Biography

R. W. Sperry was born August 20, 1913, in Hartford, Connecticut, and received his primary and secondary education nearby in Elmwood and West Hartford. He attended Oberlin College in Ohio on a four-year Miller Scholarship where he majored in English literature and varsity athletics. Influenced by courses in psychology with R. H. Stetson and L. E. Cole at Oberlin, he switched from humanities to psychology for graduate work and obtained his MA degree in psychology at Oberlin in 1937. During these initial graduate years under Stetson, he obtained a background in theory and philosophy that provided a life-long guideline to subsequent work on the brain and behavior.

In 1938, he went to the Department of Zoology at the University of Chicago for doctoral work in order to study under Paul Weiss whose research findings were at that time posing a strong challenge to fiber connection theories of neural integration and raising issues basic to brain models for learning, memory, perception, and other higher functions that by now had become Sperry's major interest. Other mentors at Chicago included Sewall Wright in genetics, Ajax Carlson in physiology, Moore in endocrinology, Gerard in neurophysiology, Klüver in psychology, Poljak in vision, and Bartelmez in neurology. His doctoral research on reeducation following surgical interchange of nerves and muscles led to a basic correction of neurological doctrine on central nervous plasticity and the functional interchangeability of neuronal connections.

On a National Research Council postdoctoral fellowship, he moved in 1941 to the laboratory of K. S. Lashley at Harvard University where he began studies on the selective growth of brain connections. After the year in Cambridge, he moved with Lashley as a research associate to the Yerkes Laboratories of Primate Biology in Orange Park, Florida. The relative isolation of the Florida station was much ameliorated by laboratory colleagues such as D. Hebb, A. Riesen, H. Nissen, W. Young, G. Clark, R. Blum, and J. Semmes in addition to Lashley himself and the many visiting investigators. During World War II, he participated in an OSRD Medical Research project between Chicago and Orange Park on the surgical repair of nerve injuries. Meanwhile, evidence on the critical importance of specific fiber connectivity in brain organization had been consistently confirmed, and
his interests turned to focus on the question of how the precise patterns of neural connections for behavior become established initially in development.

He returned to the University of Chicago in 1946 as assistant professor in the Department of Anatomy, attracted by Bartelmez, Poljak, and the tradition of C. J. Herrick. In 1952, he became a Sectional Chief in the National Institute of Neurological Diseases and Blindness with a joint appointment as associate professor of psychology at the University of Chicago. By this time, the general issues on how a brain is able to inherit and grow its own functional wiring had been largely resolved, and his investigations turned to tests of connectivity versus electric field theory in perception and to studies on the corpus callosum that in particular appeared to present at the highest cerebral levels an outstanding exception to preceding conclusions on neural plasticity. The fine-scale microscopical surgical techniques used earlier were applied to the large brains of mammals to open new experimental potentials including the so-called split-brain preparation. From the late 1940s on, his studies were conducted also in sojourns at various Marine Stations at Bimini, Bermuda, Beaufort, Miami, Galveston Medical Center, and Sea Life Park in Hawaii, mainly on regeneration and selective growth of brain connections.

In 1954, he joined George Beadle's group at Caltech to become the Hixon Professor of Psychobiology. He and his associates in the Laboratory of Psychobiology have since continued to pursue a broad range of projects focused around the growth of brain circuits, consolidation of the memory trace, and a variety of problems in cerebral organization. The latter came to be centered largely around "split-brain" procedures as a basic approach, first in animals and later used in a group of commissurotomy patients of P. J. Vogel and J. E. Bogen.

Sperry was cited by Oberlin College in their original group of Distinguished Alumni in 1954; was elected to the National Academy of Sciences in 1960; and to the American Academy of Arts and Sciences in 1963. In 1969, he was awarded the Warren Medal of the Society of Experimental Psychologists. He is a member of many professional societies, has served as Chairman of the Experimental Psychology Study Section of the National Institutes of Health, on the Fellowship Committee of the National Science Foundation, on the Corporate Visiting Committee for Psychology at MIT, and on the editorial boards of Experimental Neurology, Brain Research, Neuropsychologia, and The International Journal of Neuroscience.

Scientific Publications

1939
Functional results of muscle transplantation in the hind limb of the Albino rat. Anatomical Record, 75(Suppl.), 51. (Abstract)

1940
The functional results of muscle transposition in the hind limb of the rat. Journal of Comparative Neurology, 73, 379-404.

1941
The effect of crossing nerves to antagonistic muscles in the hind limb of the rat. Journal of Comparative Neurology, 75, 1-19.

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1942
Fixed persistence in the rat of spinal reflex patterns rendered extremely maladaptive by cross union of sensory nerves. *Anatomical Record, 84*, 483. (Abstract)
Reestablishment of visuomotor coordinations by optic nerve regeneration. *Anatomical Record, 84*, 483. (Abstract)
Transplantation of motor nerves and muscles in the forelimb of the rat. *Journal of Comparative Neurology, 76*, 283–321.

1943
Functional results of crossing sensory nerves in the rat. *Journal of Comparative Neurology, 78*, 59–90.
Visuomotor coordination in the newt (Triturus viridescens) after regeneration of the optic nerve. *Journal of Comparative Neurology, 79*, 33–35.

1944
Optic nerve regeneration with return of vision in anurans. *Journal of Neurophysiology, 7*, 57–69.

1945
Fixed persistence in the rat of spinal reflex patterns rendered extremely maladaptive by cross union of sensory nerves. *Federation Proceedings, 4*, 67. (Film abstract)
Horizontal intracortical organization in the cerebral control of limb movement. *Proceedings of the Society for Experimental Biology and Medicine, 60*, 78–79.

1946

1947
Cerebral regulation of motor coordination in monkeys following multiple transection of sensorimotor cortex. *Journal of Neurophysiology, 10*, 275–294.
Effect of crossing nerves to antagonistic limb muscles in the monkey. *Archives of Neurological Psychiatry, 58*, 452–473.

1948
Nature of functional recovery following regeneration of the oculomotor nerve in amphibians. *Anatomical Record, 97*, 293–316.

1949
Orderly patterning of synaptic associations in regeneration of intracranial fiber tracts mediating visuomotor coordination. *Anatomical Record, 102*, 63–75.

1950
Reimplantation of eyes in fishes (Bathygobius soporator) with recovery of vision. *Proceedings of the Society for Experimental Biology and Medicine, 71*, 80–81.

1951
With N. Miner. Observations on the genesis of cutaneous local sign. *Anatomical Record, 106*, 317. (Film abstract)

1952

1953

1954

1955
1955

Windle (Ed.), *Regeneration in the central nervous system.* Springfield, Ill.: Charles C Thomas.


With N. Minner. Pattern perception following insertion of mica plates into visual cortex. *Journal of Comparative and Physiological Psychology,* 48, 463–469.

1956


Experiments on perceptual integration in animals. *Psychiatric Research Reports,* 6, 151–160.


1957


High order integrative functions in surgically isolated somatic cortex in cat. *Anatomical Record,* 127, 371. (Abstract)


1958

With H. L. Abora. Studies on color discrimination following optic nerve regeneration in the cichlid fish, *Astronotus ocellatus.* *Anatomical Record,* 131, 529. (Abstract)

With R. E. Myers. Interhemispheric communication through the corpus callosum. *Archives of Neurology and Psychiatry,* 80, 298–303.


Corpus callosum and interhemispheric transfer in the monkey, *Macaca mulatta.* *Anatomical Record,* 131, 297. (Abstract)


1959

With M. Glickstein. Contralateral transfer of somesthetic discriminations in monkeys after section of major hemispheric commissures. *American Psychologist,* 14, 385. (Abstract)


1960


1961


With T. S. Veneda. Central nervous pathways involved in conditioning. *Anatomical Record,* 139, 283. (Abstract)

1962


Chemoaffinity in the orderly growth of nerve fiber patterns and connections. Proceedings of the National Academy of Sciences, 50, 703–710.

Evidence behind chemoaffinity theory of synaptic patterning. Anatomical Record, 145, 283. (Abstract)


With H. L. Arora. Selectivity in regeneration and reconnection of the oculomotor nerve in cichlid fishes. Anatomical Record, 148, 357. (Abstract)


The great cerebral commissure. Scientific American, 210, 42–52.


Corpus callosum and intermodal visuo-tactile integration in the monkey. Anatomical Record, 151, No. 3, 476. (Abstract)


Brain research: Some head-splitting implications. The Voice, 15, 11–16.


With M. S. Gazzaniga. Language following surgical disconnection of the hemispheres. In, Brain mechanisms underlying speech and language. New York: Grune & Stratton.


Split-brain approach to learning problems. In Quarton, Melnechuk, & Schmitt (Eds.), The neurosciences: A study program. New York: Rockefeller University Press.
1968


1969


1970


Perception in the absence of the neocortical commissures. *Association for Research of Nervous and Mental Diseases*, 48, 123–138.


In Press


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COMMITTEE ON SCIENTIFIC AWARDS

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