RICHARD W. ROBERTS
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Professional Preparation

B.S.	Chemistry, University of Kansas, Lawrence, KS	1987
Ph.D.	Biophysical Chemistry, Yale University, New Haven, CT	1993
Postdoctoral Fellow	Harvard Medical School/MGH, Boston, MA	1993-97

Appointments

University of Southern California—Chair, Chem. Eng. and Mat. Sci.	2014-present
University of Southern California—Professor	2009-present
University of Southern California—Associate Professor	2006-2009
California Institute of Technology—Senior Research Associate	2005
California Institute of Technology—Assistant Professor	1997-2005

Five Closely Related Publications

1. C. Anders Olson , J. Nie, J. Diep, J., I. Al-Shyoukh, Terry T. Takahashi, L. Q. Al-Mawsawi, J. M. Bolin A. L. Elwell, S. Swanson, Swanson, R. Stewart, J. A. Thomson, H. Tom Soh, **Richard W. Roberts**, and Ren Sun (2012) Single-Round, Multiplexed Antibody Mimetic Design through mRNA Display, Angew Chem Int Ed Engl 51, 12449-12453.
2. C. Anders Olson, J. D. Adams, Terry T. Takahashi, H. Qi, Shannon M. Howell, T. T. Wu, Richard W. Roberts, Ren Sun, and H. Tom Soh, "Rapid mRNA-Display Selection of an IL-6 Inhibitor Using Continuous-Flow Magnetic Separation," *Angew Chem Int Ed Engl*. **50**, 8295-8298 (2011).
3. Fumiaki N. Ishikawa, Marco Curreli, C. Anders Olson, Hsiang-I Liao, Ren Sun, **Richard W. Roberts**, Richard J. Cote, Mark E. Thompson, and Chongwu Zhou* "Importance of Controlling Nanotube Density for Highly Sensitive and Reliable Biosensors Functional in Physiological Conditions" *ACS Nano*, **4**, 6914–6922 (2010).
4. Stephen V. Fiacco and **Richard W. Roberts***. N-Methyl Scanning Mutagenesis Generates G-protein Core Motifs with Protease Resistance, Increased Binding Affinity, and Enhanced Selectivity. *ChemBioChem* **9** 2200-3 (2008). [PMCID: PMC2962921]
5. Steven W. Millward, Stephen V. Fiacco, Ryan J. Austin, and **Richard W. Roberts***. "Design of Cyclic Peptides that Bind Protein Surfaces with Antibody-Like Affinity." *ACS Chem. Biol.* **2** 625-34 (2007). [PMID: 17894440]

Five Additional Publications

6. Fumiaki N. Ishikawa, Hsiao-Kang Chang, Marco Curreli, Hsiang-I Liao, C. Anders Olson, Po-Chiang Chen, Rui Zhang, **Richard W. Roberts**, Ren Sun, Richard J. Cote, Mark E. Thompson,* Chongwu Zhou*Label Free, Electrical Detection of the SARS Virus N-Protein Utilizing Nanowire Biosensors and 10FnIII Antibody Mimics as Capture Probes, *ACS Nano* **3** (5) 1219-1224 (2009).
7. C. Anders Olson, Hsiang-I Liao, Ren Sun, and **Richard W. Roberts*** "Phosphospecific 10FnIII Intrabodies Targeting IκB" *ACS Chemical Biology* **3** 480-485 (2008).
8. Hsiang-Yi Liao, C. Anders Olson, **Richard W. Roberts** and Ren Sun* "10FnIII Intrabodies Targeting SARS Nucleocapsid Protein Synergistically Inhibit Virus Production" *J.Biol. Chem.* 284 (26) 17512-20 (2009).
9. William W. Ja, Anthony West, Sylvia Delker, Pamela Bjorkman, Seymour Benzer, and **Richard W. Roberts* "**Extension of Drosophila lifespan using a selected peptide inhibitor of the Methuselah G protein-coupled receptor" *Nature Chemical Biology* **3** 415-419 (2007). [PMCID: PMC2803097]
10. Ryan J. Austin, William W. Ja, and **Richard W. Roberts*** "Evolution of class-specific peptides targeting a hot spot of the Gas subunit. *Journal of Molecular Biology* **377** 1406-18 (2008). [PMCID: PMC2891084]

Synergistic Activities

My lab is currently engaged in two NIH funded projects: 1) one to developing high throughput approaches to create new ligands on a proteomic scale and 2) one to target "undruggable" cancer relevant proteins. The second project involves creating new cyclic peptide probes to modulate and explore and control protein signaling. **Eleven former members of my laboratory currently have faculty positions**. I have done several types of service to the scientific community, including as an editorial board member of *Molecular and Cellular Proteomics*, several NIH and NSF review panels, and section organizer at several conferences. In the area of outreach, for the past 10 years, I have spent a day giving "Mr. Science" presentations to ~550 K-5 students at Monterey Hills Elementary illustrating the forms of matter, acid/base chemistry, pigments, chromatography and photosynthesis.

Honors and Awards

1. USC Viterbi School of Engineering Use-Inspired Research Award
2. Alfred P. Sloan Foundation Research Fellowship (2001-03)
3. NSF Presidential Early Career Award in Science and Engineering (PECASE) (1999-04)
4. Beckman Young Investigator (1998-00)

Collaborators and other Affiliations

(i) Collaborations (Last 48 Months):
(external to USC): David Baltimore, Caltech; Ren Sun, UCLA; H. Tom Soh, UCSB; Brian Kobilka, Stanford; Nilhab Shastri (UC Berkeley), Stephen Sprang, U. Montana; Pamela Bjorkman, Caltech, Jamie Thompson, U. Wisconsin.

(ii) Advisors:
Undergraduate: Prof. Richard Givens, University of Kansas
Graduate: Prof. Donald M. Crothers, Yale University
Postdoctoral: Prof. Jack Szostak, Harvard Medical School/MGH.

Current Graduate Students: Mehmet Cetin (6th), Farzad Jalali-Yazdi (5th), Aaron Nichols (4th), Lan Huong Lai (4th), Will Evenson (1st), Paymaneh Malihi (1st year), John Mac (3rd) *Total: 7*

Current Postdoctorals/Research Faculty: Shannon Howell,Terry Takahashi, *Total: 2*

Current Undergraduates: Zhiyin Qin (senior), Chris Hughes (junior), Karl Heyer (junior), Makana Krulce (senior), Aleczandria Tiffany (senior), Cynthia Wang (senior), *Total: 6*

Past Graduate Advisees: Todd Thorsen (Asst. Prof. MIT); Shuwei Li (Postdoc, UTSW; Asst. Prof CARB, U. Maryland), Shelley R. Starck (Postdoc, U.C. Berkeley, UCSF); William W. Ja (Asst. Prof. Scripps Florida); Terry Takahashi (Asst. Prof. USC); Xin Qi (Postdoc, UTSW, Scripps Florida, Asst. Prof. U. Florida), Christine Ueda (DE Shaw Research), Ryan Austin (Postdoc, USC; Postdoc ISB), Steven Millward (Asst. Prof. MD Anderson Cancer Center) C. Anders Olson (Postdoc, USC, Postdoc, UCSB/UCLA), Steve Fiacco (Postdoc, USC), Kuo-Chan Hung (Postdoc, NEB), Shannon Howell, (Postdoc, USC). *Total: 13*

Past Postdoctoral Advisees: Adam Frankel (Asst. Prof. UBC); Tianbing Xia (Asst. Prof. U. Texas, Dallas), Jinsong Ren (Prof. Changchung Institute), Niki Zacharias (Asst. Prof. MD Anderson Cancer Center), Quan Chen (Assoc. Prof. USTC China) Stephen Fiacco.. *Total: 6*

Past Undergraduate Advisees: (partial list) Jeffrey Barrick (Ph.D., Yale Univ.; NSF Postdoc. Fellow Mich. St. Univ., Asst. Prof. UT Austin), Tom Snyder (Ph.D., Harvard University, Postdoc Stanford), Nancy Guillen (Ph.D. program, MIT), Jennifer Treweek, (Ph.D., TSRI, Postdoctoral Fellow, TSRI), Brett Olsen (Ph.D., Postdoc Washington Univ.), Binghai Ling (MSTP program, UCLA Med.), Ross Massey, Di Hu, Clarence Lee, Cindy Chen, Christopher Kurtz (M.D., Mayo Clinic), Julie N. Robles (M.D. Program, UCSD), John Martin, Miranda Timmons (Antidoping Research), Matthew Alexander (UMSL), Yonatan Peleg (USC Salutatorian, M.D. Program Columbia University) *Total: 28*