BIOGRAPHICAL SKETCH

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NAME	POSITION TITLE
J. Keith Joung	**Assistant Professor of Pathology (HMS)** **Assistant Pathologist (MGH)**
eRA COMMONS USER NAME	

EDUCATION/TRAINING *(Begin with baccalaureate or other initial professional education, such as nursing, and include postdoctoral training.)*

INSTITUTION AND LOCATION	DEGREE *(if applicable)*	YEAR(s)	FIELD OF STUDY
Harvard College	**A.B.**	**1987**	**Biochemical Sciences**
Harvard University	**Ph.D.**	**1996**	**Genetics**
Harvard Medical School	**M.D.**	**1996**	**Medicine**
Massachusetts Institute of Technology	**(Post-doc)**	**2001**	**Biology**

A. Positions and Honors

Positions and Employment:

1996-1999 Resident in Clinical Pathology, Massachusetts General Hospital (MGH), Boston, MA
1996-1999 Clinical Fellow in Pathology, Harvard Medical School (HMS), Boston, MA
1997 Chief Resident in Clinical Pathology, Massachusetts General Hospital, Boston, MA
1998-2001 Post-doctoral Fellow, Howard Hughes Medical Institute/Massachusetts Institute of Technology, Cambridge, MA
1999-2000 Research Fellow in Pathology, Massachusetts General Hospital, Boston MA
2000-2001 Co-Director, Molecular Diagnostics Laboratory, Massachusetts General Hospital, Boston, MA
2000-2004 Instructor in Pathology, Harvard Medical School, Boston, MA
2000- Assistant Pathologist, Massachusetts General Hospital, Boston, MA
2003- Member, Center for Cancer Research, Massachusetts General Hospital Cancer Center, Boston, MA
2004- Assistant Professor of Pathology, Harvard Medical School, Boston, MA
2004- Faculty member, Ph.D. program in Biological and Biomedical Sciences, Division of Medical Sciences, Harvard Medical School, Boston, MA
2006 Associate Director, Molecular Pathology Unit, Massachusetts General Hospital, Boston, MA
2007- Director, Molecular Pathology Unit, Massachusetts General Hospital, Boston, MA
2007- Member, Center for Computational and Integrative Biology, Massachusetts General Hospital, Boston, MA

Honors:

1987 Graduated *magna cum laude*, Harvard College
1989-1996 Medical Scientist Training Program (M.D.-Ph.D. Program) appointment, Harvard Medical School
1989-1994 Life and Health Insurance Medical Research Fund, M.D.-Ph.D. Scholarship Award
1990 & 1993 Distinction in Teaching, Derek Bok Center for Teaching and Learning, Harvard University
1996 Bernard N. Fields Prize in Microbiology and Molecular Genetics (for Ph.D. thesis), Harvard Medical School
1998-2000 Howard Hughes Medical Institute Postdoctoral Research Fellowship for Physicians
2000 Board Certification in Clinical Pathology, American Board of Pathology
2004-2005 Reviewer, Cancer Diagnostics and Treatments Special Emphasis Panel [CDT SEP- ONC 12] study section, National Cancer Institute, National Institutes of Health

B. Peer-reviewed publications (in chronological order):

Original Articles:

1. Ruben S, Perkins A, Purcell R, **Joung K**, Sia R, Burghoff R, Haseltine WA, Rosen CA. Structural and Functional Characterization of Human Immunodeficiency Virus tat Protein. *Journal of Virology* 1989; 63: 1-8.
2. **Joung JK**, Le LU, Hochschild A. Synergistic activation of transcription by the E. coli cAMP receptor protein. *Proc. Natl. Acad. Sci. USA*, 1993; 90: 3083-7.
3. **Joung JK,** Koepp DM, Hochschild A. Synergistic Activation of Transcription by Bacteriophage λ cI Protein and *E. coli* cAMP Receptor Protein. *Science* 1994; 265: 1863-6.
4. **Joung JK**, Chung EH, King G, Yu C, Hirsh AS, Hochschild A. Genetic strategy for analyzing specificity of dimer formation: *Escherichia coli* cyclic AMP receptor protein mutant altered in its dimerization specificity. *Genes and Development* 1995; 9: 2986-2996.
5. Dove SL, **Joung JK**, Hochschild A. Activation of prokaryotic transcription through arbitrary protein-protein contacts, *Nature* 1997; 386: 627-630.
6. **Joung JK**, Ramm EI, Pabo CO. A bacterial two-hybrid selection system for studying protein-DNA and protein-protein interactions, *Proc. Natl. Acad. Sci. USA* 2000; 97: 7382-7387.
7. Hurt, JA, Thibodeau SA, Hirsh AS, Pabo CO, **Joung JK**. Highly specific zinc finger proteins obtained by directed domain shuffling and cell-based selection, *Proc. Natl. Acad. Sci. USA* 2003; 100: 12271-12276.
8. Thibodeau SA, Fang R, **Joung JK**. An optimized high-throughput β-galactosidase assay for bacterial cell-based reporter systems, *Biotechniques* 2004; 36: 410-415.
9. Nguyen-Hackley DH, Ramm E, Taylor CM, **Joung JK**, Dervan PB, Pabo CO. Allosteric Inhibition of Zinc-Finger Binding in the Major Groove of DNA by Minor-Groove Binding Ligands, *Biochemistry* 2004; 43: 3880-3890.
10. Serebriiskii IG, Fang R, Latypova E, Hopkins R, Vinson C, **Joung JK**, Golemis EA. A combined yeast/bacterial two-hybrid system: development and evaluation, *Mol Cell Proteomics* 2005, 4: 819-826.
11. Vallet-Galy I, Donovan KE, Fang R, **Joung JK**, Dove SL. Repression of phase-variable *cupA* gene expression by H-NS-like proteins in *Pseudomonas aeruginosa*, *Proc. Natl. Acad. Sci. USA*, 2005, 102: 11082-11087.
12. Meng X, Smith RM, Giesecke AV, **Joung JK**, Wolfe SA. A counter-selectable marker for bacterial-based interaction trap systems, *Biotechniques*, 2006, 40: 179-184.
13. Giesecke AV, Fang R, **Joung JK**. Synthetic protein-protein interaction domains created by shuffling Cys2His2 zinc fingers, *Molecular Systems Biology*, 2006, doi: 10.1038/msb4100053
14. Wright DA, Thibodeau-Beganny S, Sander JD, Winfrey RJ, Hirsh AS, Eichtinger M, Fu F, Porteus MH, Dobbs D, Voytas DF, **Joung JK**. Standardized reagents and protocols for engineering zinc finger nucleases by modular assembly, *Nature Protocols*, 2006, 1: 1637-1652.

Review Articles/Book Chapters:

1. Hochschild A, **Joung JK** Synergistic activation of transcription in *Escherichia coli*. *Nucleic Acids and Molecular Biology* 1997; 11: 101-114.
2. Serebriiskii I, **Joung JK**. Yeast and Bacterial Two-hybrid Selection Systems for Studying Protein-protein Interactions. In: *Protein-Protein Interactions: A Molecular Cloning Manual*, E.A. Golemis, editor. Cold Spring Harbor Laboratory Press, 2001, pp. 93-142.
3. **Joung JK**. Identifying and modifying protein-DNA and protein-protein interactions using a bacterial two-hybrid selection system. *J. Cellular Biochem.* 2001, Supp 37: 53-57.
4. **Joung JK**, Lewandrowski KB. Laboratory Safety: An Overview. In: *Clinical Chemistry – Laboratory Management and Clinical Correlations*, KB Lewandrowski, editor. Lippincott Williams & Wilkins, 2002, pp. 40-50.
5. Thibodeau SA, **Joung, JK**. An improved strategy for constructing "designer" Cys2His2 zinc finger proteins, *Discovery Medicine* 2003, 3: 32-35.

6. Hirsh AS, **Joung JK**. Engineered Cys2His2 Zinc Finger DNA-Binding Domains, *Gene Therapy & Regulation* 2004, 2: 191-206.
7. Giesecke AV, **Joung JK**. A bacterial two-hybrid system for studying and modifying protein-protein interactions. In: *Protein-Protein Interactions: A Molecular Cloning Manual, 2nd ed.*, EA Golemis & P Adams, editors. Cold Spring Harbor Laboratory Press, 2005, pp. 195-216.
8. Thibodeau-Beganny S, **Joung JK**. Engineering Cys2His2 Zinc Finger Domains using a Bacterial Cell-Based Two-Hybrid Selection System, *Methods in Molecular Biology,* 2007, *in press*.

C. Research Support

Ongoing Research Support:

R01 GM069906 (Joung) 08/01/04-06/30/09
NIGMS/NIH
Studies of NRSF/REST zinc finger-DNA interactions
This grant award is aimed at studying protein-DNA interactions mediated by the NRSF/REST transcription factor.
Role: PI

R01 GM072621 (Joung) 04/01/05-03/31/09
NIGMS/NIH
Zinc Finger Protein-Protein Interactions
This grant award is aimed at performing structure, function, and design studies of protein-protein interactions mediated by zinc finger domains.
Role: PI

Completed Research Support:

5K08DK02883 (Joung) 09/01/00-06/30/05
NIH/NIDDK
Structural and Functional Characterization of WT1
This grant award is aimed at identifying physiologic nucleic acid and protein interaction partners of WT1.
Role: PI