

David Sprinzak

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Education

Period of study	Name of University	Subject	Degree	Date of award
1991-1994	The Hebrew University, Jerusalem	Physics and Math	B.Sc. (cum Laude)	1994
1994-1996	Weizmann Institute of Science, Rehovot	Physics	M.Sc.	1996
1996-2001	Weizmann Institute of Science, Rehovot	Physics	Ph.D.	2003

Title of Master's thesis: Ballistic motion of holes and phonon replicas in lightly doped GaAs
Names of Supervisor: Prof. Moty Heiblum

Title of doctoral dissertation: Coherent effects and decoherence in semiconductor quantum dots
Name of Supervisor: Prof. Moty Heiblum

Employment and Research Experience

Visiting Ph.D. student, (1996-1997). Stanford University, California, USA. Department of Physics.
Advisors: Moty Heiblum (Weizmann), Charles Marcus (Stanford).

Head of physics and engineering, (2001-2004). Qantomix Ltd., Rehovot, Israel.
In charge of developing WetSEM product line for imaging wet biological samples in a scanning electron microscope.

Postdoctoral scholar, (2004-present). California Institute of Technology, California, USA. Division of Biology.
Advisor: Michael Elowitz.

Research Interests

I am interested in understanding how complex multicellular developmental processes are encoded and controlled by the intracellular genetic circuits underlying these processes. Experimentally, this question is addressed through the construction of simplified synthetic developmental circuits in

mammalian cells and studying their dynamics through time lapse microscopy. My current focus is on developmental processes controlled by Notch signaling.

Academic Honors and Awards

- 2008 Recipient of the Baxter fellowship for senior postdoctoral fellows
- 2006 Recipient of the Ruth L. Kirschstein NIH award for individual postdoctoral fellows.
- 2005 Fellow of the Information Science and Technology Center in Caltech
- 2004/2005 Rothschild postdoctoral fellowship
- Vatat Scholarship for outstanding PhD students, 2000-2001, Weizmann Institute, Rehovot.
- Intel-Dean Prize for outstanding students, 1993/4, Hebrew University, Jerusalem.
- Dean's list 1991/2, 1992/3, 1993/4, Hebrew University, Jerusalem.

Articles

1. I. Felner, **D. Sprinzak**, U. Asaf, and T. Kröner
Crossover from two-dimensional to three-dimensional magnetic structure in $\text{Pr}_{1.5}\text{Ce}_{0.5}\text{Sr}_2\text{GaCu}_2\text{O}_9$,
Phys. Rev. B **51**, 3120-3127 (1995).
IF: 3.322 cited: 6.
2. **D. Sprinzak**, M. Heiblum, H. Shtrikman
Ballistic Transport of Holes and Phonon Replicas in lightly doped GaAs
Phys. Rev. B **55**, R10185-10188 (1995).
IF: 3.322 cited: 12
3. D. R. Stewart, **D. Sprinzak**, C. M. Marcus, C. I. Duruoz, J. S. Harris Jr.
Correlations between Ground and Excited State Spectra of a Quantum Dot
Science **278**, 1784(1997).
IF: 28.103 cited: 79
4. **D. Sprinzak**, E. Buks, M. Heiblum, H. Shtrikman
Controlled Dephasing of Electrons via a Phase Sensitive Detector
Phys. Rev. Lett. **84**, 5820 (2000).
IF: 7.180; cited: 75
5. Yang Ji, M. Heiblum, **D. Sprinzak**, D. Mahalu, and Hadas Shtrikman
Phase Evolution in a Kondo-Correlated System
Science **290**: 779-783 (2000).
IF: 28.103 cited: 168
6. **D. Sprinzak**, Yang Ji, M. Heiblum, D. Mahalu, and Hadas Shtrikman
Charge Distribution in a Kondo-Correlated Quantum Dot

Phys. Rev. Lett. **88**, 176805 (2002).

IF: 7.180; cited: 50

7. Y. Ji, Y. Chung, **D. Sprinzak**, M. Heiblum, D. Mahalu, H. Shtrikman.

An electronic Mach-Zehnder interferometer.

Nature **422**(6930): 415-8 (2003).

IF: 31.434 cited: 167

8. S. Thiberge, A. Nechushtan, **D. Sprinzak**, O. Gileadi, V. Behar, O. Zik, Y. Chowers, S. Michaeli, J. Schlessinger, E. Moses

Scanning electron microscopy of cells and tissues under fully hydrated conditions

Proc Natl Acad Sci **101**(10), 3346 (2004).

IF: 9.38; cited: 30

9. **D. Sprinzak** and M. Elowitz

Reconstruction of genetic circuits

Nature **438**(7067), 443-8 (2005) *Review*.

IF: 31.434; cited: 104

10. **D. Sprinzak**, A. Lakhanpal, L. LeBon, L. A. Santat, M. E. Fontes, G. A. Anderson, J. Garcia-Ojalvo, M. B. Elowitz

Cis interactions between Notch and Delta generate mutually exclusive signaling states

Nature, scheduled for Advance Online Publication (AOP) on April 25th, DOI **10.1038/nature08959**

IF: 31.434

Manuscripts in preparation

11. **D. Sprinzak**, A. Lakhanpal, L. LeBon, J. Garcia-Ojalvo, M. B. Elowitz

Mutual inactivation of Notch and Delta facilitates developmental patterning.

In preparation

Conference presentations

- Systems Biology for Biochemists, Lake Tahoe CA, October 2009. Invited talk.
- Computational morphodynamics workshop, UCSB CA, August-September 2009, Invited participation and talk.
- The Notch meeting, Athens, Greece, September 2009, contributed talk.
- Q-bio, Santa Fe NM, August 2009, contributed talk.
- HHMI meeting on stem cell and development, September 2009, poster presentation.
- The Notch meeting, Athens, Greece, September 2007, poster presentation.

Invited Seminars

- Yale University, Dept. of molecular, cell, and developmental biology, Job talk seminar, Jan. 2010
- UC San Francisco, Cardiovascular research institute, Job talk seminar, Feb 2010
- Washington University in St. Louis, Dept. of developmental biology, Job talk seminar, Feb. 2010
- Broad Institute of MIT and Harvard, Job talk seminar, Feb. 2010.
- Rutgers University, BioMaPS, Job talk seminar, March 2010
- Caltech, Division of Biology, Job talk seminar, March 2010

Patents

1. A sample enclosure for scanning electron microscopy and methods of use thereof. Patent application serial 03/004541L/PCT, Inventors: David Sprinzak, Amotz Nechaushtan, Opher Gileadi, Ory Zik. Country: PCT. International filing date: June 1, 2003. Publication no. WO 03/104846
2. A sample enclosure for scanning electron microscopy and methods of use thereof. Patent application serial 03/010541L/PCT, Inventors: David Sprinzak, Amotz Nechaushtan, Opher Gileadi, Ory Zik. Country: PCT. International filing date: December 10, 2003. Publication no. WO/2004/075209
3. Device for fluorescent imaging of biological samples using a scanning electron microscope and fluorescent or scintillating materials, Patent application serial 150054, Inventors: David Sprinzak, Ory Zik, Yiftah Karni, Amotz Nechaushtan, Country: Israel. Filing date June 5, 2002. Examination pending.
4. Automation compatible devices for scanning electron microscopy imaging of samples in a wet environment. Patent application serial 150055, Inventors: Ory Zik, Yossef Kliger, David Sprinzak, Yiftah Karni, Amotz Nechaushtan, Country: Israel. Filing date June 5, 2002. Examination pending.

Grants

1. National Academies Keck Futures Initiative on Synthetic Biology. Competitive Assessment of Genetically Engineered Networks (CAGEN), \$100,000. Co-PIs: Richard Murray, Peter Carr, Barry Canton, Erik Klavins, Georg Seelig, **David Sprinzak**. April 2010.

Teaching Experience

- Teaching Assistant, Advanced Quantum Mechanics (graduate level) Weizmann Institute of Science, 2000.
- Instructor, middle school and high school programs, youth educational center, Weizmann institute of science. 1995-1996, 1998-2000.

- Teacher at Hebrew language school for foreign and immigrant students, Hebrew University, Jerusalem. July-August 1994.
- Instructor, school programs, Bloomfield Science Museum Jerusalem, 1992-1994.

Supervised Stuff and Students

- Research Technicians: Michelle Fontes, Graham Anderson, Leah Santat
- PhD students: Amit Lakhanpal, Lauren LeBon
- PhD students – rotation projects: Fred Tan, Cambrian Liu, John Young, Judith Su, Weston Nichols.
- Undergraduate students: Arjun Ravikumar

Additional Experience and Expertise

- Leading multi-disciplinary R&D project involving biologists, physicists and engineers in the biotech start-up Quantomix Ltd.
- Expertise in scanning electron microscopy and optical imaging techniques.
- Expertise in micro- and nano-fabrication techniques (M.Sc. and Ph.D.).

Community Outreach

- Participation in scientific outreach programs including programs to schools in rural areas, nation-wide high school science contest, and teaching in science summer camps. (Youth Educational Center, Weizmann, 1995-2001)
- Teaching science classes at disadvantaged elementary schools as part of an outreach program of the Hebrew University (1993)