THE BARONESS GREENFIELD, CBE Curriculum Vitae

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SUMMARY



Susan Greenfield was both an undergraduate and graduate at Oxford University, taking a DPhil in the Department of Pharmacology in 1977. She subsequently held research fellowships in the Department of Physiology Oxford, the College de France Paris, and NYU Medical Center New York. In 1985 she was appointed University Lecturer in Synaptic Pharmacology, and Fellow and Tutor in Medicine, Lincoln College, Oxford, before promotion to a University Professorship in 1996. From 1998 to 2010 she served as Director of the Royal Institution of Great Britain, a post held jointly with her chair in Oxford. She is now CEO of a biotech company (www.neuro-bio.com) which she founded in 2013 to develop a disruptive approach to Alzheimer's disease, based on her research exploring novel brain mechanisms linked to neurodegeneration.

Greenfield has been awarded 32 Honorary Degrees from British and foreign universities and in 2000 was elected to an Honorary Fellowship of the Royal College of Physicians. Further international recognition of her work has included the 'Golden Plate Award' (2003) from the Academy of Achievement, Washington, the L'Ordre National de la Légion d'Honneur (2003), from the French Government, and the 2010 Australian Medical Research Society Medal. She was awarded a CBE in the Millennium New Year's Honours List, and was granted a non-political Life Peerage in 2001. In 2004 and 2005, she was 'Thinker in Residence' in Adelaide, reporting to the Premier of South Australia on applications of science for wealth creation. She served as Chancellor of Heriot Watt University 2005-2012, and in 2007 was elected into the Fellowship of the Royal Society of Edinburgh. From 2014 - 2016 she held an annual Visiting Professor at the Medical School, University of Melbourne.

Greenfield also has an interest in wider aspects of the human mind: in 1995 she published her own theory of consciousness Journey to the Centres of the Mind (1995), which was developed substantially in The Private Life of the Brain (2000). Meanwhile, her book The Human Brain: A Guided Tour (1997) ranked in the British best-seller lists as a popular introduction to the brain for non-specialists. It was followed by Tomorrow's People: How 21st Century technology is changing the way we think and feel (2003), which explored human nature and its potential vulnerability in an age of technology. These ideas were expanded in her later book, ID: The Quest for Identity in the 21st Century (2009). In addition she has written a novel '2121: A Tale form the Next Century', published in 2013, which describes a dystopia century ahead in the future. The theme of unprecedented changes to contemporary human cognition, arguably comparable in its significance to Climate Change, was briefly explored in a monograph You and Me (2011), and was developed further in an in-depth exploration of the impact of technology on the brain in 'Mind Change: How 21st Century Technology is leaving its mark on the brain' (2014). Returning to an exploration of the physical basis of consciousness 'A Day in the Life of the Brain: Consciousness from Dawn 'til Dusk' was published by Penguin in October 2016.

As a result of her original background in classics, Greenfield held the Presidency of the Classical Association for 2003 – 2004 and in 2010 was elected to a Fellowship of the Science Museum. From 2000 she was a Forum Fellow at the World Economic Conference at Davos for ten years. In 2002 she authored the Greenfield Report SET Fair: A Report on the Retention and Recruitment of Women in Science, Engineering, and Technology. Greenfield has been profiled in a wide range of papers and magazines, voted one of the 100 most influential women in Britain by the Daily Mail in 2003, and 'Woman of the Year' by the Observer in 2000. In 2014 she was included in Debretts 'Top 500' of the most influential people in Britain today.

PERSONAL DETAILS

DATE AND PLACE OF BIRTH

01 October 1950, London, UK

NATIONALITY

British

EDUCATION

1962-1969Godolphin and Latymer School for Girls, London1970-1973St Hilda's College, Oxford University

DEGREE

- 1973 BA (Hons) Oxon. Experimental Psychology
- 1974 MA, Oxon
- 1977 DPhil, Oxon. "The origin of acetyl cholinesterase in cerebrospinal fluid"

HONORARY DEGREE

1996	DSc (Hon) Brookes University
1997	DSc (Hon) St Andrew's University
1998	DSc (Hon) Exeter University
1998	DSc (Hon) Sheffield Hallam University
1999	DSc (Hon) University of North London
1999	DSc (Hon) Royal Holloway University
2000	DSc (Hon) Heriot-Watt University
2000	DSc (Hon) University of Staffordshire
2000	DSc (Hon) Brunel University
2000	DSc (Hon) University of Buckingham
2001	DSc (Hon) University of Leicester
2001	DSc (Hon) Richmond American International University
2001	DSc (Hon) Open University
2001	DSc (Hon) University of Leeds
2001	DSc (Hon) University of Birmingham
2001	DSc (Hon) University of Liverpool
2002	DSc (Hon) University of Wales
2002	DSc (Hon) University of Southampton
2002	DSc (Hon) University of Glasgow
2002	DSc (Hon) University of Kent
2002	DSc (Hon) University of Nottingham
2004	DSc (Hon) University of East London
2004	DSc (Hon) Flinders University, Adelaide
2004	DSc (Hon) Thames Valley University
2005	DSc (Hon) University of Dundee
2005	DSc (Hon) Hebrew University of Jerusalem
2005	DSc (Hon) University of Haifa, Israel
2006	DSc (Hon) Queen's University, Belfast
2007	DSc (Hon) The Robert Gordon University, Aberdeen
2009	DSc (Hon) University of Delaware, USA
2014	DSc (Hon) Middlesex University
2015	DSc (Hon) Northumbria University

POSITIONS

2023	Honorary Advisory Fellowship, United Sigma Intelligence Association (USIA)
2021	First Honorary Patron, Joint Neurosciences Council (JNC)
2020-2022	Advisor, Skyrora Ltd.
2017	President's Visiting Fellowship, University of Newcastle, Australia
2014 - 2016	Visiting Professor, Melbourne Medical School
2013 -	Founder and CEO of Neuro-Bio Ltd
2012	Governor, The Florey Institute for Neuroscience and Mental Health
2011 - 2013	Senior Research Fellow, University Dept of Pharmacology Oxford
2010	Honorary Fellowship, The Science Museum
2010	Australian Society for Medical Research Medal
2010	Fellow, The Science Museum
2007	Fellow of the Royal Society of Edinburgh
2007	Senior Fellow, The Higher Education Academy
2006	Alzheimer's Research Trust Patron
2006	Honorary Australian of the Year
2005	Honorary Fellowship, The Royal Society of South Australia
2005 - 2012	Chancellor, Heriot Watt University
2004 - 2013	Elected to Board of Governors, Weizmann Institute of Science
2004 - 2005	President, the Classical Association
2003	Golden Plate Award, American Academy of Achievement, USA
2003	L'Ordre National de la Légion d'Honneur, France
2001	Life Peerage (Non-Political)
2002 -	President, Headway: Brain Injury Association
2000 - 2004	Member of Council of Weizman Foundation
2000	Honorary Fellowship, Cardiff University
2000	Woman of the Year, The Observer
2000	Commander of the British Empire (CBE)
2000	Honorary Fellowship, Royal College of Physicians
1999	Honorary Fellowship, St Hilda's College, Oxford
1998 - 2016	Senior Research Fellowship, Lincoln College
1998 - 2010	Director of the Royal Institution of Great Britain
1996 - 2013	Professor of Pharmacology, Oxford University
1995 - 1998	Gresham Professor of Physic, Gresham College, London
1996	Distinguished Visiting Scholar, Queens' University, Belfast
1995	Visiting Fellow, Neurosciences Institute, La Jolla, USA
1988 - 1995	Deputy Director, Squibb Projects
1985 - 1998	Tutorial Fellowship in Medicine, Lincoln College, Oxford
1985 - 1996	University Lectureship in Synaptic Pharmacology, Oxford
1981 - 1984	Junior Research Fellowship, Green College, Oxford
1979 - 1980	MRC-INSERM Exchange Fellowship, College de France, Paris
1978 - 1979	Royal Society Study Visit Award, College de France, Paris
1977 - 1981	MRC Training Fellowship, Physiology Dept, Oxford
1977 - 1978	J.H. Burn Trust Scholarship, Pharmacology Dept, Oxford
1974 - 1975	Dame Catherine Fulford Senior Scholarship, St Hugh's College, Oxford
1973 - 1976	MRC Research Scholarship, Pharmacology Dept, Oxford

OVERVIEW OF RESEARCH: A NOVEL APPROACH TO NEURODEGERATION

(www.neuro-bio.com)

NeuroBio

A VERY SHORT HISTORY OF THE COMPANY

The Founder and CEO of Neuro-Bio, Susan Greenfield, was originally at Oxford University as a Tutor and Lecturer in Medicine and researching in the Dept of Pharmacology. This environment afforded the opportunity for her to reflect on the unanswered and yet fundamental questions about Alzheimer's disease (AD) and to formulate the core hypothesis that, unlike all other approaches, accounted for well-documented, but previously ignored, clinical facts. In turn this hypothesis led to the design of a first-inclass drug with the potential for arresting cell death in AD: 'NBP14'. In 2013, NBP14 inspired our first patent filing and the IP was assigned to the newly formed company which is now based at the Culham Science Centre, some six miles outside Oxford. Neuro-Bio now owns 17 patent families, covering 6 independent assets inspired by our basic technology.

TECHNOLOGY

The global market for AD treatment will more than double in value from \$4.9 billion in 2013, to reach an estimated \$13.3 billion by 2023. However, the challenge is to devise a treatment that tackles not the consequence of neurodegeneration i.e., amyloid plaques, but the actual cause, as suggested by the disruptive Neuro-Bio technology. Our novel approach is based on a previously unknown neurochemical (T14), that we are showing underlies a very basic biological system with many applications in health and disease. We have designed a new type of drug, NBP14, that is actually a structurally changed, inactive variant of T14 itself that blocks the actions of its naturally occurring counterpart when operating inappropriately. NBP14 restores memory in AD mouse models and displaces the excess, toxic T14 in *post mortem* AD brain.

As a newly discovered basic biological process, the T14 has already inspired a variety of applications in relation to AD:

(A) A first-in-class therapeutic for AD with proven efficacy in living animal models and clinical scenarios, now just published in a high impact peer-reviewed journal (*Alzheimer's and Dementia TRCI*).

(B) Biomarker for AD based on T14 in nasal swabs, saliva or blood: we are now negotiating development of a first-in-class presymptomatic Lateral Flow Test with 3 different companies (a CRO, a not-for-profit, and a risk-sharing partnership) In addition, we are planning innovative inhouse studies to ensure that we have a (C) viable back-up pipeline of variants if NBP14 itself fails during regulatory testing. Furthermore the basic T14 process could have further de-risking applications and proof of concept in B to B assets that could be monetised separately by a licence agreement or SPV.

(D) A first-in-class, non-genetic animal model of AD: currently genetically modified mouse models do not replicate the fully authentic Alzheimer profile. Given we believe we've discovered the basic mechanism driving Alzheimer's, it follows that administration of T14 to normal rodents, should result in impaired memory loss, appearance of traditional brain markers etc. Proof of concept currently underway with Evotec and results expected mid-July.

(E) Combatting metastases by blocking T14. If T14 drives cell development then it might also feature in cancer in an ongoing study with Robin Anderson (Olivia Newton-John Inst, Melbourne) we are showing NBP14 can slow down the growth of tumours and has the potential to combat the spread of metastases.

(F) Skin aging and skin disorders: If neurodegeneration and cancer are aberrant activations of a basic developmental system, driven by T14, then the molecule will be at work even in adulthood, in the skin, - which is continuously in a state of development. Accordingly, pilot studies show that T14 can be bioactive in skin, and is naturally present in epidermal cells but declines with ageing. There are therefore 3 possible applications: (i) antibody detection of natural T14 levels as a biomarker of skin aging, useful to the cosmetics industry; (ii) a synthetic variant of T14 locally applied to reduce skin aging; (iii) NBP14 to block excessive T14 activity that could underlie psoriasis and eczema.

THE NEURO-BIO USP

A BASIC BIOLOGICAL PROCESS (T14) DRIVING CELL GROWTH AND RENEWAL





PUBLICATIONS

BOOKS





A Day in the Life of the Brain (2016) Publisher: Penguin

Each of us has a unique, subjective inner world, one that we can never share directly with anyone else. But how do our physical brains actually give rise to this rich and varied experience of consciousness? In this groundbreaking book, internationally acclaimed neuroscientist Susan Greenfield brings together a series of astonishing new, empirically based insights into consciousness as she traces a single day in the life of your brain. From waking to walking the dog, working to dreaming, Greenfield explores how our daily experiences are translated into a tangle of cells, molecules and chemical blips, and thereby probing the enduring mystery of how our brains create our individual selves.

Mind Change: How digital technologies are leaving their mark on our Brains (2014) Publisher: Random House

The impact of digital technology on the human brain. The human brain has evolved to adapt to the environment: given the environment is changing in unprecedented as a result of emersion in screen culture, our mental processes **might also be changing in an unprecedented way.**

2121: A Tale from the Next Century (16 Jan 2014) Publisher: Head of Zeus.

It is many years since the human race gave up its individuality. Our world is now a place of technicolour, mechanical beauty. Iridescent domes sit upon the ruins of the previous civilization, and small figures wander constantly between them - dancing, singing, running, but never touching. Each of us is immersed in our own virtual reality. We are like children, living in a perpetual summer: ageless, beautiful, and utterly reliant on the lost knowledge of another age. For decades, nothing disturbed our peaceful equilibrium. Until Fred arrived. Until he took one of us from among from us and made her different. Until he showed us what our world was made of...

YOU AND ME: The Neuroscience of Identity

'I have dreamed in my life dreams that have...gone... through me, like wine through water, and altered the colour of my mind.' SMILY BRONTE

Susan Greenfield

You and Me: The Neuroscience of Identity (3 Nov 2011) Publisher: Notting Hill Editions.

Identity is a term much used yet hard to define. Perhaps for this reason, the concept has long been a favourite with philosophers, and for the very same reason has been avoided by brain scientists, - until now. In this neurobiological exploration of identity, Greenfield briefly reviews the social perspective from finger prints, to faces, to signatures of the many ways we try to identity ourselves, - in vain. The psychiatric perspective however does offer some valuable clues that then leads to an excursion into the physical brain: the neuroscience perspective. But identity cannot just be an objective phenomenon: hence any **pertinent brain phenomena have to be seen also, as they are in the following** chapter, from an individual perspective. Armed with the insights gained from these diverse approaches, Greenfield attempts to conceive of actual scenarios in the physical brain that would correspond to familiar examples of identity. However, given the physical brain adapts exquisitely to the environment, and the 21st Century environment is changing in unprecedented ways, are we facing **correspondingly unprecedented changes to our identity?**





ID: The Quest for Identity in the 21st Century (2 Apr 2009)

Publisher: Sceptre

If you've ever wondered what effect video games have on your children's minds or worried about how much private information the government and big companies know about you, ID is essential reading.

Professor Susan Greenfield argues persuasively that our individuality is under the microscope as never before; now more than ever we urgently need to look at what we want for ourselves as individuals and for our future society. ID is an exploration of what it means to be human in a world of rapid change,

a passionately argued wake-up call and an inspiring challenge to embrace creativity and forge our own identities.

Tomorrow's People: How 21st-Century Technology is Changing the Way We Think and Feel (30 Sep 2004) Publisher: Penguin

The book is an exploration of how this century is going to change not just the way we think, but also what we actually think with - our own individual minds. How will new technologies transform the way we see the world? At the beginning of the twenty-first century, we may be standing on the brink of a mind make-over far more cataclysmic than anything that has happened before. As we appreciate the dynamism and sensitivity of our brain circuitry, so the prospect of directly tampering with the essence of our individuality becomes a **possibility.**







The Private Life of the Brain (28 Feb 2002) Publisher: Penguin

What is happening in the brain when we drink too much alcohol, get high on ecstasy or experience road rage? Emotion, says internationally acclaimed neuroscientist Susan Greenfield, is the building block of consciousness. As our minds develop we create a personalized inner world based on our experiences. But during periods of intense emotion, such as anger, fear or euphoria, we can literally lose our mind, returning to the mental state we experienced as infants. Challenging many preconceived notions, Susan Greenfield's groundbreaking book seeks to answer one of science's most enduring mysteries: how our unique **sense of self is created.**

Brain Story: Why Do We Think and Feel as We Do? (20 Jul 2000) Publisher: BBC Books

In this tour through the brain's workings, Susan Greenfield brings the reader right up to date on the latest theories and controversies of neuroscience. From studies of the bizarre and disturbing effects of brain injuries, she tackles the questions that have baffled philosophers since antiquity.

Brainpower: Working Out the Human Mind by Susan Greenfield (30 Mar 2000) Publisher: Element

Advances in medical science have accustomed us to the idea that many of our body organs can be replaced by donation. However, it seems inconceivable to transplant the brain. What is it about our brains that make us different as **animals and individual as people?**

Advances in medical science have accustomed us to the idea that many of our body organs can be replaced with organs donated by some else. However, the one organ that it seems inconceivable to transplant from on person to another is the brain. Why is this? what is it about our brains that makes us different as animals, and individual as people?;The author looks at these and many other questions – at the ways in which our minds identify who we are, what we can do, and how we feel. Under the guidance of Professor Susan Greenfield, the book follows the development of the brain through the stages of a human life, from **the beginning in the womb, during infancy and childhood,**

to the emotional explosion of adolescence, and finally the wisdom of maturity.

HOW WE WORK

How We Work by Susan Greenfield and Phillip Whitfield (31 Oct 1997)

Publisher: Marshall Editions

Explaining the body and mind using numerous full-colour graphics to clarify the subjects, the book: includes the latest ideas and discoveries about the human body and brain; employs numerous comparisons with everyday life and the animal world to help explain how the mind works; shows with case histories what happens when aspects of the body and mind malfunction; gives many everyday examples to match theory with reality; and uses a cross-referencing system to make connections between related areas. The book attempts to make sense of the intricate workings of the body and mind by focusing not on what the body and mind are, but what they actually do. Illustrations and text, which employ comparisons and analogies from everyday life, help explain the many functions of the human body and mind. The first section, "How Your Body Works", describes the body's systems down to the smallest detail, and investigates how they interconnect and function. Every aspect of the mind is explored in "How Your Mind Works", with an explanation of the theory and structure, as well as communication processes and human consciousness in jargon-free language. Susan Greenfield is the author of "Journeys to the Centre of the Mind" and "Concepts in Cellular Neuroscience".



The Human Brain: A Guided Tour (SCIENCE MASTERS) (6 Jul 1997) Publisher: Phoenix

Locked away remote from the rest of the body in its own custom-built casing of skull bone, with no intrinsic moving parts, the human brain remains a tantalising mystery. But now, more than ever before, we have the expertise to tackle this mystery - the last 20 years have seen astounding progress in brain research. Susan Greenfield begins by exploring the roles of different regions of the brain. She then switches to the opposite direction and examines how certain functions, such as movement and vision, are accommodated in the brain. She describes how a brain is made from a single fertilized egg; the fate of the brain is traced through life as we see how it constantly changes as a result of experience to **provide the essence of a unique individual.**

'Dr Susan Greenfield ... is rightly admired as a popular communicator and The Human Brain: A Guided Tour will appeal as a Baedeker to the brain, even to the **non-scientist' The Times**



The Human Mind Explained: The Control Centre of the Living Machine (10 Oct 1996) Publisher: Cassell Illustrated

Seeks to explain the mysterious processes of the human brain, delving into everything from synapses to states of mind. This book introduces comparisons with animal brains, and provides human case histories to illustrate specific mental oddities, banishing many myths in the process.

TOWARD A SCIENCE OF CONSCIOUSNESS



Journey to the Centers of the Mind: Toward a Science of Consciousness (4 May 1995) Publisher: W.H.Freeman & Co Ltd

How do our personalities and mental processes, our "states of consciousness", derive from a gray mass of tissue with the consistency of a soft-boiled egg? How can mere molecules constitute an idea or emotion? Some of the most important questions we can ask are about our own consciousness. Our personalities, our individuality, indeed our whole reason for living, lie in the brain and in the elusive phenomenon of consciousness it generates. Thinkers in many disciplines **have long struggled with such questions, often in ways that have seemed** incompatible, if not downright contradictory. Philosophers have meditated on the subjective experience of consciousness, with little attention to the physical realm, while scientists have sought to establish a causal relation between brain function and mind, often ignoring the qualitative aspects of experience. In Journey to the Centers of the Mind, neuroscientist Susan Greenfield offers an intriguing, unifying theory of consciousness that encompasses both **phenomenological mental**

events and physical aspects of brain function. Using information gathered from clues in animal behavior, human brain damage, computer science, neurobiology, and philosophy, Greenfield offers a "concentric theory" of consciousness, and shows how certain events in the brain correspond to our qualitative experience of the world. Demonstrating the ways in which we can interpret the experience of consciousness in terms of interactions among neurons, she explores how **much we can learn by continuing to find the links between our physical and mental inner worlds.**



Mindwaves: Thoughts on Intelligence, Identity and Consciousness by Colin Blakemore and Susan Greenfield (24 Sep 1987) Publisher: Wiley-Blackwell

Is the mind an entity that exists apart from the brain? Is the relationship of brain and mind like that of computer hardware and software? Do animals have minds with which they think? These are some of the questions addressed in "Mindwaves" by specialists in brain research.

CHAPTERS AND REVIEWS

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PUBLIC ACTIVITIES

SPEECHES IN HOUSE OF LORDS, OF DIRECT RELEVANCE TO SCIENCE OUTREACH AND RESEARCH

https://hansard.parliament.uk/search/MemberContributions?house=Lords&memberId=2166

19 th January 2023	Lord Pickles to move that this House takes note of International Holocaust Memorial Day.
17th January 2019:	Baroness Kidron that this House takes note of the relationship between the use of digital technology and the health and well-being of children and young people.
19th July 2018:	Lord Norton of Louth that this House takes note of the value to the United Kingdom of higher education as an export.
16th April 2018:	Baroness Garden of Frognal to ask Her Majesty's Government what progress is being made in developing a sustainable lifelong learning culture in England.
7th September 2017:	Moved by Baroness Lane-Fox of Soho: That this House takes note of the case for improved digital understanding at all levels of United Kingdom society
12th September 2016:	Lord Storey to ask Her Majesty's Government how they intend to ensure that all teachers at academies and free schools are fully qualified.
28th January 2016:	The role of adult education and lifelong learning, Moved by Baroness Sharp: that this House takes note of the role of adult education and lifelong learning and the need to develop the skills needed to strengthen the United Kingdom economy
05 March 2015:	Women's economic empowerment both nationally and internationally, Moved by Baroness Jolly: That this House takes note of women's economic empowerment and the progress in achieving it that has been made in the United Kingdom and internationally.
09 April 2014:	Higher Education, Moved by Lord Ahmad of Wimbledon: That this House takes note of higher education in the United Kingdom.
13 March 2014:	Regenerative Medicine: S&T Committee Report, Moved by Lord Patel: To move that this House takes note of the Report of the Science and Technology Committee on regenerative medicine (1st Report, HL Paper 23).
13 March 2014:	Education: Social Mobility, Moved by Lord Nash: To move that this House takes note of the role of primary and secondary education in improving social mobility.
17 October 2013:	Drugs, Moved by Baroness Meacher: That this House takes note of the report of the House of Commons Home Affairs Select Committee Drugs: Breaking the Cycle (HC 184, 9th Report Session 2012–13) and the report of the All-Party Parliamentary Group for Drug Policy Reform, published in January.
05 December 2012:	Question for Short Debate: Digital Technology. To ask Her Majesty's Government what assessment they have made of the impact of digital technologies on the mind.
31 March 2011:	Debate on Economy: Growth. Moved by Lord Hollick to call attention to the case for policies to support economic growth and to promote investment, innovation, technology, infrastructure, skills and job creation: and to move for papers.

25 Feb 2010:	Debate on Higher and Further Education: Funding. Moved By Lord Baker of Dorking to call attention to the consequences of the cuts to higher and further education funding that have been announced; and to move for Papers.
12 Feb 2009:	Debate on Children: Social Networking Sites. Moved By Lord Harris of Haringey to call attention to the growth in the use of social networking internet sites by children and the adequacy of safeguards to protect their privacy and interests; and to move for papers.
03 May 2007:	Debate on Health: Stem Cell Therapy. Moved By Lord Alton of Liverpool
03 May 2007:	Debate on Schools: Science Teaching. Moved by Lord Broers rose to call attention to science teaching; and to move for Papers
11 May 2006:	Debate on Science and Technology: response by Lord Sainsbury of Turville
09 Dec 2003:	Debate on Science and Politics: response by Lord Sainsbury of Turville