

# IN SEARCH OF MEMORY

A FILM BY PETRA SEEGER



**THE NEUROSCIENTIST ERIC KANDEL  
WINNER OF THE NOBEL PRIZE**

95 minutes / color / 1.85:1 / Stereo Digital / 2008  
English and German w/English Subtitles

An **Icarus Films** Release  
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## Synopsis

“Memory is everything. Without it we are nothing,” says neuroscientist Eric Kandel, winner of the Nobel Prize for his groundbreaking research on the physiology of the brain’s storage of memories. As he explains, memory is the glue that binds our mental life together and provides a sense of continuity in our lives.

IN SEARCH OF MEMORY is a compelling blend of autobiography and history that recounts the life of one of the most important neuroscientists of the 20th century and illuminates scientific developments in our understanding of the brain’s role in recording and preserving memory. In addition to archival footage and dramatic re-creations of Kandel’s childhood experiences in Nazi-occupied Vienna and his formative years as an emigrant in New York, the film features discussions with Kandel, friends and family, as well as his public lectures in Vienna and New York, which explore both his professional and personal life, especially his emotional ties to Judaism.

Both through its personal journey into the memory of this amazingly spry and witty 79-year old, especially his traumatic experiences during the Holocaust, and a visit to his Columbia University laboratory, where Kandel and his colleagues demonstrate their experimental research, IN SEARCH OF MEMORY examines how the brain stores memories, the difference between short-term and long-term memory, Alzheimer’s and age-related memory loss, and structural modifications to the brain that enhance memory.

In revisiting the people, places and objects of Kandel’s lifetime experiences, IN SEARCH OF MEMORY reveals how everything we undergo changes the brain, even our genetic make-up, and can determine the focus of a life’s work.



## Dr. Eric Kandel

Eric R. Kandel, M.D., is University Professor at Columbia, Fred Kavli Professor and Director, Kavli Institute for Brain Sciences and a Senior Investigator at the Howard Hughes Medical Institute.

A graduate of Harvard College and N.Y.U. School of Medicine, Kandel trained in Neurobiology at the NIH and in Psychiatry at Harvard Medical School. He joined the faculty of the College of Physicians and Surgeons at Columbia University in 1974 as the founding director of the Center for Neurobiology and Behavior.

Within the academic community, he is also admired as a teacher. He organized the neuroscience curriculum at Columbia and is an editor of *Principles of Neural Science*, the standard textbook in the field. He recently has written a book on the brain for the general public entitled *In Search of Memory: The Emergence of a New Science of Mind*.

Eric Kandel's research has been concerned with the molecular mechanisms of memory storage in *Aplysia* and mice. Kandel has received fifteen honorary degrees, is a member of the U.S. National Academy of Sciences as well as the National Science Academies of German and France. He has been recognized with the Albert Lasker Award, the Heineken Award of the Netherlands, the Gairdner Award of Canada, the Wolf Prize of Israel, the National Medal of Science USA and the Nobel Prize for Physiology or Medicine in 2000.



c. Filmform Koeln

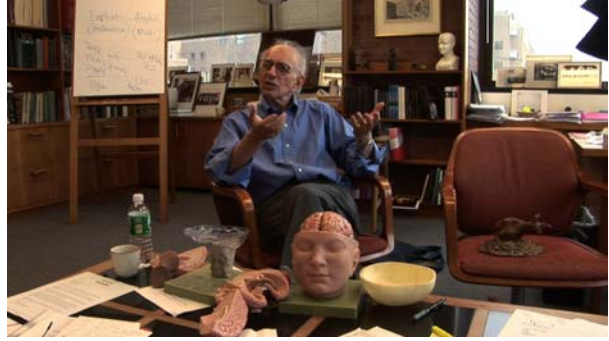
Undergraduate: Harvard College, 1952

Medical School: New York University, M.D., 1956

Internship: Montefiore Hospital, Rotating, 1956 - 1957

Residency: Massachusetts Mental Health Center, Psychiatry, 1960 - 1964

Board Certifications: Private Practice Assessment



## Review Excerpts

“Mentally stimulating and emotionally affecting.”

—Michael Phillips, *The Chicago Tribune*

“This is not just a dry doc about brain functions. Seeger makes a convincing connection between Kandel’s work and his life as a Jew who escaped from Vienna during World War II. Kandel demurs early in the film that he isn’t easy to live with, but he’s certainly a pleasure to spend time with in a doc, and his story and his passion, which Seeger easily conveys, are, if you’ll pardon the inevitable pun, memorable.”

—Hank Sartin, *Time Out Chicago*

“Conveys the breadth of neuroscience and the scientific process.”

—Alison Abbott, *Nature*

“Because of Kandel’s powerful charm and energy, the science-less and more personal aspects of the documentary add an engaging and often comical texture to this very delicate quest for memory and remembrance.”

—Stephanie Lee, *NYPress.com*

“A passionate exploration of the life and work of Eric Kandel, the brilliant and irrepressible neurobiologist, whose pioneering work has illuminated the very workings of memory. But, like Eric, Petra Seeger’s film resonates in all directions, illuminating not only the trajectory of psychology and neuroscience in the last century, but the nature of art and science, history and remembrance, work and love, inspiration and achievement. It is an unforgettable journey.”

—Oliver Sacks

## Festivals and Awards



DOK Festival Leipzig, 2008  
Biografilm Festival, Bologna, 2009

## Review Excerpts (2009 German Theatrical Release)

“The life of Nobel laureate Eric Kandel on the silver screen is an event. We experience how one of the greatest contemporary brain researchers confronts his Jewish "Vienna legacy" after seventy years, and we watch as he uncovers the neural foundation of memory performance. A documentary masterpiece in the history of science.

In making this film, director Seeger may well have made some contribution to her subject's personal healing. The documentary's sensitivity and moving emotion leave a lasting impression. Its other major strength is the ease with which Kandel's two or three great scientific ideas are communicated to the audience. A moving, fascinating documentary.

Director Petra Seeger turns these investigations of the brain into a fantastic, heart-rendering cinema experience.

In its very first seconds, this film makes a promise, an almost uncanny promise: when you leave this theater after watching this film, you will no longer be the same person you were before. That would not be unusual if it merely meant reflecting on what you had seen – art incessantly demands that we do so. But in this cinematic portrait of Nobel laureate Eric Kandel, it literally means the transformation, the metamorphosis of the mind, and one quickly learns that these are not just empty words. As we watch the screen, we watch nature ply its craft: the craft of brain design.”

—Frankfurter Allgemeine Zeitung

“The film's greatness lies in the way it integrates the depictions of scientific events into the narrative of the subject's life rather than leaving them out. As a result, documentary film as a genre takes on a new dimension: a voyage through the skull as a journey through one man's destiny. We in the audience don't know whether to laugh or to cry – there is reason enough to do both.”

—Der Spiegel

“An extraordinary film about an extraordinary human being!”

—Hamburger Morgenpost

“Human warmth, not cool facts, is at the center of this moving portrait of a personality.”

—Weltexpress

“The film is a very personal portrait of a charismatic, passionate researcher who transformed his own painful experiences into incredible, positive energy in order to uncover the foundations of human interactions.”

—Filmecho Filmwoche

"In Search of Memory is a significant contribution to bridging the gap between world-class science and the layman."

—Office of Science & Technology

# Memories revisited

**In Search of Memory: The Neuroscientist  
Eric Kandel**

Film directed by Petra Seeger  
Showing in Austria.

German filmmaker Petra Seeger met neuroscientist Eric Kandel by chance in Berlin two years ago, and was enthralled by his research and life story. An Austrian Jew forced to flee the Nazis in 1939, Kandel (pictured) is still coming to terms with his traumatic past. *In Search of Memory*, Seeger's 95-minute documentary of the mischievous 79 year old, premiered on 26 May in Vienna, Kandel's childhood home.

In 2000, Kandel shared the Nobel Prize for Physiology or Medicine for his work on how neurons lay down memories. The film weaves Kandel's recollections and the science of learning and memory. Seeger accompanies him to Vienna to seek out his family's old apartment, his father's toy shop and other poignant places that he has avoided for fear of stirring up pain. Seeger's camera follows Kandel in mid close-up. Re-enactments of his childhood are mixed with archive footage from 1930s Austria and contemporary scenes shot in his laboratory at Columbia University in New York.

Kandel recalls on screen the jubilant welcome of Hitler's troops as they marched into Vienna in March 1938. The following November, a few days after his ninth birthday, he witnessed the horrors of Kristallnacht, when rioters destroyed synagogues and Jewish premises. Instructed to leave their house, his family returned two weeks later to find that everything had been stripped from it, even his birthday toys. He recalls the collusion of many Austrians with the Nazis and the lack of support, or even sympathy, from former non-Jewish friends.

Those enduring memories fuelled Kandel's desire to understand the biological basis of memory. His approach was unfashionably reductionist. He chose as his model organism the sea slug *Aplysia californica*, which has just a few large nerve cells and a robust reflex — it withdraws its gills in response to stimulation. Kandel showed that the sea slug can learn to modify this reflex when repeatedly stimulated, and that the change is caused by strengthening



P. SEEGER

of the synapses, the regions where neurons connect with each other.

Seeger mirrors that reductionist approach in her filming. She eschews high-tech animations, relying on Kandel to explain his science with only a flip chart and a large plastic model of the brain. His lab seems busy and his colleagues look happy: young researchers relate their own discoveries with moving enthusiasm. Scientists come across as vibrant people with pasts, sensitivities and futures — with stories to tell.

The naive viewer may not take home many scientific details, but the documentary conveys the breadth of neuroscience and the scientific process. It describes different types of memory that arise in distinct parts of the brain, and the fundamental cellular process of synapse strengthening. Kandel's story shows that to reach the truth, you sometimes need to go back to basics before reconstructing the big picture.

Kandel laughs a lot as he confronts his past. In one memorable sequence in New York, he asks an old man seated on a chair in the street if he remembers his father's store. "What's your problem?" the old man barks. But within a minute they banter about their age, and laugh so infectiously that the audience laughs too. In another scene, Kandel's eyes brim with tears.

The strength and weakness of *In Search of Memory*, named after Kandel's book of the same name, is that it is uncritical, a love affair with this petite, demanding genius. The film manipulates its viewers into adoration. Scientists outside Kandel's lab barely get a mention. But the warmth of the film, together with the political and scientific importance of the subject, more than compensate. ■

Alison Abbott is Nature's Senior European Correspondent.

# Petra Seeger

## Selected Filmography



- 2008**            **In search of Memory**  
Screenplay / Director / Producer
- 2006**            **Bis zu der grossen Ewigkeit**  
Director / Camera / Producer
- 2005**            **Photo project** / New York
- 2004**            **Die besten Seiten von...**  
Screenplay / Director / 2nd Camera
- 2003**            **Vatersland**  
Screenplay / Autobiographical feature film
- After the bombing**  
Director / Camera / Producer
- 2002**            **Wim Wenders, BAP und der Oscar**  
Director / Camera / Producer
- 2001**            **Vill Passiert**  
2nd camera for the cinema film by Wim Wenders about the rock group BAP
- 2000/01**        **Die Schiller-Gang**  
Director / Camera / Producer
- 1999**            **380° Afrika**  
Director



**1997/98**      **Film is a Battleground**  
Director /Producer

**1996**            **Peter Zadek stages Harold Pinter's "Moonlight"**  
Director

**1995**            **Nikolaikirche Leipzig**  
**(The Nikolai Church in Leipzig, the "base" of the demonstrations in October 1989)**  
Director

**1993**            **Zwischen allen Stühlen**  
Director

**1992**            **Ein Film kommt auf die Welt**  
Director

**1990**            **Abschied vom Drehbuch**  
Director  
"Special event" at the Venice Film Festival (1991)

**1984**            **Gratwanderung**  
actress  
Director: Barbara Kappen

**1984**            **Turin - Santo Stefano Belbo**  
Co-director with Renate Sami

**1984**            **Zwei Bilder**  
Screenplay and actress  
Director: Rudolf Thome

**1980**            **Schule im 3. Reich**  
Co-director with Jürgen Heiter  
Documentary about the education system in the Third Reich.  
45 min. for WDR

**1980**            **Der Bund Deutscher Mädel**  
Director

# Credits

## In Search of Memory

### The Neuroscientist Eric Kandel

written & directed by	Petra Seeger
Director of Photography	Robert Winkler Mario Masini
Sound	Mario Sternisa Rafael Tyblewski
Editor	Oliver Neumann
Executive Producer	Petra Seeger
Commissioning Editors	Andrea Ernst WDR/ARTE Klaus Hipfl ORF Jutta Krug WDR
Soundmix	Christofer Frank
Soundeditor	Nina Slatosch Karin Hammer
Assistent Editor	Reinhard Schwaiger
Trainee	Alexander Peiler
Offline Editing	Off-Line, Vienna
Sound Recording	Sync-Sound Studio, New York Tremens Tonstudio, Vienna Tone Town, Vienna
Video Postproduction	Kurt Hennrich
Postproduction Manager	Johannes Fiala

#### **“Memories” Scenes**

Eric	Emanuel Schierl
Mother	Angelika Kropej
Father	Markus Griefing
Brother	Konstantin Petricek
Mitzi	Viktoria Müller
Casting	Angelika Kropej
Set Design	Tommy Vögele

Costume Design	Sammy Zayed
Make Up Artist	Christian Kahrer Monika Watzek
Assistent Set Design	Regina Rauter
Assistent Costume Design	Barbara Zach Nelma Kalonji
Production Manager	Igor Orovac
Location Manager	Christian Ringswirth
Service Producer	Robert Winkler, Bonusfilm GmbH
Trainee	Victoria Müller
Catering	Irene Pöhl, Kutschkermarkt
Driver	Joschi Deininger

the film was shot in  
New York (USA), Vienna (Austria), Paris and Cahors (France), London (UK)

Eric Kandel is  
University Professor / Columbia University, New York and  
Senior Investigator at the Howard Hughes Medical Institute

### **special thanks to**

Denise Kandel  
Paul, Emily, Allison and Libby Kandel  
Minouche, Rick, Izzy and Maya Sheinfeld

Howard Hughes Medical Institute, New York and all staff members  
Millie Pellan  
Christopher Hawkins, Meryl Marcus, Maria Palileo,

### **Associate Research Scientists**

Juan Marcus Alarcon, Christoph Kellendonk,  
Francisco Monje, Isabel Muzzio, Michael Rogan, Eleanor Simpson,

### **Postdoctoral Fellows**

Stefan Kassabov, Daniela Pollak, Joseph Rayman,  
Harshad Vishwasrao, Lee Zuckerman

Privyamvada Rajasethupathy MD/Ph.D. candidate

Aaron Beck, Yvonne Féraud, Josef Grasser, Michael Hudecek, Anna Müller, Irene Pöhl, Inge Scholz-  
Strasser, Rabbi Marc Schneier , Andreas Stadler, Martin Stolar, Micky Stunkard,  
Doron Weber, Kurt Weiss

**Archiv Material**

Bundesarchiv / Transit Film GmbH  
Chronos Media  
Sveriges Television, Sweden

**“Wintertime with Kandel”**

by Anna Müller and Martin Rabl

**"Kandels Reise"**

Music by Walter W. Cikan and Marnix Veenenbos

**“Broken Monitors”**

**“Aldebaran Waltz”**

Music by B. Fleischmann

**“Glasharp”**

Music by Petr Spatina  
a courtesy by Goodwatermusic

**dedicated to**

Dr. Hildegard Köhle

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