource “Talksaver” (1998-2000)
- Founder and CSO of Avatar Biotechnologies Ltd (1998-2001)
- Board Member, Avatar Biotechnologies Ltd (2002-2004)
- Consultant, Ariad Pharmaceuticals (2007)

## **PROFESSIONAL AFFILIATIONS**

- 1994 - AAAS
- 2004 - ASBMB
- 2004 - Biophysical Society
- 2010 - Leukocyte Society
- 2010 - The American Association of Immunologists (AAI)