KAREL SVOBODA

The Pew Scholars Program in the Biomedical Sciences

Transcript of an Interview
Conducted by
William Van Benschoten
at
Cold Spring Harbor Laboratory
Cold Spring Harbor, New York
on
19 and 20 August 2004

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Karel Svoboda
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KAREL SVOBODA

1965 Born in Prague, Czechoslovakia, on 30 December

Education

1988 B.A., Physics (cum Laude), Cornell University
1994 Ph.D., Biophysics, Harvard University

Professional Experience

Bell Laboratories, Lucent Technologies

Cold Spring Harbor Laboratory
1997-2003 Assistant, Associate Professor
2004-present Professor
State University of New York at Stony Brook
1997-present Affiliated Professor

Howard Hughes Medical Institute
2000-present Investigator
2006-present Group Leader, Janelia Farm Research Campus

Honors

1994-1995 Society of General Physiology Scholar
1998-2002 Pew Scholars Award
1998-2001 Klingenstein Award
1999 Science Magazine, Runner-up, Breakthrough of the Year
1999-2002 Mathers Foundation Award
1998-2001 Whitaker Foundation Award
2000-present Howard Hughes Medical Institute, Assistant Investigator
2002-2003 McKnight Technological Innovations in Neuroscience Award
2003 Eppendorf and Science Prize for Neurobiology, Runner-Up
2004 Popular Science Brilliant 10
2004 Society for Neuroscience, AstraZeneca Young Investigator Award
Selected Publications


Maravall M, Koh IY, Lindquist WB and Svoboda K. 2004. Experience-dependent changes in
basal dendritic branching of layer 2/3 pyramidal neurons during a critical period for
Nimchinsky EA, Yasuda R, Oertner TG, Svoboda K. 2004. The number of glutamate receptors
opened by synaptic stimulation in single hippocampal spines. *J Neurosci* 24(8):2054-64.
bulb: efficiency and modulation of spike-evoked calcium influx into granule cells. *J Neurosci*
23, 755 1-7558.
*Nat Neurosci* 6, 948-955.
plasticity in the developing rat barrel cortex. *Neuron* 38, 277-89.
Takahashi T, Svoboda K, Malinow R. 2003. Experience strengthening transmission by driving
Long-term in vivo imaging of experience-dependent synaptic plasticity in adult cortex. *Nature*
420, 788-94.
33, 439-452.
Genetic manipulation of the odor-evoked distributed neural activity in the Drosophila
mushroom body. *Neuron* 29, 267-76.
Sabatini BL and Svoboda K. The number and properties of calcium channels in single dendritic
Chen BE, Lendvai B, Nimchinsky EA, Burbach B, Fox K and Svoboda K. 2000. Imaging high-
Lendvai B, Stern E, Chen B and Svoboda K. 2000. Experience-dependent plasticity of dendritic
calcium concentrations without wavelength ratioing. *Biophys J* 78:2655-2667.
Helmchen F, Svoboda K, Denk W and Tank DW. 1999. In vivo dendritic calcium dynamics in
Rapid Spine Delivery and Redistribution of AMPA Receptors After Synaptic NMDA


ABSTRACT

Karel Svoboda was born in Prague, Czechoslovakia, though he and his family immigrated to western Germany—the Ruhr Valley—during the Cold War era, in stages: first, his father, then his mother, Svoboda, and one sister, and then, finally, his youngest sister. Both of Svoboda’s parents studied chemical engineering, though only his father received his degree since his mother focused on raising their children; later, his mother became a teacher in Germany and then, when the family immigrated, the United States as well. In Germany, Svoboda attended an alternative school that focused much more on the arts, like music, chorus, and theater, which he enjoyed tremendously. He always performed well in his mathematics and science classes, and developed prowess in chess.

Not wanting to stagger his education for time in Germany’s military service, Svoboda applied to several universities in the United States and chose to matriculate at Cornell University. He capitalized on the work-study program while there, working in a number of research labs throughout his undergraduate career, initially as a computer programmer. The summers he spent at Bell Laboratories, where he worked in statistics and then in physics, and the semester he spent at the Lawrence-Berkeley National Laboratory, where he worked full-time in a physics laboratory focused on high-temperature critical superconductors, were significant in his scientific development. After applying to and being accepted at Harvard University for graduate studies Svoboda deferred for a year in order to teach physics in Katmandu, Nepal. At Harvard, he started his doctoral work with Howard Berg but then also worked with Steven M. Block at the Rowland Institute for the Sciences. His love of Bell Laboratories during his undergraduate years brought him back there for postdoctoral research on synapses with Winfred Denk and David Tank, and gave him the opportunity to take what became a very influential course on neural systems at the Woods Hole Oceanographic Institute. Svoboda left Bell for a position at the Cold Spring Harbor Laboratory, studying biophysical neuroscience in neocortical circuits and their plasticity, with the intent of expanding his work to ensembles of neocortical circuits.

As the interview came to a close, Svoboda discuss some of the general issues associated with being a principal investigator and a scientist working in the United States, like the issue of patents; the origin of his ideas; the process of conducting scientific research; becoming familiar with the history of a particular field of research; competition and collaboration in science; setting the national scientific agenda; and the role of the scientist in educating the public about science. The interview concluded with his thoughts on the Pew Scholars Program in the Biomedical Sciences award.
UCLA INTERVIEW HISTORY

INTERVIEWER:


TIME AND SETTING OF INTERVIEW:

Place: Svoboda’s office at Cold Spring Harbor Laboratory.


Total number of recorded hours: 4.5

Persons present during interview: Svoboda and Van Benschoten.

CONDUCT OF INTERVIEW:

This interview is one in a series with Pew Scholars in the Biomedical Sciences conducted by the UCLA Oral History Program in conjunction with the Pew Charitable Trusts’s Pew Scholars in the Biomedical Sciences Oral History and Archives Project. The project has been designed to document the backgrounds, education, and research of biomedical scientists awarded four-year Pew scholarships since 1988.

To provide an overall framework for project interviews, the director of the UCLA Oral History Program and three UCLA faculty project consultants developed a topic outline. In preparing for this interview, Van Benschoten held a telephone preinterview conversation with Svoboda to obtain written background information (curriculum vitae, copies of published articles, etc.) and agree on an interviewing schedule. He also reviewed documentation in Svoboda’s file at the Pew Scholars Program office in San Francisco, including Svoboda’s proposal application, letters of recommendation, and reviews by Pew Scholars Program national advisory committee members.

ORIGINAL EDITING:

Carol Squires edited the interview. She checked the verbatim transcript of the interview against the original tape recordings, edited for punctuation, paragraphing, and spelling, and verified proper names. Words and phrases inserted by the editor have been bracketed.

Svoboda reviewed the transcript. He verified proper names and made a minor number of corrections and additions.

Carol Squires prepared the table of contents and TechniType Transcripts compiled the guide to proper names.
TABLE OF CONTENTS

Childhood in Germany and College in Ithaca, New York

Graduate School, Postdoctoral Work, and Cold Spring Harbor Laboratory

The Scientific Life

Index
INDEX

A
Alekhine, Alexander, 12
Alexandria, Virginia, 9
Ali, Sarah (wife), 23, 53, 58, 74
Allied Powers, 2
Alzheimer's disease, 43
Amsterdam, the Netherlands, 26
Aplysia, 31
Argentina, 76
Art of Attack in Chess, The, 13
AT&T, 36

B
Baltimore, David, 46
Bednorz, J. Georg, 22
Bell Laboratories, 13, 20, 28, 29, 30, 31, 32, 34, 35, 36, 37, 38, 39, 41, 52
Berg, Howard, 26, 27
Bernstein, Peter L., 30
Biophysical Society, 32
biophysics, 24, 25, 26, 28, 29, 30, 37, 61, 76
Block, Steven M., 26, 27, 30, 32, 61
Brandt, Chancellor Willy, 7
Branton, Daniel, 26
Brazil, 15
Bystřice, Czech Republic, 4

calcium, 35
California, 52
California Institute of Technology, 27
Caltech. See California Institute of Technology
Cambridge, Massachusetts, 23, 28, 54
Canada, 6
chess, 11, 12, 13
Caro-Kann Defense, 13
Sicilian Defense, 13
Chess Sacrifice, The

D
Dada, 15
Dechant, Helena Svoboda (sister), 2
Deep Blue, 12
dendritic spines, 35
denk, Winfred, 27, 29, 30, 31, 32, 35, 36, 51
Department of Energy, 22
DNA, 46, 64, 66, 67
cDNA, 66
Dortmund, Germany, 2
dual-beam interferometry, 27

e
E. coli, 26
E.I. DuPont de Nemours Company, 18
Economist, The, 10
Essen, Germany, 2
ethics, 71
Europe, 11, 15
F
Fischer, Robert, 12
Food and Drug Administration, 68
fragile-X mental retardation, 43
France, 76

G
Gates, William G., 27
Gattaca, 73
Germany, 1, 2, 3, 6, 7, 8, 10, 11, 12, 17, 76
Goldstein, Lawrence S.B., 26
Golgi, 65
grants/funding, 22, 40, 45, 47, 48, 53, 60, 69

H
Hannon, Gregory, 78
Harvard University, 23, 24, 25, 27, 65
Hawke, Ethan, 73
Heisenberg, Werner, 16
high Tc superconductors, 22, 26
Hilton Hotels, 9
Hitler, Adolf, 15
Hodgkin, Alan L., 50, 63, 65
Howard Hughes Medical Institute, 44, 45, 47, 48
Hudson, Kathy, 71, 72, 73
Human Genome Project, 68
Huntington, Long Island, New York, 73
Huxley, Andrew Fielding, 50

I
India, 24
Industriegebiet, dis, 2
Iran, 6
Italy, 76

J
Japan, 3, 76
Johns Hopkins University, 27

K
Kandel, Eric R., 31
Karpov, Anatoly, 12
Kasparov, Garry, 12, 13
Katmandu, Nepal, 24
kinesin, 26, 27, 61
Klingenstein Award, 78
Korea, 3
Krupp, 2, 6

L
Land, Edwin H., 26, 27
Latour, Lawrence, 31
Lawrence Berkeley National Laboratory, 22
Lucent Technologies, 36
LuValle, Michael, 21

M
MacKinnon, Roderick, 46
magnetic resonance imaging, 28, 30
Malinow, Robert, 38
Manhattan, New York City, New York, 9
Massachusetts Institute of Technology, 19
Matthiessen, Mr., 14
McKnight Foundation Doctoral Fellowships, 44
McKnight Grant, 44
McKnight Technological Innovations in Neuroscience Award, 45
Memorial Sloan-Kettering Cancer Center, 55
Mephisto, 13
Merck Co., 68
Messiah, 14
MIT. See Massachusetts Institute of Technology
Mitra, Partha, 28, 30
Moravia, 3, 4, 5, 18
Mormon, 17
MRI. See magnetic resonance imaging
Müller, K. Alexander, 22
Munich, Germany, 3

N
National Institutes of Health, 40, 42, 43, 45, 47, 48, 70
Nelson, David, 25
neocortex, 41
Netherlands, 26, 76
neuroscience, 30, 31, 33, 34, 38, 43, 62, 63, 64, 65, 66, 68
New Jersey, 31
New York Times, The, 74
New Yorker, The, 74
NIH. See National Institutes of Health
Nobel Prize, 22
Northern Ireland, 4
Norway, 76

P
patent, 59
Pew Scholars Program in the Biomedical Sciences, 21, 40, 44, 45, 62, 71, 78
Pfizer Inc., 68
Poland, 76
Polaroid, 27
polymerase chain reaction, 66, 72
Popular Mechanics, 76
Prague, Czechoslovakia, 1, 4, 5, 18
Princeton University, 30, 32
Ptashne, Mark, 26
publish/publication, 49, 50

R
Ramon y Cajal, Santiago, 65
religion, 17, 18, 71
(Roman) Catholic, 4, 5, 17
Protestantism, 4
Lutheran, 17
Reformation, 4
RNA, 66
Rowland Institute for Science, 26, 27
Rowland, Henry A., 27
Ruhr River, 2, 3
Russia, 76
Ruy Lopez Opening, 13
Rwanda, 15
Ryan, Timothy, 29

S
San Juan, Puerto Rico, 71
Schmidt, Christoph G., 10, 26, 32
Science and Society Institute, 71
Scientific American, 6, 74, 75
serendipity, 61
Social Democratic Party, 10
South America, 6
Spiegel, der, 10
St. Matthew Passion, 14
Stanford University, 25, 27
Stillman, Bruce W., 39
Svoboda, Benjamin (son), 8, 53, 57
Svoboda, Ludmila (sister), 2
Svoboda, Tycho (son), 53, 57
synapses, 31, 34, 35, 41, 42, 61, 65, 66

T
Taiwan, 3
Tal, Mikhail, 12
Tank, David, 31, 36, 38, 51
tenure, 40, 67, 69
Third Reich, 2
Three Degrees Above Zero, 30
Turkey, 6

U
United States of America, 1, 6, 7, 8, 18, 19
University of California, Berkeley, 22, 24, 25
University of California, Santa Barbara, 24
University of Pennsylvania, 19

V
Varmus, Harold E., 48
voltage-clamp amplifier, 65
Vukovic, Vladimir, 12

W
Webb, Watt W., 29, 30, 31
Woods Hole Oceanographic Institute, 30, 33, 34, 38
Worcester Polytechnic Institute, 31
World War II, 2, 5
Z

Zettle, Alex, 22