

ALEX SIGAL

Max Planck Group Leader and Assistant Investigator
K-RITH
719 Umbilo Road, Durban, 4001, South Africa

alexander.sigal@gmail.com
(626) 864-2911
<http://www.sigallab.net/>

EDUCATION

Ph.D. (2006). The Weizmann Institute of Science
Systems Biology. Advisor: Uri Alon.

M.Sc. (2000). The Weizmann Institute of Science
p53 and Cancer. Advisor: Varda Rotter.

B.Sc. (1996). University of Toronto

POSTDOCTORAL TRAINING

California Institute of Technology (January 2007 – Present)
HIV reservoirs and evolution. Advisor: David Baltimore.

The Weizmann Institute of Science (2006)
Quantitative behavior of endogenous proteins in human cells. Advisor: Uri Alon.

INTERESTS

Systems analysis of reservoir mechanisms in TB and HIV infection.

RESEARCH EXPERIENCE

Postdoctoral Scholar with David Baltimore at the California Institute of Technology, 2007 – Present.

- HIV reservoirs.

HIV Facility Manager at the Baltimore laboratory, 2009 – Present.

Postdoctoral Scholar and Doctoral Student with Uri Alon at the Weizmann Institute of Science, 2001 – 2006.

- Cell-to-cell variability in human cells.
- Dynamic proteomics in individual living cells.

Master's Student with Varda Rotter at the Weizmann Institute of Science, 1997 – 2000.

- Oncogenic gain of function of p53 tumor suppressor mutants.

Rotation Student with Ronen Alon at the Weizmann Institute of Science, 1997.

- Role of the integrin LFA-1 in immune cell homing to infection sites.

PUBLICATIONS

1. **Sigal A***, Baltimore D. As Good As It Gets? The Problem of HIV Persistence despite Antiretroviral Drugs. *Cell Host Microbe*. 2012 Aug 16;12(2):132-8. *Corresponding author.
2. Puliafito A, Hufnagel L, Neveu P, Streichan S, **Sigal A**, Fygenon DK, Shraiman BI. Collective and single cell behavior in epithelial contact inhibition. *Proc Natl Acad Sci U S A*. 2012 Jan 17;109(3):739-44.
3. Farkash-Amar S, Eden E, Cohen A, Geva-Zatorsky N, Cohen L, Milo R, **Sigal A**, Danon T, Alon U. Dynamic Proteomics of Human Protein Level and Localization across the Cell Cycle. *PLoS One*. 2012;7(11):e48722.
4. **Sigal A**, Kim JT, Balazs AB, Dekel E, Mayo A, Milo R, Baltimore D. Cell-to-cell spread of HIV permits ongoing replication despite antiretroviral therapy. *Nature*. 2011 Sep 1;477(7362):95-8.
5. Frenkel-Morgenstern M, Cohen AA, Geva-Zatorsky N, Eden E, Prilusky J, Issaeva I, **Sigal A**, Cohen-Saidon C, Liron Y, Cohen L, Danon T, Perzov N, Alon U. Dynamic Proteomics: a database for dynamics and localizations of endogenous fluorescently-tagged proteins in living human cells. *Nucleic Acids Res*. 2009 Oct 9.
6. Cohen-Saidon C, Cohen AA, **Sigal A**, Liron Y, Alon U. Dynamics and Variability of ERK2 Response to EGF in Individual Living Cells. *Molecular Cell*. 2009 Dec 11;36(5):885-93.
7. Cohen AA, Kalisky T, Mayo A, Geva-Zatorsky N, Danon T, Issaeva I, Kopito RB, Perzov N, Milo R, **Sigal A**, Alon U. Protein dynamics in individual human cells: experiment and theory. *PLoS One*. 2009;4(4):e4901.
8. Cohen AA, Geva-Zatorsky N, Eden E, Frenkel-Morgenstern M, Issaeva I, **Sigal A**, Milo R, Cohen-Saidon C, Liron Y, Kam Z, Cohen L, Danon T, Perzov N, Alon U. Dynamic Proteomics of Individual Cancer Cells in Response to a Drug. *Science*. 2008 Dec 5;322(5907):1511-6.
9. **Sigal A***, Danon T, Cohen A, Milo R, Geva-Zatorsky N, Lustig G, Liron Y, Alon U, Perzov N. Generation of a fluorescently labeled endogenous protein library in living human cells. *Nat Protoc*. 2007;2(6):1515-27. *Corresponding author.
10. Lavelle C, **Sigal A**. Systems biology meets chromatin function: a report on the Fourth Elmau Conference on Nuclear Organization. *Chromosome Res*. 2007;15(2):247-56.
11. **Sigal A**, Milo R, Cohen A, Geva-Zatorsky N, Klein Y, Liron Y, Rosenfeld N, Danon T, Perzov N, Alon U. Variability and memory of protein levels in human cells. *Nature*. 2006 Nov 30;444(7119):643-6.
12. **Sigal A**, Milo R, Cohen A, Geva-Zatorsky N, Klein Y, Alaluf I, Swerdlin N, Perzov N, Danon T, Liron Y, Raveh T, Carpenter AE, Lahav G, Alon U. Dynamic proteomics in individual human cells uncovers widespread cell-cycle dependence of nuclear proteins. *Nat Methods*. 2006 Jul;3(7):525-31.

13. Geva-Zatorsky N, Rosenfeld N, Itzkovitz S, Milo R, **Sigal A**, Dekel E, Yarnitzky T, Liron Y, Polak P, Lahav G, Alon U. Oscillations and variability in the p53 system. *Mol Syst Biol*. 2006;2:2006 0033.
14. **Sigal A**, Rotter V. The oncogenic activity of p53 mutants. Zambetti G, editor. New York: Springer; 2005.
15. Lahav G, Rosenfeld N, **Sigal A**, Geva-Zatorsky N, Levine AJ, Elowitz MB, Alon U. Dynamics of the p53-Mdm2 feedback loop in individual cells. *Nat Genet*. 2004 Feb;36(2):147-50.
16. **Sigal A**, Matas D, Almog N, Goldfinger N, Rotter V. The C-terminus of mutant p53 is necessary for its ability to interfere with growth arrest or apoptosis. *Oncogene*. 2001 Aug 9;20(35):4891-8.
17. Seluanov A, Gorbunova V, Falcovitz A, **Sigal A**, Milyavsky M, Zurer I, Shohat G, Goldfinger N, Rotter V. Change of the death pathway in senescent human fibroblasts in response to DNA damage is caused by an inability to stabilize p53. *Mol Cell Biol*. 2001 Mar;21(5):1552-64.
18. Matas D, **Sigal A**, Stambolsky P, Milyavsky M, Weisz L, Schwartz D, Goldfinger N, Rotter V. Integrity of the N-terminal transcription domain of p53 is required for mutant p53 interference with drug-induced apoptosis. *EMBO J*. 2001 Aug 1;20(15):4163-72.
19. **Sigal A**, Rotter V. Oncogenic mutations of the p53 tumor suppressor: the demons of the guardian of the genome. *Cancer Res*. 2000 Dec 15;60(24):6788-93.
20. **Sigal A**, Bleijs DA, Grabovsky V, van Vliet SJ, Dwir O, Figdor CG, van Kooyk Y, Alon R. The LFA-1 integrin supports rolling adhesions on ICAM-1 under physiological shear flow in a permissive cellular environment. *Journal of Immunology*. 2000 Jul 1;165(1):442-52.

FELLOWSHIPS AND AWARDS

John F. Kennedy prize for outstanding Ph.D.

European Molecular Biology Organization (EMBO) Fellowship.

Human Frontier Science Program (HFSP) Fellowship.

PATENT

WO 2009/093242 A2 – Cell populations for polypeptide analysis and uses of same.

SELECTED TALKS

The Aaron Diamond AIDS Research Center Seminar Series, New York, USA (2012).
“Reservoirs of HIV infection in the face of antiretroviral therapy”.

The 18th West Coast Retrovirus Meeting, Palm Springs, USA (2011). "Cell-to-cell HIV spread allows intermittent ongoing replication in the face of antiretroviral drugs".

4th q-bio Conference on Cellular Information Processing, Santa Fe, USA (2010). "Direct cell-to-cell transmission of HIV confers resistance to therapy and may produce a virus reservoir".

17th Conference on Retroviruses and Opportunistic Infections, San Francisco, USA (2010). "Direct cell-to-cell HIV transfer is insensitive to ART at high drug concentrations".

HIV, Viruses and their Hosts: A Systems Biology Approach. Institute for Advanced Study, Princeton, USA (2008). "Time to evolution of drug resistance depends on whether drugs target infection frequency or burst size".

The 10th International Conference on Molecular Systems Biology, Manila, Philippines (2008). "Variability dynamics of protein levels in human cells".

1st q-bio Conference on Cellular Information Processing, Santa Fe, USA (2007). "Variability dynamics of protein levels in human cells".

EMBO Workshop on Nuclear Organization: Systems Biology Meets Chromatin Function. Gosau, Austria (2006). "Variability and memory in human cells".

Systems Biology of Mammalian Cells. Heidelberg, Germany (2006). "Memory in human cells".

European Symposium on Biochemical Engineering Science. Stuttgart, Germany (2004). "Dynamic proteomics in living human cells reveal extensive cell cycle dependence of nuclear proteins".

TEACHING

Instructor, flow cytometry course at the Weizmann Institute of Science (2005-2006).

Instructor, HIV facility training course at the California Institute of Technology (2009-2011).