

# CURRICULUM VITAE (June 2017)

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**Name:** Hans Rurik Albert Hultborn

**Birth date:** November 17, 1943.

**Birthplace:** Umeå, Sweden.

**Nationality:** Originally Swedish, *from November 1985 Danish*.

**Education:** GCE from Hvitfeldtska HAL Gothenburg, 1962. Studies in psychology at Gothenburg University, 1963. Studies in medicine at Gothenburg University, 1963-1971. D.MSc.(Ph.D.) and 'docent' (physiology) at Gothenburg University, 1972.

**Appointments:** In the period 1966-1980 various appointments at the Institute of Physiology, University of Gothenburg, as assistant, research assistant, and lecturer.

· From 1 April, 1980 **Professor of Neurophysiology at the University of Copenhagen**. Emeritus professor since September 1<sup>st</sup>, 2015.

### **Prolonged stays abroad:**

- 1972-73 (12 months) Department of Biophysical Engineering, Faculty of Engineering Sciences, Osaka University, Japan (with professor **Nakaakira Tsukahara**)
- 1977 (3 months) Service de Rééducation Neurologique, Hopital de la Salpêtrière, Paris (with professor **Emanuel Pierrot-Desilligny**) thereafter continued cooperation with this group).
- 1988-89 (6 months) Visiting professor at the Department of Physiology, Christian-Albrecht University, Kiel (with professor **Michael Illert**)
- 1993-94 (7 months) Visiting professor at the Department of Physiology, University of Manitoba, Winnipeg, Canada (with prof **Larry Jordan**)
- 2008 - frequent stays at Chengde Medical University, Hebei, China (Honorary Professor since 2008 – my previous PhD-student **Liqun Ren** is now Director of the Spinal Cord Injury Laboratory there).
- 2011 - Frequent stays at Department of Physiology, CINVESTAV, Mexico City, Mexico - research collaboration (with **Jorge Quevedo**)

### **Administrative duties at Copenhagen University, Faculty of Health Sciences:**

- Chairman of Institute of Neurophysiology 1981-1986, 1987-1992
- Chairman of the Neuroscience Centre at the Medical Faculty/Faculty of Health Sciences 1990-1996
- Member of the Faculty Council 1983-1986, 1992-1993, 1996-2002
- Member of the Research Committee of the Faculty 1983-1986, 1992-1993, 1995; its chairman 1984-1986
- Member of the Senate of the University (Konsistorium) 1989-1993, 1996-2002
- **Dean, Faculty of Health Sciences 1996-2002**

### **Honorary Memberships of Scientific Societies – and other Awards**

The Royal Danish Academy of Sciences and Letters, 1990  
The Royal Society of Science and Literature in Gothenburg, 1995  
The Norwegian Academy of Sciences, 1998  
The Thunberg medal/prize (University of Lund), 2004  
The Carmichael Memorial Medal (University of London), 2006  
The Order of the Dannebrog, Knight, 1st Class, 2006  
“The People’s Republic of China Friendship Award”, 2013

### **Ordinary Membership of Scientific Societies:**

The Scandinavian Physiological Society 1968 -  
Danish Society for Neuroscience (and thus FENS and IBRO) 1984 -  
The New York Academy of Sciences 1988 -  
The Physiological Society (London) 1989  
Society for Neuroscience (The American) 1990 -

### **Scientific committees etc.:**

- **President of the Scandinavian Physiological Society 1988-1994**
- President-elect of the **Federation of European Physiological Societies** 2001-2003, **President 2003-2007**
- **Co-founder of the Danish Society of Neuroscience** (1984), its chairman 1984 - 1988.
- Danish representative in International Brain Research Organization (IBRO) 1988 - 1995
- Danish representative in the Steering Committee of the European Neuroscience Programme under European Science Foundation 1991 - 1996
- Danish representative in the EC Task Force on Brain Research 1993
- Member of the review committee of the Human Frontier Science Program 1992-1995
- Member of the Scientific Council of Institut *pour la Recherche sur la Moëlle Epinière*, Paris 1999-

- Member of the Board of the Medical Valley Academy 1997 – 2002
- Member of the *External Advisory Board* visiting the Miami Project in January 2004
- Board member of the Desirée and Niels Yde Foundation 2001- 2005
- Chairman of the Board of the Strategic Research Committee, the Medical Faculty, Lund's University 2004-2005
- Member of the Anders Jahre's Prize Committee (Oslo) 2002-2009
- Member of the Norwegian Medical Research Councils review of physiology and neuroscience 2011

**Foreign guest scientists:**

**20 international post-docs/guest professors** (from 1981; staying for more than 6 months, and often more than 2 years).

**PhD-students:**

**8 postgraduate students have obtained Ph.D.degrees** under my guidance – presently co-supervisor of a PhD student at CINVESTAV(Center for Research and Advanced Studies of the National Polytechnic Institute), Mexico City.

**Publications etc:**

I have presently authored around 130 articles (in Google Scholar > **13.300 citations, H-index=60**)  
<https://scholar.google.dk/citations?user=dC4G4rMAAAAJ&hl=da> .

**The field of research covers**

- 1) spinal circuits and their control from the brain in relation to "motor control",
- 2) locomotion and sensory control of the spinal "**C**entral **P**attern **G**enerator",
- 3) both animal research and parallel work in humans,
- 4) the pathophysiology of "spasticity" following spinal cord lesion

Hans Hultborn joined the Medical Faculty at Gothenburg University in 1963 and started his PhD studies with Anders Lundberg and Elzbieta Jankowska as mentors in parallel with his medical studies. He defended his D.M.Sci. thesis in 1972 on interneurons in the reciprocal Ia inhibitory pathway to motoneurons of antagonist muscles. In 1980 he was appointed Professor in Neurophysiology at the University of Copenhagen, Denmark.

During his post.doc. period with N Tsukahara in Osaka, he joined a project on the electrophysiological evidence on collateral sprouting from cortico-rubral fibres following cerebellar lesions.

Together with E. Pierrot-Deseilligny (the Salpêtrière Hospital in Paris) he developed indirect methods for estimating recurrent inhibition, and presynaptic inhibition in humans – in Copenhagen the group continued to study the control of these spinal reflexes, and – not least - the reciprocal Ia inhibition – during movement in healthy subjects, as well as changes in patients following spinal cord injury or stroke.

Back in Gothenburg, after the post-doc period in Japan, he demonstrated that a short-lasting activation of Ia afferents could cause a very long-lasting contraction of the muscle receiving the monosynaptic Ia excitation. Several years later (now in Copenhagen) he demonstrated that that this long-lasting excitation was explained by the generation of plateau potentials (persistent inward current; PICs) in the motoneurons – and that they were dependent on a sustained monoaminergic innervation of the motoneurons. During the last several years he has continued the studies on the plasticity below spinal lesions together with colleagues who has added the techniques of immunohistochemistry and gene-expression changes to his own electrophysiological expertise.

He also studied the importance of sensory input to the spinal cord in controlling the "central pattern generator" (CPG) for locomotion, which determines the initiation and termination of the swing and stance phases in locomotion. Presently the study of the interneurons mediating these effects opens for an identification of the interneurons which are part of the CPG.