



Curriculum Vitae

Personal information **Dirk Van Roost**

Work experience

01/10/2018 – CURRENT – Ghent, Belgium

PART-TIME ACADEMIC NEUROSURGEON – Universitair Ziekenhuis Gent
Part-time continued activity after reaching the legal retirement age:

- 1) Functional neurosurgery, comprising
 - a) stereotactic deep brain stimulation for movement disorders (Parkinson's disease, essential tremor, dystonia), psychiatric disorders (obsessive compulsive disorder), epilepsy, and pain;
 - b) diagnostic and therapeutic surgical interventions in patients with medically refractory epilepsy;
- 2) Skull base surgery;
- 3) Supervision of PhD students;
- 4) Regular teacher at the courses of the European Association of Neurosurgical Societies.

01/05/2003 – 30/09/2018 – Ghent, Belgium

NEUROSURGEON - HEAD OF DEPARTMENT – Universitair Ziekenhuis Gent

- 1) General neurosurgical practice, including brain tumors, vascular malformations, cerebral endoscopy, radiosurgery, skull base and spine surgery, and pain treatment, but special interest in functional stereotaxis (deep brain stimulation) and epilepsy surgery.
- 2) University education teacher in medicine and speech therapy.
- 3) Internship supervisor responsible for neurosurgeons in training.
- 4) Researcher and supervisor of PhD students.
- 5) Head of department: management of the neurosurgical department.

02/01/1985 – 30/04/2003 – Bonn, Germany

FULL-TIME NEUROSURGEON, STAFF MEMBER, AND LASTLY EXECUTIVE ASSISTANT PROFESSOR – Universitätsklinikum Bonn, Klinik und Poliklinik für Neurochirurgie

- 1) General neurosurgery, comprising brain tumors, aneurysms and vascular malformations, skull base and spine surgery, pain treatment, stereotactic and epilepsy surgery.
- 2) Stays in neuroradiology and intensive care.
- 3) University teaching.
- 4) Research.

03/11/1983 – 02/12/1984 – Neder-over-Heembeek, Belgium

CONSCRIPT SOLDIER IN THE MEDICAL SERVICE OF THE BELGIAN ARMED FORCES – Militair Hospitaal Koningin Astrid

- 1) Neuropsychiatry.
- 2) Neurosurgical advice.

Education and training

25/10/2001 – Tersteegenstraße 9, Düsseldorf, Germany

CERTIFICATE IN SPECIAL NEUROSURGICAL INTENSIVE CARE – Ärztekammer Nordrhein

<https://www.aekno.de/aerzte/weiterbildung>

30/05/2001 – Regina-Pacis-Weg 3, Bonn, Germany

RESEARCH DOCTORAL DEGREE / PH.D. / "HABILITATION" IN

NEUROSURGERY – Rheinische Friedrichs-Wilhelms-Universität Bonn
The cerebral blood flow in the presence of intracranial tumors, measured by Xenon-CT.
www.uni-bonn.de

11/04/1991 – Tersteegenstraße 9, Düsseldorf, Germany
CERTIFICATE IN RADIATION PROTECTION IN DIAGNOSTIC RADIOLOGY –
Ärztchamber Nordrhein
<https://www.aekno.de/aerzte/weiterbildung>

11/11/1989 – Medizinische Fakultät - Dekanat , Venusberg-Campus 1, Haus 33, Bonn, Germany
MASTER IN MEDICINE / "DOKTOR DER MEDIZIN" – Rheinische Friedrich-Wilhelms-Universität Bonn
magna cum laude Commissural myelotomy in the treatment of pain.
Metanalysis and review of the literature.
<https://www.medfak.uni-bonn.de/>

01/08/1980 – 30/09/1983 – Kapucijnenvoer 33, Leuven, Belgium
RESIDENT IN NEUROSURGERY – Universitair Ziekenhuis Leuven, campus Sint-Rafaël
Full-time training in neurosurgery, with emphasis on neurotrauma, cerebrospinal fluid shunts, functional and stereotactic neurosurgery.
<https://www.uzleuven.be/>

01/08/1978 – 31/07/1980 – Calwer Straße 7, Tübingen, Germany
RESIDENT IN NEUROSURGERY / GENERAL SURGERY – Chirurgische Universitätsklinik Tübingen
Full-time training in general surgery and neurosurgery, with emphasis on traumatology, neurotrauma and lumbar disc surgery.
<https://www.medizin.uni-tuebingen.de/de/das-klinikum/einrichtungen/kliniken/neurochirurgie-und-neurotechnologie/neurochirurgie>

01/08/1977 – 31/07/1978 – Kapucijnenvoer 33, Leuven, Belgium
RESIDENT IN NEUROSURGERY / NEUROLOGY – Universitair Ziekenhuis Leuven, campus Sint-Rafaël
Full-time training in clinical neurology.
<https://www.uzleuven.be/>

27/06/1977 – 3624 Market Street, Philadelphia, PA, USA
ECFMG CERTIFICATE – Educational Commission for Foreign Medical Graduates
<https://www.ecfm.org/>

01/09/1970 – 30/06/1977 – Oude Markt 13, Leuven, Belgium
MEDICAL DOCTOR / "DOCTOR IN DE GENEES-, HEEL- EN VERLOSKUNDE" – Katholieke Universiteit Leuven
magna cum laude
<https://www.kuleuven.be/>

01/09/1964 – 30/06/1970 – Minderbroedersstraat 13, Leuven, Belgium
SECONDARY SCHOOL, SECTION LATIN & MATHEMATICS – Sint-Pieters College
<http://sintpieterscollege.be/>

01/09/1958 – 30/06/1964 – Mechelsevest 2, Leuven, Belgium
PRIMARY SCHOOL – Sint-Jan School
<https://www.sintjanleuven.be/>

Additional information

Publications Safety of intrahippocampal depth electrodes for presurgical evaluation of patients with intractable epilepsy.
Fernández G, Hufnagel A, Van Roost D, et al. Epilepsia 1997;38:922-9
<https://doi.org/10.1111/j.1528-1157.1997.tb01258.x> – 1997

Intracerebral depth electrodes are used in the preoperative evaluation of selected patients with intractable epilepsies. In spite of their usefulness, the safety of depth electrodes is disputed, and the number of insertions is decreasing. This study examined retrospectively possible deleterious effects such as perioperative complications, induction of epileptogenesis, and neuropsychologic deficits. The results of the study indicate that it is safe to implant intrahippocampal depth electrodes in selected patients.

Depth electrode implantation in the length axis of the hippocampus for the presurgical evaluation of medial temporal lobe epilepsy.

Van Roost D, Solymosi L, Schramm J, et al. *Neurosurgery* 1998;43:819-26
<https://doi.org/10.1097/00006123-199810000-00058> – 1998

An individualized computed tomography-based stereotactic technique for the longitudinal insertion of intrahippocampal electrodes is presented and its accuracy described. The protocol proved to be reliable and can be considered as an adequate alternative to MRI-based stereotactic implantation if MRI is not available or if a single MRI-based stereotactic setup is unreliable because of intolerable distortions.

Real-time tracking of memory formation in the human rhinal cortex and hippocampus.

Fernández G, Efferen A, Grunwald T, ...Van Roost D, Elger CE. *Science* 1999;285:1582-5

<https://doi.org/10.1126/science.285.5433.1582> – 1999

A fundamental question about human memory is which brain structures are involved and when, in transforming experiences into memories. This experiment sought to identify neural correlates of memory formation with the use of intracerebral electrodes implanted in the brains of patients with temporal lobe epilepsy. Event-related potentials (ERPs) were recorded directly from the medial temporal lobe (MTL) as the patients studied single words. ERPs elicited by words subsequently recalled in a memory test were contrasted with ERPs elicited by unrecalled words. Memory formation was associated with distinct but interrelated ERP differences within the rhinal cortex and the hippocampus, which arose after about 300 and 500 milliseconds, respectively. These findings suggest that declarative memory formation is dissociable into subprocesses and sequentially organized within the MTL.

Vagus nerve stimulation for refractory epilepsy, a transatlantic experience.

Vonck K, Thadani V, Gilbert K, ...Van Roost D, et al. *J Clin Neurophysiol* 2004;21:283-9

<https://doi.org/10.1097/01.wnp.0000139654.32974.4e> – 2004

Vagus nerve stimulation (VNS) is an alternative treatment for medically or surgically refractory epilepsy. The long-term efficacy and safety of VNS were evaluated in a large patient series at two centers, in Belgium and the USA. A prospective assessment was performed of 131 patients treated with VNS in either center. A total of 118 implanted patients had a minimum post-implantation follow-up of 6 months and were included in the efficacy and safety analysis. The mean reduction in monthly seizure frequency in all patients was 55% (SD = 31,6). Seven percent of patients were free of seizures with impaired consciousness, 50% of patients had a seizure frequency reduction of >50%, and 21% of patients were nonresponders. Fifteen patients reported stimulation-related side effects such as hoarseness or gagging. In a large patient series from two geographically distinct epilepsy centers located in two different continents, VNS proved to be efficacious and safe during long-term follow-up.

Deep brain stimulation in patients with refractory temporal lobe epilepsy.

Boon P, Vonck K, De Herdt V, Van Dycke A, ...Caemaert J, Van Roost D. *Epilepsia* 2007;48:1551-60

<https://doi.org/10.1111/j.1528-1167.2007.01005.x> – 2007

This pilot study prospectively evaluated the efficacy of long - term deep brain stimulation (DBS) in medial temporal lobe (MTL) structures in patients with MTL epilepsy. Twelve consecutive patients with refractory MTL epilepsy were included in this study. Ten of 12 patients underwent long - term MTL DBS and

2 patients underwent selective amygdalohippocampectomy. After a mean follow-up of 31 months, 1 of 10 stimulated patients was seizure free (>1 year), 1 patient had a >90% reduction in seizure frequency, 5 patients had a seizure frequency reduction of $\geq 50\%$, 2 patients had a seizure frequency reduction of 30–49%, and 1 patient was a nonresponder. None of the patients reported side effects. In 1 patient, MRI showed an asymptomatic intracranial hemorrhage along the trajectory of the electrodes. None of the patients showed changes in clinical neurological testing. Patients who underwent selective amygdalohippocampectomy are seizurefree (>1 year), AEDs are unchanged, and no side effects have occurred. This open pilot study demonstrated the potential efficacy of long-term DBS in MTL structures, that should now be further confirmed by multicenter randomized controlled trials.

A novel implantable vagus nerve stimulation system (ADNS-300): pilot trial at Ghent University Hospital.

El Tahry R, Raedt R, Mollet L, ...Van Roost D et al. *Epilepsy Research* 2010;92:231-9

<https://doi.org/10.1016/j.eplepsyres.2010.10.007> – 2010

The ADNS-300 is a new system for vagus nerve stimulation (VNS, treatment for refractory epilepsy) that includes a rechargeable stimulus generator and an electrode for combined stimulation and recording. In this feasibility study, three patients were implanted with ADNS-300 for therapeutic VNS. In addition, compound action potentials (CAPs) were recorded to evaluate the activation of the vagus nerve in response to VNS. The study demonstrated that the ADNS-300 system can be used for combined therapeutic stimulation and recording of CAPs in response to VNS up to three weeks after surgery. Implantation in a larger number of patients will lead to a better understanding of the electrophysiology of the vagus nerve, which in turn could result in more adequate and individualized VNS parameter choices.

A decade of experience with deep brain stimulation for patients with refractory medial temporal lobe epilepsy.

Vonck K, Sprengers M, Carrette E, ...Van Roost D, Boon P. *Int J Neural Syst* 2013;23:1250034

<https://doi.org/10.1142/S0129065712500347> – 2013

Since 2001, 11 patients with refractory mediotemporal lobe (MTL) epilepsy underwent MTL deep brain stimulation (DBS). When unilateral DBS failed to decrease seizures by >90%, a switch to bilateral MTL DBS was proposed. After a mean followup of 8,5 years, 6/11 patients had a $\geq 90\%$ seizure frequency reduction with 3/6 seizure-free for >3 years; 3 patients had a 40%-70% reduction, and 2 had a <30% reduction. In 3/5 patients, switching to bilateral DBS further improved outcome. Unilateral MTL DBS did not affect neuropsychological functioning. This open study with an extended long-term follow-up demonstrated maintained efficacy of DBS for MTL epilepsy. In more than half of the patients, a seizure frequency reduction of at least 90% was reached. Bilateral MTL DBS may herald superior efficacy in unilateral MTL epilepsy.

Subthalamic nucleus stimulation and spontaneous language production in Parkinson's disease: a double laterality problem.

Batens K, De Letter M, Raedt R, ...Van Roost D, Santens P. *Brain Lang* 2015;147:76-84

<https://doi.org/10.1016/j.bandl.2015.06.002> – 2015

Asymmetric degeneration of dopaminergic neurons is characteristic for Parkinson's disease (PD). Despite the lateralized representation of language in the brain, the correlation of asymmetric degeneration of nigrostriatal networks in PD with language performance has only scarcely been examined. The laterality of dopamine depletion influences language deficits in PD and thus modulates the effects of subthalamic nucleus (STN) stimulation on language production. Spontaneous language production of patients with predominant dopamine depletion of the left (PD-left) and right (PD-right) hemisphere was compared in 4 stimulation conditions. PD-right patients made comparatively more verb inflection errors than PD-left patients. Bilateral STN stimulation improves spontaneous language production only for

PD-left patients.

Semantic and perceptual priming activate partially overlapping brain networks as revealed

by direct cortical recordings in humans.

Khachatryan E, Wittewrongel B, Hnazaee MFF, ...Van Roost D, Van Hulle MM. NeuroImage 2019;203:11620

<https://doi.org/10.1016/j.neuroimage.2019.116204> – 2019

Facilitation of object processing in the brain due to a related context (priming) can be influenced by both semantic connections and perceptual similarity. It is thus important to discern these two when evaluating the spatiotemporal dynamics of primed object processing. The repetition-priming paradigm frequently used to study perceptual priming is, however, unable to differentiate between the mentioned priming effects, possibly leading to confounded results. In the current study, we recorded brain signals from the scalp and cerebral convexity of nine patients with refractory epilepsy in response to related and unrelated image-pairs, all of which shared perceptual features while only related ones had a semantic connection. While previous studies employing a repetition-priming paradigm observed largely overlapping networks between semantic and perceptual priming effects, our results suggest that this overlap is only partial (both temporally and spatially). These findings stress the importance of controlling for perceptual features when studying semantic priming.

Invasive neuromodulation as a treatment for tinnitus: a systematic review.

Deklerck A, Marechal C, Pérez Fernández AM, ...Van Roost D, Dhooge I. Neuromodulation 2020;23:451-6

<https://doi.org/10.1111/ner.13042> – 2020

Although the prevalence and burden of tinnitus is high, none of the available tinnitus treatments has been proven to be effective for the majority of tinnitus patients so far. Neuromodulation is currently gaining more interest to be explored. Because noninvasive neuromodulation has been shown to be effective in some tinnitus patients in the short term, more invasive techniques have been applied with variable success and without clear clinical applicability. We conducted a systematic review, in which 21 studies were included. Studies were often of low quality due to low sample sizes, lack of controlled designs, or investigating tinnitus as a secondary indication of neuromodulation. Current research results provide insufficient evidence to generally recommend invasive neuromodulation as a treatment alternative for intractable tinnitus, although some promising effects are mentioned. Further research must be encouraged to gain more insight in this treatment including optimization of the technique, and standardization of tinnitus evaluation in subgroups.

Projects 01/2018 – 12/2021

Real-time meerwegscodering van uitgevoerde, geobserveerde en ingebeelde bewegingselektrocorticografie ondersteund door avatar-gebaseerde gebruikerstraining.

Promoters: Van Hulle M, Van Roost D, Meurs A, Boon P.

Financed by the Research Foundation Flanders (FWO), n° GOA4118N.

10/2014 – 09/2018

Magnetic nanoparticle hyperthermia for the treatment of spinal metastases.

Promoters: Van Roost D, Dupré L. Researchers: Ruņģevics-Kiseļovs N, Harabech M.

Financed by Bijzonder Onderzoeksfonds (BOF) of Ghent University, Interdisciplinary Research Project n° 01IO5014, amount 404.000€.

01/2014 – 12/2017

Real-time motor brain-computer interface based on electrocorticography in man.

Promoters: Van Hulle M, Van Roost D, Boon P. Researchers: Chumerin N, Manyakov N.

Financed by the Research Foundation Flanders (FWO), n° GOA 0914N, amount 240.000€.

10/2015 – 09/2017

Tinnitus: an explorative study towards a new target for deep brain stimulation.

Promoters: Dhooge I, Van Roost D. Researcher: Deklerck A.

Financed by Bijzonder Onderzoeksfonds (BOF) of Ghent University, n° 01D22515.

2011 – 2014

Neuromodulation: Parkinson's disease and acquired brain lesions.

Promoters: Santens P, Van Roost D. Researcher: Batens K.

Financed by the Institute for Neuroscience of Ghent University, amount 150.000€.

2011 – 2014

Fast multi-modal imaging for diagnosis and therapy assessment of tumour patients.

Promoters: Van Huffel S, Achten E, Van Roost D, Himmelreich U.

Financed by the Research Foundation Flanders (FWO), n° G.0869.12, amount 628.000€.

01/07/2012 – 31/12/2013

Implantable dural venous sinus access device (DVSAD).

Promoters: Van Roost D, Baert E, Dewaele F, Vansteenkiste E. Researcher: Vandersteene J.

Financed by the Industrial Research Fund (IOF) of Ghent University Association and industry, IOF-Advanced/041, amount 149.485€.

2009 – 2012

Sensors en electronica voor ambulante toepassingen (SEAT).

Promoters: Vanfleteren J, Leman M, Boon P, Stroobandt D, Van Roost D, Staelens S, Doutrelaigne J. Researcher: Christiaens W.

Financed by the Industrial Research Fund (IOF) of Ghent University Association and industry, amount 260.000€.

01/07/2011 – 30/06/2012

Implantable dural venous sinus access device (DVSAD)

Promoters: Van Roost D, Baert E, Dewaele F, Segers P, Lefebvre R.

Financed by the Industrial Research Fund (IOF) of Ghent University Association and industry, StarTT/014, amount 49.205€.

01/02/2007 – 31/12/2010

Matrix metalloproteinases as therapeutic target in mesial temporal lobe epilepsy.

Promoters: Boon P, Van Cauwenberghe P, Watelet JB, Van Roost D, Praet M. Researcher: Hemelsoet D.

Financed by the Research Foundation Flanders (FWO), n° G.0168.07N, amount 100.000€.

2007 – 2010

Integrated elastic microsystems for cerebral electromodulation.

Promoters: Vanfleteren J, Van Roost D.

Financed by the Research Foundation Flanders (FWO), n° G.0349.07, amount 255.200€.

Memberships

02/12/1983 – CURRENT

European Society for Stereotactic and Functional Neurosurgery (ESSFN)

Univ. Paul Sabatier, Faculté de Médecine Rangueil, 133 route de Narbonne, 31062 Toulouse, France

Member of the Executive Committee since 06/10/2006.

08/05/1988 – CURRENT

Deutsche Gesellschaft für Neurochirurgie (DGNC)

Carl-Pulfrich-Straße 1, 07745 Jena, Germany

18/03/1989 – CURRENT

Belgian Society of Neurosurgery (BSN)

Route de Lennik 808, 1070 Bruxelles, Belgium

Secretary 2007-2010. President 2010-2013. Treasurer 2013-2019. Honorary

member since 30/12/2020.

31/01/2000 – CURRENT

Congress of Neurological Surgeons (CNS)
10 North Martingale Road, Suite 190, Schaumburg, IL 60173, USA
International member.

01/06/2005 – CURRENT

European Association of Neurosurgical Societies (EANS)
Brandstraat 36, 9830 Sint-Martens-Latem, Belgium
Individual member.

01/06/2006 – CURRENT

Belgian Society for Stereotactic and Functional Neurosurgery (BSSFN)
Route de Lennik 808, 1070 Bruxelles, Belgium
President 2009-2012. Secretary 2012-2015. President 2015-2019.

01/03/2007 – CURRENT

Belgian Brain Council (BBC)
Egmontstraat 11, 1000 Brussels, Belgium
Secretary 2010-2012. President 2015-2017. Board member 2017-ongoing.

04/2012 – CURRENT

Belgian College of Neuropsychopharmacology and Biological Psychiatry
(BCNBP)
UPC KU Leuven, Campus Gasthuisberg, Herestraat 49, 3000 Leuven, Belgium
Titular member.

01/06/2006 – CURRENT

Peer Review Commission "DBS for Movement Disorders" at the National
Institute for Health and Disability Insurance (RIZIV-INAMI)
Tervurenlaan 211, 1150 Sint-Pieters-Woluwe, Belgium

01/01/2012 – CURRENT

Peer Review Commission "DBS for Obsessive Compulsive Disorder" at the
National Institute
for Health and Disability Insurance (RIZIV – INAMI)
Galileelaan 5/01, 1210 Brussel, Belgium

04/09/2006 – 19/09/2019

Belgian Board for the Certification of Neurological Surgeons - Dutch-Speaking
Chamber
Agentschap Zorg & Gezondheid, Koning Albert II-laan 35/38, 1030 Brussel,
Belgium

Other Relevant Information

HONOURS AND AWARDS

28/06/2001

The Knight's Cross in the Order of Leopold of the Kingdom of Belgium –
Ministry of National Defense of Belgium
Awarded for services in the reserve squadron of the Belgian Armed Forces.

CONFERENCES AND SEMINARS

07/02/2019 – 09/02/2019 – Ghent, Belgium

14th ESSFN Hands-On Course "Epilepsy Surgery"

Course under the auspices of the European Society for Stereotactic and
Functional Neurosurgery (ESSFN).

Local organizer: Van Roost D.

21/10/2018 – 25/10/2018 – Brussels, Belgium

EANS2018: 18th European Congress of Neurosurgery

Congress organized by the Belgian Society of Neurosurgery on behalf of the
European Association of Neurosurgical Societies.

Principal organizer: Bruneau M. Responsible for the Functional & Stereotactic
program: Van Roost D.

21/09/2018 – Brussels, Belgium

Interuniversity Seminar in Neurosurgery "Vascular Neurosurgery & Peripheral

Nerves”
Organizer: Van Roost D.

16/04/2016 – 17/04/2016 – Bangalore, Karnataka, India
Epilepsy Hands-On Cadaver Workshop
Course in collaboration with the MS Ramaiah Institute of Neurosciences:
Hegde AS, Ravi Gopal Varma, Kiran Khanapure, Raghavendra Seetharam,
Aniruddha TJ.
Invited co-organizers: Van Roost D, Meurs A.

24/04/2015 – Genval, Belgium
Interuniversity Seminar in Neurosurgery “Functional Neurosurgery & Basic
Sciences”
Organizer: Van Roost D.

04/10/2014 – Ghent, Belgium
5th Belgian Brain Congress, Biannual scientific congress of the Belgian Brain
Council.
Local organizers: Van Roost D, Fias W.

12/04/2014 – 13/04/2014 – Bangalore, Karnataka, India
1st Intracranial Endoscopy and Endoscopic Pituitary Surgery Cadaver Hands-
On Workshop Course in collaboration with the MS Ramaiah Institute of
Neurosciences: Hegde AS, Chandrakiran C, Aniruddha TJ.
Invited co-organizers: Van Roost D, Baert E.

10/10/2013 – 12/10/2013 – Ghent, Belgium
6th ESSFN Hands-On Course “Epilepsy Surgery”. Course under the auspices
of the European Society for Stereotactic and Functional Neurosurgery
(ESSFN).
Local organizer: Van Roost D.

30/03/2013 – Ghent, Belgium
Annual Scientific Congress of the Belgian Society of Neurosurgery
Local organizer: Van Roost D.

29/03/2013 – Ghent, Belgium
BSSFN Symposium “Radiosurgery”
Local organizer: Van Roost D, on behalf of the Belgian Society for
Stereotactic and Functional Neurosurgery (BSSFN).

10/03/2012 – Ghent, Belgium
Annual Scientific Congress of the Belgian Society of Neurosurgery
Local organizer: Van Roost D.

26/10/2011 – 29/10/2011 – Ghent, Belgium
5th ESSFN Hands-On Course “Epilepsy Surgery”. Course under the auspices
of the European Society for Stereotactic and Functional Neurosurgery
(ESSFN).
Local organizer: Van Roost D.

26/03/2011 – Ghent, Belgium
Annual Scientific Congress of the Belgian Society of Neurosurgery
Local organizer: Van Roost D.

20/04/2007 – Ghent, Belgium
International Symposium on Hydrocephalus
Local organizer: Van Roost D.

18/11/2005 – 19/11/2005 – Ghent, Belgium
3rd Scientific Meeting of the Benelux Neuromodulation Society
Local organizer: Van Roost D.