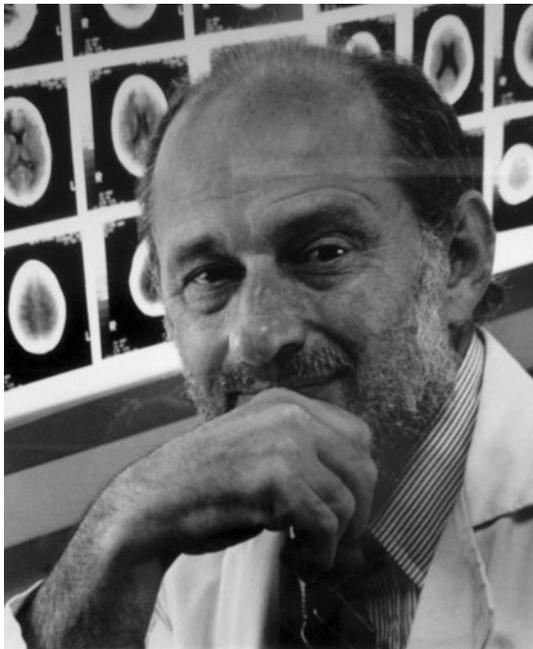


Norman Geschwind (1926–1984)

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Norman Geschwind (1926–1984) was born in New York City on 8 January, 1926, where his parents, Hannah and Morris, had arrived from Polish Galicia 20 years before [4]. When Norman was four, his father died of pneumonia.

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Despite difficulties, Hannah sent Norman and his brother Irving to the Hebrew Institute of Borough Park, where he never mastered Hebrew [2]. His later years at the Boy's High School in Brooklyn were instead recognized as the most profound educational experience of his life [2]. He loved literature and Latin, was attracted by mathematics and nicknamed the 'head' [4]. Geschwind had the credits to enroll in Columbia College and City College, but his Latin teacher convinced him to enter Harvard University on a Pulitzer Scholarship [2]. During his first two years in Boston, Geschwind's interests turned towards medicine, but his application to Harvard Medical School was turned down. In 1944 he was drafted, and after serving for 2 years he returned to Harvard University, where he completed his Bachelor of Arts Degree, *magna cum laude* [10]. Geschwind then began to study anthropology and psychology, partly through amazement by the ability of soldiers in battle to forget their own safety and attack when they were asked to [4]. His interest in psychology soon resulted in a fascination with psychiatry, and he applied again, this time successfully, to Harvard Medical School. Previously, he believed that anatomy and physiology were irrelevant to the study of human behaviour, but now he had changed his mind, thanks to the neuroanatomical classes of Marcus Singer, who introduced him to aphasia and epilepsy research. He switched from psychiatry to neurology and began investigating higher brain functions. After graduation in 1951 he continued his studies as an intern at Boston's Beth Israel Hospital, as a young physician at London's National Hospital at Queen Square on a Moseley Travelling Fellowship (from 1952 to 1953), and subsequently as a United States Public Health Service fellow until 1955 [5]. He devoted himself to the pathophysiology of neurological disease, such as periodic paralysis and the application of procainamide in myotonia [5], influenced by Sir Charles Symonds's teachings about the need to 'localize'

the lesion rather than ‘jump to a diagnosis’ [3]. Having been appointed neurology Chief Resident at Boston City Hospital under Derek Denny-Brown, in 1955, he carried on his research activity at the Massachusetts Institute of Technology (MIT) Department of Biology. In 1958 he joined the Neurology Department of the Boston Veterans Administration (VA) Hospital and worked on the squid axon in Francis O. Schmitt’s MIT laboratory. During these years, he met Davis Howes, with whom he focused on the psycholinguistic aspects of aphasia. Fred Quadfasel prompted Geschwind to discover classic texts of neurology from the nineteenth and early twentieth century, thus exposing him to classic localizationist theory and leading him to reintroduce, among others, the writings of Paul Broca, Carl Wernicke and Joseph Jules Dejerine [4]. Geschwind became Chief of Neurology at the Boston VA Hospital in 1962, and Associate Professor in Neurology at Boston University. Along with Edith Kaplan, he founded the Boston University Aphasia Research Center, one of the first interdisciplinary Institutes entirely dedicated to aphasia research and including psychologists such as Harold Goodglass. Geschwind ended his tenure as Chief of Neurology at the VA in 1966 and then became Professor and Chair of the Department of Neurology at Boston University until 1968 [10]. In 1969, he succeeded his mentor Denny-Brown as Harvard Medical School’s James Jackson Putnam Professor of Neurology and became Director of the Harvard Neurological Unit of the Boston City Hospital [2]. Six years later, he moved to the Beth Israel Hospital, returning to the place where he had taken his first steps as internship trainee. Geschwind is one of the founders of the fields of ‘Behavioral Neurology’ and ‘Neuropsychology’. He emphasized the role of white matter tract projections to and from different brain regions in explaining specific behavioural disturbances, in contrast to the widespread holistic approach to cortical functions that he initially supported, influenced by John Hughlings Jackson, Kurt Goldstein, Henry Head, and Karl Lashley [1, 6]. He addressed not only key issues in aphasia and epilepsy [3, 7], but also in dyslexia and cerebral asymmetries during development, in man and animals [6]. Remarkably, Geschwind disproved of the notion of the anatomist Gerhard von Bonin that structural asymmetries in the human brain could not account for hemispheric cerebral specialization, by identifying asymmetries in the planum temporale [5, 9]. He also opposed the strict dichotomy between right- and left-handers, suggesting instead that handedness was a continuum [9]. He thought that hand skills were intimately linked to cognitive features as well to other physiopathological factors, to the intrauterine hormonal and immune environment and to other extrinsic influences on brain development early in life [8]. Current neurological eponyms include ‘Geschwind syndrome’, a personality syndrome particularly linked to temporal lobe epilepsy, and the ‘Geschwind–Galaburda hypothesis’, explaining sex

differences in cognitive skills in relation to the cerebral lateralization. He was mentor to numerous neurologists and neuroscientists, among them Antonio Damasio, Hanna Damasio, Elliot Mufson, Kenneth Heilman, Marsel M. Mesulam, François Boller, Gary W. Van Hoesen, and Elliott Ross. He was a great supporter of interdisciplinary brain research involving linguistics and cognitive psychology. On the Tuesday evenings of spring semesters in the 1970s and 1980s, his not-for-credit lectures attracted so many people that the steps were systematically littered with sitters and people standing at the back [4]. He is recognized as one of the most influential figures of postwar neuroscience [4] and also remembered as an erudite and loquacious speaker and writer who knew almost everything. Geschwind died prematurely on November 4, 1984, aged 58, of acute myocardial infarction. His work evolved from the reestablishment of classic localisationist thinking to the forging of new frontiers, reemphasizing that knowing the past is necessary to make progress [5]. Geschwind’s legacy of knowledge and ideas is still propelling neuroscientific research, and the Norman Geschwind Award in Behavioral Neurology and the Norman Geschwind-Rodin Prize are given in his honor today.

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Conflicts of interest The corresponding author states that there is no conflict of interest.

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