

# Introduction to the sixteenth C.U. Ariëns Kappers lecture

D.F. Swaab\*, J. van Pelt and M.A. Hofman

*Netherlands Institute for Brain Research, Meibergdreef 33, 1105 AZ Amsterdam, The Netherlands*

Professor Dennis D.M. O'Leary was invited to deliver the sixteenth C.U. Ariëns Kappers Lecture during the 23rd International Summer School of Brain Research on 25 August 2003, for his outstanding achievements in unraveling the molecular control of cortical development. The C.U. Ariëns Kappers Award was created to honor the first director of the Netherlands Institute for Brain Research. The award is presented approximately once a year to a leading and outstanding neuroscientist, who is invited to give the C.U. Ariëns Kappers Lecture (Table 1).

Cornelius Ubbo Ariëns Kappers was born in Groningen in 1877. During his medical training he was inspired by the neurologist Prof. Cornelis Winkler to take up brain research, which in 1904 led to a Ph.D. thesis on the neuroanatomy of bony and cartilaginous fishes. This choice was strongly reinforced by his appointment in 1906 as "Abteilungsvorsteher" (i.e., head of the department) at the "Senckenbergisch-Neurologisches Institut" of the famous neurologist and comparative neuro-anatomist Prof. Ludwig Edinger in Frankfurt am Main, Germany.

Meanwhile, at the meeting of the International Association of Academies held in Paris in 1901, the anatomist Dr. Wilhelm His proposed that research on the nervous system should be placed on an international footing. Thus, on 5 June 1903, at Burlington House in London, the former headquarters of the

Royal Society, the "Central Commission for Brain Research" was constituted. This so-called "Brain Commission" set itself the task of "... organizing a network of institutions throughout the civilized world, dedicated to the study of the structure and functions of the central organ. ..." Several governments responded to this ambition by founding brain research institutes (Table 2), among which was the Central Institute for Brain Research in the Netherlands, which opened its doors on 8 June 1909, in the presence of the Nobel laureate Dr. Camillo Golgi.

Prof. C.U. Ariëns Kappers became the first director of the institute, a position he held until his death in 1946. He turned the institute into an internationally renowned place; the three volume

Table 1. Previous awarded C.U. Ariëns Kappers lectures in this series were given by the following authors:

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1	Pasco Rakic (New Haven, USA, 1987)
2	Anders Björklund (Lund, Sweden, 1988)
3	Mortimer Mishkin (Bethesda, USA, 1989)
4	Robert Y. Moore (New York, USA, 1991)
5	Dale Purves (Durham, USA, 1993)
6	Joseph Takahashi (Evanston, USA, 1995)
7	Patricia S. Goldman Rakic (New Haven, USA, 1996)
8	Dean H. Hamer (Bethesda, USA, 1999)
9	Gerald M. Edelman (San Diego, USA, 1999)
10	Vilayanur S. Ramachandran (San Diego, USA, 1999)
11	Steven P.R. Rose (Milton Keynes, UK, 1999)
12	Michael S. Gazzaniga (Hanover, USA, 1999)
13	Antonio R. Damasio (Iowa City, USA, 1999)
14	Rudolf Nieuwenhuys (Amsterdam, The Netherlands, 2000)
15	M.H. Tuszynski (San Diego, USA, 2001)

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\*Corresponding author. Tel.: +31 20 566 5500; Fax: +31 20 696 1006; E-mail: d.swaab@nih.knaw.nl

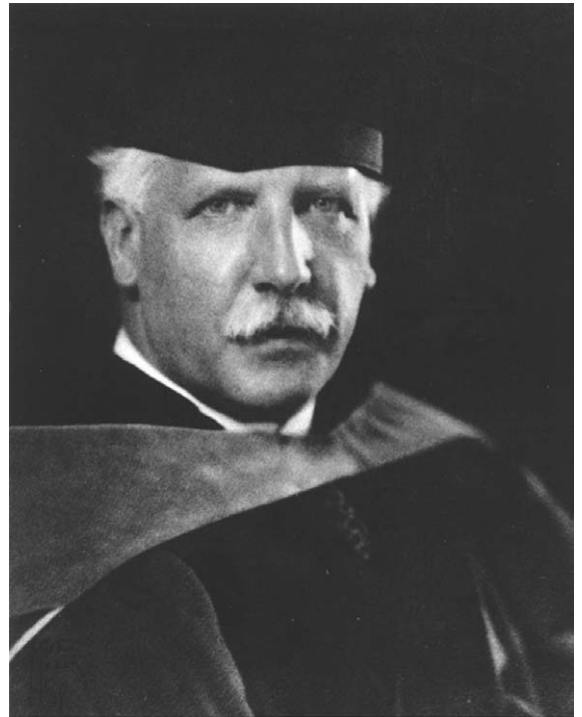
Table 2. Brain commission: register of “interacademic brain institutes”

	Name of the institute	Name of the director	Year of recognition
1	Laboratory for Biological Sciences (University of Madrid)	Santiago Ramón y Cajal	1906
2	Neurological Institute (University of Leipzig)	Paul E. Flechsig	1906
3	Neurological Institute (University of Vienna)	Heinrich Obersteiner	1906
4	Brain-Anatomical Institute (Zürich)	Constantin von Monakow	1906
5	Neurological Department (Wistar Institute, Philadelphia)	Henry H. Donaldson	1906
6	Neurological Institute (Frankfurt am Main)	Ludwig Edinger	1906
7	Psychoneurological Institute (St. Petersburg)	Vladimir M. Bekhterev	1908
8	Central Institute for Brain Research (Amsterdam)	Cornelius U. Ariëns Kappers	1908
9	Brain-Histological Institute (University of Budapest)	Karoly Schaffer	1912

Source: Richter, J. (2000) Brain Res. Bull., 52: 445–457.

book he wrote together with Dr. G.C. Huber and Dr. E.C. Crosby, entitled *The Comparative Anatomy of the Nervous System of Vertebrates, including Man* (1936), became a classic and is still well cited. He traveled all over the world and received a visiting professorship at Peking Union Medical College in China from 1923 to 1924. Four years later he was awarded an Honorary Doctorate of Sciences from Yale University. In 1929 Ariëns Kappers held his inaugural lecture as “extraordinary professor” at the medical faculty of the University of Amsterdam and in the early thirties he received further Honorary Doctorates from the Universities of Glasgow, Dublin, and Chicago.

We are very glad that Prof. Dennis D.M. O’Leary accepted our invitation to deliver the seventeenth C.U. Ariëns Kappers Lecture in honor of this exceptional scientist. With a background in Biology and Biochemistry at the University of Illinois, Dennis O’Leary received his Ph.D. from Washington University in the Neural Sciences and was a postdoctoral fellow at the Salk Institute. Presently, he is a professor in the Molecular Neurobiology Laboratory, studying genes that guide brain development in the growing embryo. He focuses on the genes that orchestrate cell identity and arrange connections in the cortex, the part of the brain that controls perception, reasoning and voluntary actions. O’Leary’s lab identified the first genes that “tell” cortex cells their function. For example, the gene *Emx-2* can switch cells that normally make up motor cortex into visual cortex. O’Leary’s team also identified genes that control how orderly connections are set up between the retina and the part of the brain that processes vision, and genes that appear to be



*C. U. Ariëns Kappers*

C.U. Ariëns Kappers (1877–1946).

candidates for Parkinson’s disease genes. Their findings may provide insights into congenital birth defects, neurodegenerative diseases, and neural injury.

With the molecular control of neuronal connections and its focus on the visual system O’Leary’s research interests matched optimally the theme of this Summer School. The next chapter therefore

excellently illustrates the progress made in the understanding of mechanisms controlling the formation of functional neuronal networks.

Professor O'Leary received many awards and honors, among which are the Society for

Neuroscience Young Investigator Award and the Decade of the Brain Medal from the American Association of Neurological Surgeons. Dr. O'Leary is senior editor of the *Journal of Neuroscience*.