Trevor W. Siggers, PhD

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Education

Columbia University, New York, NY 09/1999 - 02/2006
Degree: Ph.D. (with Distinction) Biochemistry & Molecular Biophysics
Thesis: Aligning and Modeling Protein-DNA Interfaces: Towards an understanding of Protein-DNA binding specificity.
Advisor: Barry Honig, Ph.D., Columbia University, HHMI

Simon Fraser University, Vancouver, BC, Canada 09/1993 - 05/1999
Degree: B.Sc. (with Honors) Mathematical Physics

Post-doctoral Training

Brigham & Women's Hospital/ Harvard Medical School, Boston, MA 01/2006 - 06/2012
Advisor: Martha L. Bulyk, Ph.D

Appointments

Assistant Professor, Biology Dept., Boston University, Boston, MA 07/2012 - present

Programmatic Appointments

Member	BU MCBB Graduate Program	2012 - present
Member	BU Bioinformatics Graduate Program	2012 - present
Member	BU Biological Design Center (BDC)	2017 - present
Member	BUMC Immunology Training Program (ITP)	2018 - present

Grants/Awards

NIH (NIAID) R01 (PI)	2016 - 2020
NSF (IOS) Grant (co-PI)	2014 - 2018
Joslin Diabetes Center/BU Pilot Project Grant (PI)	2016 - 2017
NIH (NIAID) R56 (PI)	2015 - 2016
BU Genome Sciences Institute (GSI) Pilot Grant (PI)	2015 - 2016
Joslin Diabetes Center/BU Pilot Project Grant (PI)	2014 - 2015
American Cancer Society (ACS) Pilot Project Grant (PI)	2014 - 2015
BU Genome Sciences Institute (GSI) Pilot Grant (co-PI)	2013 - 2014
NIH (NIAID) K22 Research Scholar Development Award	2012 - 2014
NSF Postdoctoral Research Fellowship in Biological Informatics	2006 - 2008

Teaching

CAS BI 560: Systems Biology (*Developed as new course 2013*)
10 students Spring 2013

	8 students	Fall 2014
	16 students	Fall 2015
	34 students	Fall 2016
	23 students	Fall 2017
CAS BI 385: Immunology		
	69 students	Spring 2014
	73 students	Spring 2015
	130 students	Spring 2016
	131 students	Spring 2017
	143 students	Spring 2018

AIM Introduction to Medicine (BU Summer Program)
Infectious Disease Section (*Developed as new course 2015)*

50 students	Sum. 2015
50 students	Sum. 2016
50 students	Sum. 2017

Community Involvement

BU Biology Cell & Molecular (CM) Program Admissions Committee	2013 - present
BU Biology Department Seminar Series Organizing Committee	2015 - present
BU SMED Program Appeals Committee	2015 - present
BU Biology Faculty Search Committee	2016 search
BU Bioinformatics Graduate Program Admissions Committee	2014 - 2016
BU Biology Department Graduate Committee	2014 - 2016
BU Bioinformatics Graduate Program Curriculum Committee	2012 - 2015
BUMC SMED Program Admissions Committee	2014 - 2015
BUMC MMEDIC Program Admission Committee	2015
RCR Training Mentor	2013 - 2014

Mentoring Experience

Nima Mohaghegh (BU, Postdoctoral fellow)	01/2013 - present
BU Graduate Students	
Kellen Andrilenas	05/2013 - present
Ashley Penvose	05/2013 - present
Jessica Keenan	05/2013 - present
David Bray	05/2016 - present
BU Undergraduates	
Amanda Chaplin	09/2016 - present
Heather Dennett	01/2017 - 10/2017
Vijendra Ramlall (also as Lab Technician)	10/2012 - 08/2017
Kailyn Doiron	01/2015 - 06/2017

Matthew Caputo	01/2016 - 05/2016
David Mueller	01/2016 - 05/2016
Ryan Webster	09/2013 - 11/2015
Nicole Akramoff	09/2013 - 12/2015
Nanrui Tan	09/2014 - 05/2015
Brandon Leung	09/2014 - 12/2015
Jesse Kurland	01/2013 - 05/2014
Katherine Tooley	07/2013 - 05/2014
Michael Simpson	01/2013 - 05/2014
Kavin Zhu	01/2013 - 09/2013

Other

Bilal Ahmed (HST Program in Bioinformatics and Genomics)	06/2010 - 08/2010
Jessica Reddy (Lab Technician)	06/2008 - 08/2009
Sidra Khan (UROP, MIT Chem. Biological. Eng Senior)	06/2008 - 08/2008
Brian Ho (Rotation Student, Harvard BBS graduate program)	01/2008 - 05/2008
Michael Duyzend (HST Program in Bioinformatics and Genomics)	06/2007 - 08/2007

Journal Reviews

I have reviewed papers for the following peer-review journals: JMB, Bioinformatics, Molecular Systems Biology, Genome Biology, Genomics, Nucleic Acids Research, PLoS ONE, Journal of Inflammation, F1000Research

Publications (*in process)*

Bruno L, Ramlall V, Studer RA, Dharmalingam G, Chopin M, Nutt S, Elderkin S, Fisher AG, **Siggers T**, Beltrao P, Merkenschlager M (*in revision)* Functional differences and tissue-specific expression combine to explain the evolution of duplicated genes

Saini AS, Riddell J, Dienger-Stambaugh K, Andrilenas KK, Yukawa M, Barski A, **Siggers T**, Weirauch MT, Singh H (*in revision)* Signal integration in lymphocytes via convergent genomic actions of NFATs with IRF4 and IRF8

Publications

Mohaghegh N*, Bray D*, Keenan J, Penvose A, Andrilenas KK, Ramlall V, **Siggers T** (2018) Biophysical Principles of Lineage Factor PU.1 Binding Revealed by NextPBMs. BioRxiv doi.org/10.1101/328625

Andrilenas KK, Ramlall V, Kurland J, Leung B, Harbaugh AG, **Siggers T** (2018) DNA-binding landscape of IRF3, IRF5 and IRF7 dimers: implications for dimer-specific gene regulation. *Nucleic Acids Research* 46:2509-2520 (PMID:29361124)

Mansfield KM, Carter NM, Nguyen L, Cleves PA, Alshanbayeva A, Williams LM, Crowder C, Penvose AR, Finnerty JR, Weis VM, **Siggers T**, Gilmore TD (2017) Transcription factor NF-kB

is modulated by symbiotic status in a sea anemone model of cnidarian bleaching. *Scientific Reports* 7:16025 (PMID:29167511)

Kuzu G, Kaye EG, Chery J, **Siggers T,** Yang L, Dobson JR, Boor S, Bliss J, Liu W, Jogi, Rohs R, Singh ND, Bulyk ML, Tolstorukov MY, Larschan E (2016) Expansion of GA Dinucleotdie Repeats Increases the Density of CLAMP Binding Sites on the X-Chromosome to Promote Drosophila Dosage Compensation. *PLoS Genetics* 12:e1006120 (PMID:27414415)

Barrera LA, Vedenko A, Kurland JV, Rogers JM, Gisselbrecht SS, Rossin EJ, Woodard J, Mariani L, Kock KH, Inukai S, **Siggers T,** Shokri L, Gordan R, Sahni N, Cotsapas C, Hao T, Yi S, Kellis M, Daly MJ, Vidal M, Hill DE, Bulyk ML (2016) Survey of variation in human transcription factors reveals prevalent DNA binding changes *Science* 35:1450-1454 (PMID:27013732)

Menke C, Cionni M, **Siggers T**, Bulyk ML, Beier DR, Stottmann RW (2015) Grhl2 is required in nonneural tissue for neural progenitor survival and forebrain development. *Genesis* 53(9):573-582 (PMID:26177923)

Andrilenas K, Penvose A, **Siggers T.** Using protein-binding microarrays to study transcription factor specificity. (2015) *Briefings in Functional Genomics* 14:17-29 (PMID:25431149)

Siggers T, Gilmore T, Barron B, Penvose A. Characterizing the DNA binding sites specificity of NF-kB with Protein Binding Microarrays (PBM) (2015) *Methods in Molecular Biology* 128:609-630 (PMID:25736775)

Siggers T, Reddy J, Barron B, Bulyk ML. Diversification of transcription factor paralogs via noncanonical modularity in C2H2 zinc finger DNA binding (2014) *Molecular Cell* 55:640-648 (PMID:25042805)

Siggers T, Gordan R. Protein-DNA binding: complexities and multi-protein code (2014) *Nucleic Acids Research.* 42:2099-2111 (PMID:24243859)

Soruco MM, Chery J, Bishop EP, **Siggers T**, Tolstorukovv MY, Leydon AR, Sugden AU, Goebel K, Feng J, Xia P, Vedenko A, Bulyk ML, Park PJ, Larschan E. (2013) The CLAMP protein links the MSL complex to the X chromosome during Drosophila dosage compensation. *Genes & Development* 27(14):1551-1556 (PMID:23873939)

Siggers T*, Chang AB*, Teixeira A, Wong D, Williams KJ, Ahmed B, Ragoussis J, Udalova IA, Smale ST, Bulyk ML. (2012) Principles of dimer-specific gene regulation revealed by a comprehensive characterization of NF-κB family DNA binding. *Nature Immunology* 13(1):95-102 (PMID:22101729)

Siggers T, Duyzend MH, Reddy J, Khan S, Bulyk ML. (2011) Non-DNA-binding cofactors enhance DNA-binding specificity of a transcriptional regulatory complex. *Molecular Systems Biology* 7:555 (PMID:22146299)

Wong D, Teixeira A, Oikonomopoulos S, Humburg P, Lone IN, Saliba D, **Siggers T**, Bulyk ML, Angelov D, Dimitrov S, Udalova I, Ragoussis J. (2011) Extensive characterization of NF-KappaB binding uncovers non-canonical motifs and advances the interpretation of genetic functional traits *Genome Biol.* 12(7):R70 (PMID:21801342)

Rowan S*, **Siggers T***, Lachke SA, Yue Y, Bulyk ML, Maas RL. (2010) Precise temporal control of the eye regulatory gene Pax6 via enhancer binding site affinity *Genes Dev.* 24(10):980-985. (PMID:20413611)

Giorgetti L, **Siggers T**, Tiana G, Caprara G, Notarbartolo S, Corona T, Pasparakis M, Milani P, Bulyk ML, Natoli G (2010) Noncooperative interactions between transcription factors and clustered DNA binding sites enable graded transcriptional responses transcriptional responses to environmental inputs. *Mol. Cell.* 37(3):418-428. (PMID:20159650)

Viiri KM, Janis J, **Siggers T**, Heinonen TY, Valjakka J, Bulyk ML, Maki M, Lohi O (2009) DNA-binding and -bending activities of SAP30L and SAP30 are mediated by a zinc-dependent module and monophosphoinositides *Mol. Cell Biol.* 29:342-356.

Siggers T, Honig B (2007) Structure-based prediction of C2H2 zinc-finger binding specificity: sensitivity to docking geometry. *Nucleic Acids Res*. 35(5):1085-1097. (PMID:17264128)

Siggers T, Silkov T, Honig B (2005) Bending in the right direction. *Structure* 13:1400-1401. (PMID:16216570)

Siggers T, Silkov A, Honig B (2005) Structural alignment of protein-DNA interfaces: insights into the determinants of binding specificity. *JMB* 345(5):1027-1045. (PMID:15644202)

*Authors contributed equally