

Stanford



Markus Covert

Associate Professor of Bioengineering and, by courtesy, of Chemical and Systems Biology

Bio

BIO

Our focus is on building computational models of complex biological processes, and using these models to guide an experimental program. Such an approach leads to a relatively rapid identification and validation of previously unknown components and interactions. Biological systems of interest include metabolic, regulatory and signaling networks as well as cell-cell interactions. Current research involves the dynamic behavior of NF-kappaB, an important family of transcription factors whose aberrant activity has been linked to oncogenesis, tumor progression, and resistance to chemotherapy.

ACADEMIC APPOINTMENTS

- Associate Professor, Bioengineering
- Associate Professor (By courtesy), Chemical and Systems Biology
- Member, Bio-X
- Faculty Fellow, Stanford ChEM-H

HONORS AND AWARDS

- Ezra Taft Benson Presidential Scholar, Brigham Young University (1991-1997)
- Robert Black Postdoctoral Fellow, Damon Runyon Cancer Research Foundation (2004-2006)

PROFESSIONAL EDUCATION

- Ph.D., UCSD , Bioengineering/ Bioinformatics (2003)
- M.S., UCSD , Bioengineering (2002)
- B.S., Brigham Young University , Chemical Engineering (1997)

LINKS

- Lab Website: <https://www.covert.stanford.edu/>

Research & Scholarship

CURRENT RESEARCH AND SCHOLARLY INTERESTS

Our focus is on building computational models of complex biological processes, and using these models to guide an experimental program. Such an approach leads to a relatively rapid identification and validation of previously unknown components and interactions. Biological systems of interest include metabolic, regulatory and signaling networks as well as cell-cell interactions. Current research involves the dynamic behavior of NF-kappaB, an important family of transcription factors whose aberrant activity has been linked to oncogenesis, tumor progression, and resistance to chemotherapy.

Teaching

COURSES

2018-19

- Bon Appétit, Marie Curie! The Science Behind Haute Cuisine: BIOE 32Q (Spr)
- Systems Biology: BIOE 101, BIOE 210 (Aut)

2017-18

- Bon Appétit, Marie Curie! The Science Behind Haute Cuisine: BIOE 32Q (Spr)
- Electricity, Magnetism and Optics with Laboratory: OSPPARIS 53 (Win)

2016-17

- Bon Appétit, Marie Curie! The Science Behind Haute Cuisine: BIOE 32Q (Spr)

2015-16

- Bon Appétit, Marie Curie! The Science Behind Haute Cuisine: BIOE 32Q (Spr)

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STANFORD ADVISEES

Doctoral Dissertation Reader (AC)

Hannah Kempton

Postdoctoral Faculty Sponsor

Eran Agmon, Taryn Gillies

Doctoral Dissertation Advisor (AC)

Mialy DeFelice, Stevan Jeknic

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GRADUATE AND FELLOWSHIP PROGRAM AFFILIATIONS

- Bioengineering (Phd Program)
- Biomedical Informatics (Phd Program)
- Chemical and Systems Biology (Phd Program)

Publications

PUBLICATIONS

- **Live-cell measurements of kinase activity in single cells using translocation reporters** *NATURE PROTOCOLS*
Kudo, T., Jeknic, S., Macklin, D. N., Akhter, S., Hughey, J. J., Regot, S., Covert, M. W.
2018; 13 (1): 155–69
- **Deep Learning Automates the Quantitative Analysis of Individual Cells in Live-Cell Imaging Experiments.** *PLoS computational biology*
Van Valen, D. A., Kudo, T., Lane, K. M., Macklin, D. N., Quach, N. T., DeFelice, M. M., Maayan, I., Tanouchi, Y., Ashley, E. A., Covert, M. W.
2016; 12 (11)
- **High-sensitivity measurements of multiple kinase activities in live single cells.** *Cell*
Regot, S., Hughey, J. J., Bajar, B. T., Carrasco, S., Covert, M. W.
2014; 157 (7): 1724–1734

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