BIOGRAPHICAL SKETCH

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NAME	POSITION TITLE
Shoelson, Steven E.	Section Head, Joslin Diabetes Center Professor of Medicine, Harvard Medical School
eRA COMMONS USER NAME (credential, e.g., agency login) STEVEN_SHOELSON	

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

INSTITUTION AND LOCATION	DEGREE *(if applicable)*	MM/YY	FIELD OF STUDY
Florida State University, Tallahassee, FL	BS	1973-76	Chemistry & Biology
University of Chicago, Chicago, IL	PhD	1976-80	Bioorganic Chemistry
University of Chicago, Chicago, IL	MD	1980-85	Medicine
Brigham and Women's Hospital, Boston, MA	Intern/Residency	1985-88	Internal Medicine
Joslin Diabetes Center/Harvard Medical School	Research Fellow	1986-88	Diabetes Research

A. Personal Statement

Studies in the Shoelson lab focus on the pathogenesis of diabetes and its complications, and potential new avenues for treatment. More than 10 years ago we rediscovered an arcane medical literature on the use of salicylate in diabetes, and have since developed this line of investigation to (1) better understand pathogenesis in insulin resistance, impaired β cell function, and T2D, (2) provide leads for pharmacological target identification and validation, and (3) develop potential new treatment strategies for patients with T2D and its microvascular complications. These studies led to our identifying both molecular (e.g. NF-κB) and cellular targets of salicylate, which include macrophages and other elements of the immune system. Preclinical and clinical trials are either underway or being considered, including a Phase III trial for T2D and the parent TINSAL-CVD trial in patients CAD. These studies are of direct potential value to both researchers in the field and patients with cardiovascular disease and diabetes.

B. Positions and Honors

Positions and Employment

1988- Investigator & Senior Investigator, Joslin Diabetes Center, Boston, MA.
1988-1991 Instructor in Medicine, Harvard Medical School, Boston, MA.
1991-1996 Assistant Professor in Medicine, Harvard Medical School, Boston, MA.
1991- Associate and Senior Physician, Brigham and Women's Hospital, Boston.
1993-1996 Active Staff, New England Deaconess Hospital, Boston
1996-2003 Associate Professor in Medicine, Harvard Medical School, Boston, MA.
1997- Active Staff, Beth Israel-Deaconess Medical Center, Boston.
1999- Department of Biological Chemistry and Molecular Pharmacology, Harvard Medical School.
2001- Faculty, Committee on Higher Degrees in Biophysics, Harvard University.
2002- Member, Biological and Biomedical Sciences Program, Harvard Medical School
2002- Section Head, Cellular and Molecular Physiology, Joslin Diabetes Center; name changed 2009 to Section on Pathology and Molecular Pharmacolgy.
2002- Helen and Morton Adler Chair, Joslin Diabetes Center.
2003- Associate Research Director, Joslin Diabetes Center.
2003- Professor of Medicine, Harvard Medical School.

Honors (selected)

1976	Phi beta kappa and magna cum laude graduate, Florida State University.
1984	American Medical Association: National Award for Excellence in Clinical Research by a Student.
1984	American Diabetes Association: National Award for Excellence in Research by a Student.
1984	Mead Johnson Award for Outstanding Achievement by a Student in Clinical and Basic Science.
1985	Honors graduate and John van Prohaska Award for Outstanding Potential in Teaching, Research and Clinical Medicine, University of Chicago Pritzker School of Medicine.
1988	American Federation of Clinical Research, Outstanding Trainee Award.
1988-1992	Research and Development Award, American Diabetes Association.
1989-1991	Capps Scholar in Diabetes, Harvard Medical School.
1991-1994	Career Development Award, Juvenile Diabetes Foundation.
1993	Elected Member, American Society of Clinical Investigation.
1995	Burroughs-Wellcome Fund Scholar Award in Experimental Therapeutics.
1995	Juvenile Diabetes Foundation/Boehringer Mannheim Diabetes Care Research Award.
2003	Elected Member, Association of American Physicians.
2005	MERIT Award from NIH/NIDDK.
2006	Michaela Modan Memorial Award of the American Diabetes Association (shared).
2008	The Caledonian Prize of the Royal Society of Edinburgh.
2010	Nature Biotechnology Award for Outstanding Research Achievement.

Honorary Lectureships (selected)

1994	Fuller G. Sherman Lectureship, Jefferson Medical College, Philadelphia, PA
2002	Honorary Lectureship, Physician Scientist Training Program, Washington Univ, St. Louis, MO.
2004	Distinguished Lecturer, Harvard School of Public Health, Genetics and Complex Diseases.
2005	Stedman Center - GSK Visiting Professorship in Metabolic Research, Duke University.
2006	Ray A. and Robert L. Kroc Professorship in Diabetes, University of Alabama.
2007	Herbert Chasis Memorial Lectureship and Medical Grand Rounds, New York University.
2008	The Herman O. Mosenthal Lectureship, Eastern Regional American Diabetes Association.
2010	Frank and Sheila Thompson Lectureship in Endocrinology, Texas A&M University and Scott & White Hospital, Temple, TX.
2010	Ray A. and Robert L. Kroc Lectureship in Diabetes & Obesity, University of Washington, Seattle.
2011	MSTP Distinguished Lectureship, University of Virginia Medical Scientist Training Program, Charlottesville, VA

C. Selected Peer-reviewed Publications

Shoelson SE, Haneda M, Blix P, Nanjo A, Sanke T, Inouye K, Steiner D, Rubenstein A and Tager H (1983) Three mutant insulins in man. **Nature** *302*, 540-3. PMID6339950

Eck MJ, Dhe-Paganon S, Trub T, Nolte R and Shoelson SE (1996) Structure of the IRS-1 PTB domain bound to the juxtamembrane region of the insulin receptor. **Cell** *85*, 695-05. PMID8646778

Hof P, Pluskey S, Dhe-Paganon S, Eck MJ and Shoelson SE (1998) Crystal structure of the tyrosine phosphatase SHP-2. **Cell** 92, 441-50. PMID9491886

Dhe-Paganon S, Ottinger E, Nolte R, Eck MJ and Shoelson SE. (1999) Crystal structure of the PH-PTB targeting region of IRS-1. **PNAS** *96***,** 8378-83. PMID10411883

Yuan M, Konstantopoulos N, Lee J, Hansen L, Li ZW, Karin M and Shoelson SE (2001) Reversal of obesity- and diet-induced insulin resistance with salicylates or targeted disruption of *Ikk*β. **Science** *293*, 1673-7. PMID11533494

Chi Y-I, Frantz JD, Oh B-C, Hansen L, Dhe-Paganon S and Shoelson SE (2002) Diabetes mutations delineate an atypical POU domain in HNF-1α. **Molecular Cell** *10*, 1129-37. PMID12453420

Werner ED, Lee J, Hansen L, Yuan M and Shoelson SE. (2004) Insulin resistance due to phosphorylation of IRS-1 at serine 302. **J Biol Chem.** *279*, 35298-305. PMID15199052

Duda K, Chi YI, and Shoelson SE (2004) Structural basis for HNF-4α activation by ligand and coactivator binding. **J Biol Chem.** *279*, 23311-6. PMID14982928

Cai D, Frantz JD, Tawa NE, Melendez PA, Oh B-C, Lidov HGW, Hasselgren P-O, Frontera WR, Lee J, Glass DJ, Shoelson SE (2004) IKKβ/NF-κB activation causes severe muscle wasting in mice. **Cell** *119*, 285-98. PMID15479644

Cai D, Yuan M, Frantz JD, Melendez PA, Hansen L, Lee J and Shoelson SE. (2005) Local and systemic insulin resistance due to hepatic activation of IKKβ and NF-κB. **Nature Medicine** *11*, 183-90. PMID15685173

Shoelson SE, Lee J and Goldfine AB (2006) Inflammation and insulin resistance. **J Clin Invest.** *116*,1793-801. PMID16823477

Goldfine AB, Silver R, Aldhahi W, Cai D, Lee J and Shoelson SE (2008) Use of salsalate to target inflammation in the treatment of insulin resistance and type 2 diabetes. **Clin Translational Sci.** *1*, 36-43. PMID19337387

Feuerer M, Herrero L, Cipoletta D, Naaz A, Wong J, Nayer A, Lee J, Goldfine A, Benoist C, Shoelson SE, and Mathis D. 2009. Lean, but not obese, fat is enriched for a unique population of regulatory T cells that affect metabolic parameters. **Nature Medicine** *15*, 930-9. PMID19633656

Herrero L, Shapiro H, Nayer A, Lee J, and Shoelson SE. (2009) Inflammation and adipose tissue macrophages in lipodystrophic mice. **PNAS.** *107*, 240-5. PMID2806777

Goldfine AB, Fonseca V, Jablonski KA, Pyle L, Staten MA, Shoelson SE. (2010) The effects of salsalate on glycemic control in patients with type 2 diabetes: A parallel randomized trial. **Annals Intern Med**, *152*, 346-57. PMID20231565.

Park S-Y, Jin W, Woo JR and Shoelson SE. (2011) Crystal structures of TBC1D1 and TBC1D4 (AS160) RabGAP domains reveal critical elements for GLUT4 translocation. J Biol Chem. *In press.*

D. Research Support

Ongoing Research Support

R37 DK51729 **(PI: Shoelson)** 9/21/96 – 6/30/11
"Mediators and modifiers of NF-κB in insulin resistance"
Assesses specific NF-κB targets as mediators of obesity induced inflammation.
Role: PI

U01 DK74556 **(PI: Shoelson)** 9/4/06 – 6/30/11
"TINSAL-T2D: Clinical Trial to Target Inflammation Using Salsalate in Type 2 Diabetes"
This clinical trial determines whether the anti-inflammatory drug salsalate has clinical efficacy in type 2 diabetes. ***It does not provide resources for the Shoelson lab.***
Role: PI

P50 HL83813 **(PD: Welty)** 7/1/06 – 4/30/11
"Metabolic Syndrome, Inflammation and Vascular Remodeling" (Welty: Program Director)
Clinical trial to determine whether targeting inflammation reduces rate of progression in atherosclerosis.
Role: PI, project 1 "preclinical studies of salicylate in atherosclerosis."

RC4 DK73547 **(PI: Shoelson)** 9/30/10 – 9/29/12
"Mechanism-Based Biomarkers for Glucose-Lowering in TINSAL-T2D"
Genomic profiling to assess effects of salicylate on patient leukocyte mRNA expression.
Role: PI

Completed Research Support

Dana Foundation for Immunological Research (PI: Shoelson) 1/01/08 – 12/31/09
Macrophages and Tregs in Adipose Tissue Inflammation
Role: PI

R01 DK45943 **(PI: Shoelson)** 8/01/96 – 12/31/09
"Tissue-specific effects of IKKβ and NF-κB in insulin resistance"
Genetic models determine the tissues involved in inflammation-mediated insulin resistance and diabetes.
Role: PI

R01 DK73547 **(PI: Shoelson)** 2/15/06 – 1/31/11
"TLR activation of NF-κB in insulin resistance and T2DM"
Assesses upstream activators of NF-κB targets in obesity induced inflammation, insulin resistance and T2DM.
Role: PI