

# Gabriel Etienne Zentner, Ph.D.

## **Curriculum Vitae**

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Department of Biology  
Indiana University  
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## **Professional Experience**

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2015- Assistant Professor  
Department of Biology  
Genome, Cell & Developmental Biology Section  
Indiana University, Bloomington, IN, USA

## **Education**

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2011-2015 Postdoctoral scholar  
Fred Hutchinson Cancer Research Center, Seattle, WA, USA  
Research on transcriptional regulation using epigenomic technologies  
Advisor: Steven Henikoff, Ph.D.

2007-2011 Ph.D. in Genetics  
Case Western Reserve University, Cleveland, OH, USA  
Thesis: Genomic analysis of ribosomal DNA and its application to the investigation of disease pathogenesis  
Advisor: Peter Scacheri, Ph.D.

2003-2007 B.S. in Cell, Molecular, and Developmental Biology  
Purdue University, West Lafayette, IN, USA  
Research on the role of miRNAs in zebrafish hair cell development  
Advisor: Donna Fekete, Ph.D.  
Research on genetic control of *Bacillus anthracis* sporulation  
Advisor: Arthur Aronson, Ph.D.

## **Honors and Awards**

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2012-2015 Chromosome Metabolism and Cancer Training Grant, Fred Hutchinson Cancer Research Center

2012 Doctoral Excellence Award in Genetics, Case Western Reserve University

2011 Travel award for the 9<sup>th</sup> International Conference on Pathways, Networks, and Systems Medicine

2011 Honorable mention for oral presentation, 34<sup>th</sup> Biomedical Graduate Student Symposium, Case Western Reserve University

2008-2011 Developmental Biology Training Grant, Case Western Reserve University

2005-2006 Howard Hughes summer research internship, Purdue University

## **Publications**

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### **Research**

19. Grünberg S, **Zentner GE** (2017). Genome-wide mapping of protein-DNA interactions with ChEC-seq in *Saccharomyces cerevisiae*. *J Vis Exp* 124:e55836.

18. Drury DW, Dapper AL, Siniard DJ, **Zentner GE**, Wade MJ (2017). CRISPR/Cas9 gene drives in genetically variable and non-randomly mating wild populations. *Sci Adv* 3(5):e1601910.

17. Rivero-Hinojosa S, Kang S, Lobanenkov VV, **Zentner GE** (2017). Testis-specific transcriptional regulators selectively occupy BORIS-bound CTCF target regions in mouse male germ cells. *Sci Rep*, 7:41279.
16. Grünberg S, Henikoff S, Hahn S, **Zentner GE** (2016). Mediator binding to UASs is broadly uncoupled from transcription and cooperative with TFIID recruitment to promoters. *EMBO J* 35(22):2435-2446.  
-Recommended by Faculty of 1000 (<http://f1000.com/prime/726906686>)
15. **Zentner GE**, Kasinathan S, Xin B, Rohs R, Henikoff S (2015). ChEC-seq kinetics discriminates transcription factor binding sites by DNA sequence and shape *in vivo*. *Nat Commun* 6:8733.
14. Ramachandran S, **Zentner GE**, Henikoff S (2015). Asymmetric nucleosomes flank promoters in the budding yeast genome. *Genome Res* 25(3):381-390.
13. Factor DC, Corradin O, **Zentner GE**, Saiakhova A, Song L, Chenoweth JG, McKay RD, Crawford GE, Scacheri PC, Tesar PJ (2014). Epigenomic Comparison Reveals Activation of "Seed" Enhancers during Transition from Naive to Primed Pluripotency. *Cell Stem Cell* 14(6):854-863.
12. Weeks LD, **Zentner GE**, Scacheri PC, Gerson SL (2014). Uracil DNA glycosylase (UNG) loss enhances DNA double strand break formation in human cancer cells exposed to pemetrexed. *Cell Death Dis* 5:e1045.
11. **Zentner GE**, Balow SA, Scacheri PC (2014). Genomic characterization of the mouse ribosomal DNA locus. *G3* 4(2):243-254.
10. Kasinathan S, Orsi GA, **Zentner GE**, Ahmad K, Henikoff S (2014). High-resolution profiling of transcription factor binding sites on native chromatin. *Nat Methods* 11(2):203-209.
9. **Zentner GE**, Henikoff S (2013). Mot1 redistributes TBP from TATA-containing to TATA-less promoters. *Mol Cell Biol* 33(24):4996-5004.
8. Balow SA, Pierce LX, **Zentner GE**, Davis S, Sabaawy HE, McDermott BM Jr, Scacheri PC (2013). Knockdown of *fbxl/kdm2bb* rescues *chd7* morphant phenotypes in a zebrafish model of CHARGE syndrome. *Dev Biol* 382(1):57-69.
7. **Zentner GE**, Tsukiyama T, Henikoff S (2013). ISWI and CHD chromatin remodelers bind promoters but act in gene bodies. *PLoS Genet* 9(2):e1003317.
6. **Zentner GE**, Tesar PJ, Scacheri PC (2011). Epigenetic signatures distinguish multiple classes of enhancers with distinct cellular functions. *Genome Res* 21(8):1273-1283.
5. Yazbek SN, Buchner DA, Geisinger JA, Burrage LC, Spiezio SH, **Zentner GE**, Hsieh C-W, Scacheri PC, Croniger CM, Nadeau JH (2011). Deep congenic analysis identifies many strong, context-dependent QTLs, one of which, *Slc35b4*, regulates obesity and glucose homeostasis. *Genome Res* 21(7):1065-1073.
4. **Zentner GE**, Saiakhova A, Manaenkov P, Adams MD, Scacheri PC (2011). Integrative genomic analysis of human ribosomal DNA. *Nucleic Acids Res* 39(12):4949-4960.
3. Tran T, Jarrell A, **Zentner GE**, Welsh A, Brownell I, Scacheri PC, Atit R (2010). Role of canonical Wnt signaling/ $\beta$ -catenin via Dermo1 in cranial dermal cell development. *Development* 137(23):3973-3984.
2. **Zentner GE**, Hurd EA, Schnetz MP, Handoko L, Wang C, Wang Z, Wei C, Tesar PJ, Hatzoglou M, Martin DM, Scacheri PC (2010). CHD7 functions in the nucleolus as a positive regulator of ribosomal RNA biogenesis. *Hum Mol Genet* 19(18):3491-3501.
1. Schnetz MP, Bartels CF, Shastri K, Balasubramanian D, **Zentner GE**, Balaji R, Song L, Zhang X, Wang Z, LaFramboise T, Crawford GE, Scacheri PC (2009). Genomic distribution of CHD7 on chromatin tracks H3K4 methylation patterns. *Genome Res* 19(4):590-601.

## Reviews

6. Grünberg S, **Zentner GE** (2017). Genome-wide characterization of Mediator recruitment, function, and regulation. *Transcription* e1291082.
5. **Zentner GE**, Henikoff S (2014). High-resolution digital profiling of the epigenome. *Nat Rev Genet* 15(12):814-827.
4. **Zentner GE**, Henikoff S (2013). Regulation of nucleosome dynamics by histone modifications. *Nat Struct Mol Biol* 20(3):259-266.

3. **Zentner GE**, Henikoff S (2012). Surveying the epigenomic landscape, one base at a time. *Genome Biol* 13(10):250.
2. **Zentner GE**, Scacheri PC (2012). The chromatin fingerprint of gene enhancer elements. *J Biol Chem* 287(37):30888-30896.
1. **Zentner GE**, Layman WS, Martin DM, Scacheri PC (2010). Molecular and phenotypic aspects of *CHD7* mutation in CHARGE syndrome. *Am J Med Genet A* 152A(3):674-686.

#### **Commentaries/perspectives**

1. **Zentner GE**, Henikoff S (2015). Epigenome editing made easy. *Nat Biotechnol* 33(6):606-607.

#### **Book chapters**

1. Orsi GA, Kasinathan S, **Zentner GE**, Henikoff S, Ahmad K (2015). Mapping Regulatory Factors by Immunoprecipitation from Native Chromatin. *Curr Protoc Mol Biol* 110:21.31.1-21.31.25.

#### **Invited Presentations**

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8/22/16	Fred Hutchinson Cancer Research Center	Seattle, WA
6/30/15	Fred Hutchinson Cancer Research Center	Seattle, WA
1/28/15	University of Washington	Seattle, WA
6/8/11	9 <sup>th</sup> Int. Conf. on Pathways, Networks, and Systems Medicine	Chania, Greece

#### **Conference Proceedings**

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2016	American Society for Biochemistry and Molecular Biology Special Symposium on Transcriptional Regulation: Chromatin and RNA Polymerase II – poster presentation
2014	American Society for Biochemistry and Molecular Biology Special Symposium on Transcriptional Regulation: Chromatin and RNA Polymerase II – poster presentation
2014	Howard Hughes Medical Institute Scientific Meeting – poster presentation
2013	35 <sup>th</sup> Asilomar Chromatin and Chromosomes Conference – platform presentation
2013	Epigenetics & Chromatin: Interactions and Processes – platform presentation
2011	30 <sup>th</sup> Penn State Summer Symposium in Molecular Biology: Chromatin and Epigenetic Regulation of Transcription – poster presentation
2011	Miami 2011 Winter Symposium: Epigenetics in Development and Disease – poster presentation
2010	60 <sup>th</sup> annual meeting of the American Society of Human Genetics – poster presentation

#### **Research Support**

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##### **Active**

External Resubmission Faculty Research Support Program	2/8/2017-12/31/2017
“Assessment of genetic background and ecology on the efficacy of CRISPR-Cas9 gene drive and drive reversal safeguards”	
Role: co-PI (PI: Michael Wade, Indiana University)	
Direct costs: \$53,986	
Johnson Center for Innovation and Translational Research Pilot Grant	6/1/2016-5/31/2017
“Sustained controlled population collapse”	
Role: co-PI (PI: Michael Wade, Indiana University)	
Direct costs: \$50,000	
Indiana CTSI Pilot Funding for Research Use of Core Facilities	1/1/2016-12/31/2017
“Targeted interrogation of genomic interactions with a Cas9 fusion protein”	
Role: PI	
Direct costs: \$9,252	

##### **Teaching**

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2017-	BIOL-L 211: Molecular Biology
2016-	BIOL-Z 620: Bioinformatics2Go
2016	BIOL-Z 620: Methods in Epigenomics

## ***Trainees***

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Ms. Alaina Johnston, undergraduate researcher 2017-  
Mr. Andrej Sikoski, undergraduate researcher 2017-  
Ms. JiHye Kim, GCDB Ph.D. student 2017-  
Mr. Moustafa Saleh, GCDB Ph.D. student 2017-  
Dr. Sungyun Kang, postdoctoral fellow 2016-  
Mr. Wyatt Lee, undergraduate researcher 2016  
Mr. Logan Hille, undergraduate researcher 2016-  
Mr. Robert Policastro, GCDB Ph.D. student 2016-

## ***Professional Activities and Service***

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2017- Biology Departmental Planning Committee, Indiana University  
2017- Faculty advisory committee member, Center for Genomics and Bioinformatics,  
Indiana University  
2016-2017 Ad hoc reviewer, Indiana CTSI Core Pilot  
2016 Ad hoc reviewer, Wellcome Trust Sir Henry Wellcome Postdoctoral Fellowship  
2016- Editorial board member, *Scientific Reports*  
2015- Ad hoc reviewer for *Cell Reports*, *Epigenetics & Chromatin*, *G3: Genes | Genomes |  
Genetics*, *Genome Research*, *Human Molecular Genetics*, *International Review of  
Cell and Molecular Biology*, *Nucleic Acids Research*, *Nature Communications*, *PLOS  
ONE*, *Scientific Reports*