



FOUNDATION OF THE  
SOCIETY FOR THE STUDY OF  
NEUROPROTECTION AND  
NEUROPLASTICITY



UMF  
IULIU HATEGANU  
UNIVERSITY OF  
MEDICINE AND PHARMACY  
CLUJ-NAPOCA



# 15<sup>TH</sup> AMN CONGRESS

15 NOVEMBER, 2017

MULTIMEDIA AUDITORIUM | VICTOR BABES STREET 8

CLUJ-NAPOCA | ROMANIA



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Alexandru V. Ciurea / Romania

Karin Diserens / Switzerland

Ioan Ștefan Florian / Romania

Max Hiltz / Germany

Volker Hömberg / Germany

Dafin F. Mureșanu / Romania

Nicole von Steinbüchel / Germany

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## **GENERAL INFORMATION**

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### **REGISTRATION DESK**

All materials and documentation will be available at the registration desk located at SSNN booth.

The staff will be pleased to help you with all enquiries regarding registration, materials and program. Please do not hesitate to contact the staff members if there is something they can do to make your stay more enjoyable.

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## ***LANGUAGE***

The official language is English. Simultaneous translation will not be provided.

## ***CHANGES IN PROGRAM***

The organizers cannot assume liability for any changes in the program due to external or unforeseen circumstances.

## ***NAME BADGES***

Participants are kindly requested to wear their name badge at all times. The badge enables admission to the scientific sessions and dinners.

## ***FINAL PROGRAM & ABSTRACT BOOK***

The participants documents include the program and abstract book which will be handed out at the registration counter.

## ***COFFEE BREAKS***

Coffee, tea and water are served during morning coffee breaks and are free of charge to all registered participants.

## ***MOBILE PHONES***

Participants are kindly requested to keep their mobile phones turned off while attending the scientific sessions in the meeting rooms.

## ***CURRENCY***

The official currency in Romania is RON.

## ***ELECTRICITY***

Electrical power is 220 volts, 50 Hz. Two-prong plugs are standard.

## ***TIME***

The time in Romania is Eastern European Time (GMT+2).

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## ***SCIENTIFIC PROGRAM***

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# 15<sup>TH</sup> AMN CONGRESS

15 NOVEMBER, 2017 | MULTIMEDIA AUDITORIUM  
VICTOR BABES STREET 8 | CLUJ-NAPOCA | ROMANIA

## WEDNESDAY, NOVEMBER 15<sup>TH</sup>, 2017

08:50 – 09:00                      *WELCOME ADDRESS*

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***SESSION 1, CHAIRPERSONS:***                      Nicole von Steinbüchel (Germany)  
Volker Hömberg (Germany)

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09:00 – 09:30                      Ioan Ștefan Florian (Romania)  
Decompressive Craniectomy -  
Why we still perform it after the DECRA trial

09:30 – 10:00                      Nicole von Steinbüchel (Germany)  
Outcome after TBI

10:00 – 10:30                      Volker Hömberg (Germany)  
The rule of „proportional recovery“:  
End or hope for future neurorehabilitation?

10:30 – 11:00                      Dafin F. Mureșanu (Romania)  
Advances in neurobiology of cognitive impairment  
after acute brain lesions

11:00 – 11:30                      *COFFEE BREAK*



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## ***SESSION 2, CHAIRPERSONS:***

Max Hiltz (Germany)

Johannes Vester (Germany)

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11:30 – 12:00

Klaus Von Wild (Germany)

Music and dance encourage social competence and integration

12:00 – 12:30

Max Hiltz (Germany)

Patients with a history of traumatic brain injury have persistent cardiovascular autonomic dysfunction

12:30 – 13:00

Johannes Vester (Germany)

The multidimensional approach - towards a new gold standard to improve TBI clinical research

13:00 – 13:30

Karin Diserens (Switzerland)

Subtle motor behavior assessment in the acute phase of disorders of consciousness improve the predictability of outcome

13:30 – 15:00

***AMN BOARD MEETING***

# 15<sup>TH</sup> AMN CONGRESS

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***SESSION 3, CHAIRPERSONS:***

A. V. Ciurea (Romania)

Antón Álvarez (Spain)

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15:00 – 15:30

Antón Álvarez (Spain)

Involvement of BDNF in the prevention and recovery of neurocognitive deficits after TBI

15:30 – 16:00

A. V. Ciurea (Romania)

“Multum in parvo”

(The Glasgow Coma Scale at its 40th birthday)

16:00 – 16:30

Dana Boering (Germany)

State of the art in the treatment of spasticity

16:30 – 16:40

Closing Remarks

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## *ABSTRACTS*

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## **INVOLVEMENT OF BDNF IN THE PREVENTION AND RECOVERY OF NEUROCOGNITIVE DEFICITS AFTER TBI**

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**ANTÓN ÁLVAREZ<sup>1,2</sup>**

*JESUS FIGUEROA<sup>1,3</sup>, DAFIN F. MUREȘANU<sup>4,5</sup>*

1. Medinova Institute of Neurosciences, Clínica RehaSalud, A Coruña, Spain;
2. Clinical Research Department, QPS Holdings, A Coruña, Spain;
3. Rehabilitation Department, University Hospital, Santiago de Compostela, Spain;
4. Department of Neurosciences, University of Medicine & Pharmacy 'Iuliu Hatieganu', Cluj-Napoca, Romania
5. "RoNeuro" Institute for Neurological Research and Diagnostic, Cluj-Napoca, Romania

Neurocognitive deficits represent a main cause of disability after traumatic brain injury (TBI). Up to 10-15% of the individuals with mild TBI (mTBI) show persistent difficulties in cognition and executive functions; more than half of the patients with moderate-severe TBI (msTBI) endure long-term cognitive impairment; and the risk of dementia attributable to TBI is in the range of 5% to 15%. However, neurocognitive deficits and dementia after TBI have been poorly investigated, and there is no effective drug therapy for its management.

TBI activates endogenous processes of neurorestoration by inducing the expression of neuroprotective genes, which are also responsive to the administration of neurotrophic factors such as Brain-derived neurotrophic factor (BDNF). BDNF is the most abundant neurotrophin within the brain; it regulates neurovascular functions such as neural and vascular plasticity, angiogenesis, neurogenesis and neuroinflammation; and has been implicated the recovery after TBI, showing a positive influence on survival, depression and cognitive functioning. Low circulating BDNF levels were found to be associated with enhanced TBI severity, with increased mortality, with poorer memory performance, as well as with the occurrence of depression and posttraumatic stress disorder in TBI patients. In addition, BDNF gene polymorphisms were shown to influence plasticity in the prefrontal cortex, preservation of general cognitive functioning, delayed alteration of memory processing, memory and processing speed, long-term potentiation/depression (LTP, LDP), recovery of executive functioning, and the response of depression to treatment after TBI. Therefore, strategies aimed at enhancing endogenous BDNF seem to represent an effective option for improving neurocognitive deficits, and probably to prevent dementia after TBI.

Several clinical trials demonstrated improvements of cognitive performance in TBI patients treated with endogenous peptides as well as with the peptidergic drug Cerebrolysin. Results of the available clinical studies indicate that Cerebrolysin induced a faster clinical recovery and a shorter hospitalization time in patients with

acute TBI, and improved cognitive performance when administered during either acute or post-acute TBI phases. The increase of endogenous BDNF levels induced by Cerebrolysin might account for its neurorestorative and procognitive effects in TBI. Thus, treatment with Cerebrolysin during both acute and rehabilitation periods could contribute to improve neuro-recovery and to delay/prevent dementia after TBI. However, large short-term controlled trials and long-term efficacy and prevention studies with peptidergic drugs are still needed.

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## ***STATE OF THE ART IN THE TREATMENT OF SPASTICITY***

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***DANA BOERING***

Department of Neurology, SRH\_GBW Bad Wimpfen, Germany

Cerebral, spinal and mixed spasticity after traumatic brain injury, spinal cord injury, stroke or multiple sclerosis represent one of the major challenges in neurorehabilitation, since insufficient/inadequate treatment leads to complex consequences including limb disuse, altered body mechanics, pain, impaired body hygiene, pressure sores, limb deformity, emotional disturbances and thus an increased burden for patients, families, healthcare professionals and insurances.

The talk will give a short overview on the pathophysiology of spasticity, its forms and management, focusing on oral drugs, intramuscular botulinum toxin, intrathecal baclofen, physiotherapy and additive nonpharmacological treatments inclusive noninvasive brain stimulation.

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## **“MULTUM IN PARVO” (THE GLASGOW COMA SCALE AT ITS 40TH BIRTHDAY)**

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**A.V. CIUREA<sup>1,2</sup>**

*A MOHAN<sup>3</sup>, R. ONCIUL<sup>1</sup>, A. MARINESCU<sup>4</sup>*

1: Carol Davila University School of Medicine, Department of Neurosurgery, Bucharest, Romania.

2: Sanador Medical Center Hospital, Department of Neurosurgery, Bucharest, Romania.

3: Department of Neurosurgery, University Of Medicine and Pharmacy, Oradea;  
Department of Neurosurgery, Bihor County Emergency Hospital, Oradea, Romania.

4: Carol Davila University School of Medicine, Bucharest.

Coma assesment scales have been developed to facilitate ease of communication between emergency team members and to facilitate ease of clinical assesment for patients with severe impairment of consciousness.

In 1974 Graham Teasdale and Bryan Jennett published in the Lancet a scale which theoretically helped physicians get a quick and accurate status of comatose patients. The scale they described assesed patient behaviour regarding three key aspects – motor reactivity, verbal communication and eye opening. As the two authors were working in Glasgow, the scale was dubbed the Glasgow Coma Scale (GCS) a name which all neurologists and neurosurgeons are well-accustomed with. In their description of the GCS, the authors starded from the lack of broadly-accepted criteria by which assesment of patients should be made. This fact was a generator for communication issues between physicians all over the world, who had their own criteria for clinical assesment of comatose patients.

In Romania, for example, physicians used a coma scale described by Constantin Arseni and I. Oprescu in 1972. The scale divided post-traumatic comas in 5 different categories. At the time some Romanian physicians also used Jouvets Coma Scale (published in 1969) which evoked perception and responsiveness in patients. Jouvets scale was used for its strong insight on anatomical and clinical correlations between the patients symptoms and the existing lesions, however its use was difficult and time consuming, which rendered it useless in critical situations demanding instant decisions such as brain injury. Furthermore, the use of the Jouvets scale was impossible in patients with language disorders or patients which didn't speak the same language as the physician.

The use of the GCS is based on the patient's capacity to react using language and motion to external stimuli. Eye movement, Speech and Motion are graded using 4, 5 and 6 points, for a maximum total of 15 points or a minimum total of 3 points. (See table 1). A patient with a Glasgow Coma Score of 3 is completely non-reactive, while a patient with a Glasgow Coma Score of 15 is perfectly aware.

Eye Movement		Verbal Response		Motor Response	
None	1p	None	1p	None	1p
To Pain	2p	Sounds	2p	Abnormal Extension	2p
To Voice	3p	Words	3p	Abnormal Flexion	3p
Spontaneously	4p	Confuse	4p	Withdraws from pain	4p
		Orientated	5p	Localizes pain	5p
				Obeys commands	6p

Table 1. The Glasgow Coma Scale System

There still are limits in the use of the Glasgow Coma Scale. One of these refers to the period of time after brain injury occurs. Emergency medical crews use muscle relaxants and sedatives to make patient transport easier and more effective. The use of such substances will interfere with the assesment of the GCS. Another limit in establishing the Glasgow Coma Score is identifiable in intubated patients which have an non-testable verbal response. Patients which cannot open their eyes due to palpebral edema, again have a non-testable eye response.

Despite its wide use today, the GCS has been seriously criticised due to its incapacity to determine the functional status of brainstem structures. Therefore, various improvements and updates were performed for the Glasgow Coma Scale. One of the best-known improvementss of the GCS came in 1982 from Born & colab. Who added to the known three parameters the assesment of brainstem reflexes : the fronto-orbicular reflex (with 5 points), the vertical oculo-cephalic reflex (4 points), the photo-motor reflex (3 points), the horizontal oculo-cephalic reflex (2 points) and the oculo-cardiac reflex (1 point).

One of the most recent improvements in assesing consciousness is represented by the FOUR score (Full Outline UnResponsiveness), developed in 2005 by Wijdicks & colab. This score is almost as easy to use as the GCS, however its usefulness is noticed when patients are admitted in intensive care units and intubated. In such situations the FOUR score allows for a better examination of the patient's neurologic status.

Over the years, the use of the GCS extended in the entire medical meme despite its criticism. The simplicity and ease of use which characterize the GCS made it a very useful instrument for neurological examination since the first moment a patient is seen by a medical professional.

The Glasgow Coma Scale which recently reached its 40th birthday became an universal language for physicians. Since it has been in use neurological status can be expressed with great ease and without loss of meaning. Through their efforts, the two Scottish physicians made it possible for doctors to communicate easier in life-or-death situations and therefore greatly improved the odds for patients with traumatic brain injuries.

Key words : Glasgow Coma Scale, Traumatic Brain Injury, Neurosurgery

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***SUBTLE MOTOR BEHAVIOR ASSESSMENT IN THE ACUTE PHASE OF DISORDERS OF CONSCIOUSNESS IMPROVE THE PREDICTABILITY OF OUTCOME***

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***KARIN DISERENS***

*JÖHR.J., PIGNAT.J-M*

Chief of the Transversal Acute Neurorehabilitation Unit of the Division of Neurology, in the Department of Clinical Neurosciences, Unitiversity Hosptilal (CHUV) , Lausanne Switzerland

## 1. Introduction

Reaching accurate diagnosis remains one of the most challenging tasks when facing patients with Disorders of Consciousness (DOC), which in turn is crucial for prognosis validity and appropriate medical management.

Despite recent advances in neuroimaging and electrophysiological methods having demonstrated covert cognition in behaviourally non-responsive and non-communicative patients (Goldfine et al., 2011; Soddu et al., 2009), conventional diagnostic assessment of DOC in the acute phase remains based upon behavioural evaluation. Neurobehavioural rating scales, such as the Coma-Recovery-Scale-Revised (CRS-R, Giacino et al., 2004), can lead to an underestimation of the content and amount of consciousness and to frequent diagnostic error (Schnakers, 2009).

In order to determine various clinical signs that lead to a more accurate conscious awareness assessment in the early phase, allowing more reliable outcome prediction the acute neurorehabilitation unit Lausanne, Switzerland, achieved a study in describing the MBT (Motor Behaviour tool) and it's predicatability. ( Diserens K et al. Plos One 2016)



## 2. Patients & methods

A total of 33 in-patients (Acute Neurorehabilitation Unit, University Hospital, Lausanne) were enrolled in this study. DOC diagnosis was established according to the CRS-R. Twenty patients were initially diagnosed with Unresponsive Wakefulness Syndrome (UWS), 13 were in a Minimally Conscious State (MCS). Behavioural assessment over time was conducted using the CRS-R scale and complementary clinical items of a new observational Motor Behaviour Tool (MBT, currently under validation) jointly assessed from the first evaluation. Patients were divided into 2 groups according to DOC status at unit discharge: having emerged from DOC, and remaining in DOC; and into 6 subgroups detailing the outcome of UWS and MCS respectively.

## 3. Results

First, statistical prediction of the first CRS-R scores did not permit outcome differentiation between groups; longitudinal regression modelling of the CRS-R data identified distant outcome evolution, but not earlier than 19 days. Second, the MBT yielded a significant outcome predictability in the acute phase. Third, a statistical comparison of the CRS-R subclass weighted by MBT became significantly predictive for DOC outcome.

## 4. Conclusion

The association of MBT and CRS-R scoring improves significantly the evaluation of consciousness and the predictability of outcome in the acute phase. We discuss how subtle motor behaviour assessment provides accurate insight in the amount and the content of consciousness even in the case of potential cognitive motor dissociation.

OBJECTIVE of the course:

Based on the results of this study and the video analysis of the included DOC patients the different tools validated in this domain will be presented and exercised for better understanding of diagnosis, predictability and treatment of DOC .

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## ***DECOMPRESSIVE CRANIECTOMY – WHY WE STILL PERFORM IT AFTER THE DECRA TRIAL***

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***IOAN ȘTEFAN FLORIAN***

*CRISTINA ALDEA, C. MAGAN, R. POP*

University of Medicine and Pharmacy “Iuliu Hatieganu” Cluj-Napoca, Romania

President of the University’s Senate, Head of Neurosurgery Department, Cluj-Napoca, Romania

Evidence of decompressive craniectomy (DC) for severe traumatic brain injury has been discovered dating more than 5000 years, but the actual understanding of the role of DC in order to decrease intracranial pressure and its deleterious consequences is less than one century old. Despite the large number of studies emerged within the last two decades arguing in favor of DC, the DECRA trial tremendously quaked the neurosurgical community with its conclusion that “early bifrontotemporoparietal decompressive craniectomy decreased intracranial pressure and the length of stay in the ICU but was associated with more unfavorable outcomes”. Since then, many criticisms to this study have aroused in the literature, and many expectations to clarify the unanswered questions are related to the upcoming results of RESCUE-icp trial. In fact, the entire neurotraumatological community is in search for the best therapeutical solution for the severe traumatic brain injured patient. Consequently, we are trying to standardize what is almost impossible to standardize: on one hand, the individual traumatic conditions and individual responses of every single patient to trauma, and the other hand, less discussed, the individual factors related to surgery (surgeon related factors, surgical related lesions, complications of DC, consequent surgical interventions and their complications etc.) and intensive care (invasive monitoring and subsequent complications, long term ventilation related complications, anticoagulation, general infections, consumptions etc.). Despite every standardization and unfavorable prognostic factors, there are, in the experience of every surgeon or intensive care physician, cases that not only survive, but are also doing well. Along with our experience related to DC since 2013, we are presenting a few case reports with almost no chance of survival, according to actual prognostic criteria. These are the cases that demonstrate that we are far from understanding the complex mechanisms of TBI and are obliged to do our best in every single case. What is “the best” remains a mater of debate.

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## ***PATIENTS WITH A HISTORY OF TRAUMATIC BRAIN INJURY HAVE PERSISTENT CARDIOVASCULAR AUTONOMIC DYSFUNCTION***

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**MAX HILZ**

Depts. of Neurology, University of Erlangen-Nuremberg, Erlangen, Germany  
Icahn School of Medicine at Mount Sinai, New York, NY, USA

Long-term mortality is increased after traumatic brain injury (TBI). Central cardiovascular autonomic dysregulation resulting from trauma-induced brain lesions might contribute to cardiovascular events and fatalities.

In patients with a history of mild TBI, we found reduced cardiac autonomic modulation with a shift towards predominant sympathetic activity and a loss in baroreflex sensitivity already under resting, supine conditions. Upon standing-up, their baroreflex sensitivity was still reduced, and patients did not adequately withdraw parasympathetic or augment sympathetic modulation. We concluded that subtle central autonomic network dysfunction accounts for the impaired cardiovascular autonomic modulation at rest and during orthostatic challenge.

During activation of the baroreflex-independent oculocardiac reflex by means of eyeball pressure stimulation, patients with a history of mild TBI were unable to mount cardiovagal activation and slow their heart rates but instead increased blood pressure, indicating a paradox sympathetic activation and dysfunction also of the baroreflex-independent cardiovascular autonomic modulation.

Recently, we showed that patients with a history of moderate or severe TBI have more prominent cardiovascular autonomic dysregulation at rest and upon orthostatic challenge than do patients with a history of mild TBI. We concluded that the severity of the initial TBI correlates with the severity of long-term cardiovascular autonomic dysfunction. We assume that the more severe autonomic dysregulation in patients who initially had a more severe TBI results from their more prominent central autonomic network alterations than in patients with a history of mild TBI.

Centrally triggered impairment of cardiovascular autonomic modulation might contribute to cardiovascular irregularities in patients with a history of TBI even years after the trauma, and might thus add to the increased risk of mortality in this patient group.

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## ***THE RULE OF „PROPORTIONAL RECOVERY“ : END OR HOPE FOR FUTURE NEUROREHABILITATION?***

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***VOLKER HÖMBERG***

Head of Neurology SRH\_GBW Bad Wimpfen and Neurology Coordinator  
for the SRH Group of Hospitals and Clinics, Germany

Within the last 10 years the number of survivors after stroke and traumatic brain injury (TBI) has dramatically increased due to advances in acute medical care.

In parallel the need for intensive neurorehabilitation to combat resulting impairment and handicap has increased. Fortunately also over the last 20 years neurologic rehabilitation is more and more conceived as applied neuroscience.

Over the last two decades there has been a remarkable change in our thinking in the invention, design and efficacy evaluation of motor therapies in neuro-rehabilitation which can be described by three paradigmatic changes.

Paradigmatic changes

First there is a change from confession to profession, i.e. more and more evidence based approaches rather than intuitively driven procedures have come into use. This was accompanied by a change from “hands on” treating to “hands off” coaching approaches, which now dominate most of the evidence procedures. This change in treatment philosophy has had a marked impact also on the self-understanding of the therapists in their relation to the patient mutating from treaters to teachers. Thirdly these developments were accompanied by a transition from intuitively marshaled individual one to one treatments to quality proven group treatments.

Especially the distinction between treatment strategies targetted to restore function and thereby decrease impairments contrasted to approaches to compensate function in order to improve activities is becoming more and more important.

Are we really able to influence impairment, i.e. can we reduce the amount of paresis, e.g. after stroke „The enigma of proportional recovery“.

First published in 2008 (Prabhakaran et al 2008) an interesting phenomenon was described: The spontaneous impairment recovery after stroke at day 90 after the ictus (with or without treatment) for upper extremity was usually 70% of the

maximum possible difference between initial score and the maximum possible. There were outliers from this rule attributable to severe pathology in the primary descending motor tracts especially the corticospinal tract. In the meantime this "proportional recovery" rule was also demonstrated to apply for impairments in non-motor domains as neglect and language abilities (Lazar et al 2010, Marchi et al 2017). If this 70%proportional spontaneous recovery is a universal rule and cannot be influenced, this of course would mean that impairment oriented rehab is not possible. The challenge is to change the slope (i.e. from 70% to 80% or more) or to make outliers inliners.

In animal experimentation, so called „enriched environments“ have been proven to facilitate brain repair. There has however been no translation from this experimental animal world to the clinical bedside.

So far only three major strategies have been shown to help decrease impairment in the subacute stage e.g. after stroke: The forced use or constraint induced movement therapy approach has been proven to be effective in the multicenter prospective EXCITE trial (Wolf et al 2008). Also the use of antidepressant agents was shown to be effective in the FLAME trial (Chollet et al 2011). Very recently the CARS trial (Mureşanu et al 2016) documented for the first time after decades of frustrane attempts to achieve some sort of neuroprotective and/or neurorestorative effects that a multimodal drug can improve impairment after stroke. This was further corroborated in a consecutive trial (Guekt et al 2017).

Possible additional candidates for a true „impairment“ oriented treatment approach are neuromodulatory techniques such as peripheral neuromuscular and/ or sensory stimulation (e.g. whole hand subliminal „mesh-glove“ stimulation) and more and more also non invasive brain stimulation techniques such as repetitive transcranial magnetic stimulation and transcranial DC stimulation. Also the use of non fatiguable robotic devices to enable a high intensity massed movement treatment appear promising.

As treatment intensity is likely to be the key element for impairment reduction we certainly have to find clever and affordable ways: to increase the daily treatment time of our patients. To day even during inpatient rehabilitation treatment times hardly exceed three hours a day i.e. that we use only a small percentage of waking hours leaving long "idling" time not field by any treatment. In this sense we have to "reinvent" neurorehabilitation within this sensitive post injury period to combat impairment with high frequency treatments combined with neuromodulatory techniques (robot use, peripheral and central stimulation, pharmaceuticals).

Probably the most important impact in facilitating impairment reduction will

however have clever, economically feasible, approaches to increase the net number of therapy or activity hours per day by creating true „enriched environment“ for severely impaired patients. They should enable 6-8 hours of daytime treatment to avoid leaving our patients „inactive and alone“ in future.

## Neurorehabilitation after the „Proportional Recovery Rule“

But lets address also the worst case scenario: If the proportional recovery rule cannot be influenced, there is still ample space if not even more need for neurorehabilitation exploiting our knowledge about compensatory interventions including motor learning. This means optimizing residual motor function at a given a (and unchangeable) impairment level.

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## ***ADVANCES IN NEUROBIOLOGY OF COGNITIVE IMPAIRMENT AFTER ACUTE BRAIN LESIONS***

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***DAFIN F. MUREȘANU***

Department of Neurosciences “Iuliu Hatieganu” University of Medicine and Pharmacy,  
Cluj-Napoca, Romania

TBI is a field with many unmet needs in medicine and public health. It is a major cause of death and disability and also leads to huge direct and indirect costs to society. Currently the incidence of TBI is increasing.

TBI populations are heterogeneous in terms of mechanism of disease, baseline prognostic risk factors, clinical severity and evolution. This heterogeneity generates complex challenges.

New pharmacological approach together with more basic and clinical research is needed for better targeting TBI therapy to the individuals.

The frequent progression of contusive brain injury indicates that this may constitute a subpopulation of TBI more likely to benefit from acute neuroprotection (in the classic sense) by limiting processes involved in secondary brain damage.

Other mechanisms, and consequently different approaches may be more relevant in patients with diffuse axonal injury, and neuroprotection in a more broad sense also includes strategies and therapies aimed at promoting regeneration or replacement of lost neuronal and glial cells, neuronal circuits, and stimulation of neuroplasticity (neurorecovery).

The primary goal of pharmacological support in TBI is to reduce secondary damage (neuroprotection) and to enhance repair (neurorecovery).

The current presentation will highlight the limits of monomodal drugs, the advantages of multimodal drugs and the results of a large retrospective cohort trial with trophic factors in traumatic brain injury.

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## ***OUTCOME AFTER TBI***

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***NICOLE VON STEINBÜCHEL***

Institute of Medical Psychology and Medical Sociology, Georg-August-University,  
Göttingen, Germany

Introduction: Traumatic brain injury (TBI) is one of the leading causes of death and disability in industrialized countries. The CENTER-TBI project is a large European observational study designed to improve disease characterization and medical care after TBI. After TBI, many patients report persisting post-concussion symptoms, post-traumatic stress disorder and impaired HRQOL. Estimating persistence of symptoms in an international context requires that translations of instruments are psychometrically comparable across translations and time. Here I will report on the translation and linguistic validation of the RPQ in several European languages, and on psychometric properties across translations and time points.

Methods: The aim of Center-TBI is to enroll 5000 patients after TBI. We will analyze prevalence of PCS at the level of individual symptoms and symptom clusters for patients with mild, moderate and severe TBI, and assess psychometric properties using classical test and item response theory across translations and time points.

Conclusion: In this report we provide a systematic comparison of psychometric properties of the RPQ in several European languages. Assessing comparability of patient's responses across translations and time points will enhance our understanding of the association of TBI and PCS, inform future international research projects, and, hopefully, improve patients' lives.

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## ***THE MULTIDIMENSIONAL APPROACH - TOWARDS A NEW GOLD STANDARD TO IMPROVE TBI CLINICAL RESEARCH***

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***JOHANNES VESTER***

Senior Consultant Biometry and Clinical Research  
idv - Data Analysis and Study Planning, Germany

Is TBI clinical research stifled by backward oriented designs? An evaluation of neuroprotection intervention studies conducted in the last 30 years has determined that methodological design flaws are among the major reasons why pharmacological agents fail to demonstrate efficacy. Almost all the inconclusive studies used a single outcome measure approach. This classic approach in clinical



TBI trials cannot capture all clinical relevant functional information in survivors of any kind of TBI. Even survivors of mild to moderate TBI may experience lifelong disturbances in the physical, behavioral, emotional, cognitive (memory, attention, reasoning, communication and planning), motor, sensory, perception and social domains of life that may affect specific or global functioning.

Leading interdisciplinary research groups recently highlighted the multidimensional nature of TBI, such as, e.g., the International Mission on Prognosis and Clinical Trial Design in TBI (IMPACT), stating that "outcome after TBI is by definition multidimensional" or the US Traumatic Brain Injury Clinical Trials Network Group, pointing out that "multiple measures are necessary to address the breadth of potential deficits and recovery following TBI".

The multidimensional strategy is expected to become a key development in TBI clinical research, opening up new horizons for TBI management. Examples from the literature and current study designs in neurosciences are discussed and their implications related to future developments. The CAPTAIN approach is introduced as the first series of trials in TBI history with a true multidimensional approach based on full outcome scales.

Key Words: Clinical Research, TBI, Multidimensional, Methodology

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## ***MUSIC AND DANCE ENCOURAGE SOCIAL COMPETENCE AND INTEGRATION***

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***KLAUS VON WILD<sup>1</sup>***

***FEDERICO HERNÁNDEZ MEYER<sup>2</sup>***

1. Prof. of Neurosurgery and Neurorehabilitation Medical Faculty University Münster, Germany
2. Magister Pharmacy, Huétor Vega, Spain

Music anthropology attests the special role of music on human social interactions: music in mysteries, family life, clannish community, and medicine- the latter well documented from the Ritual of Dyonisa, the ancient Greek frolic dance festivals. Our presentation focuses on the personal experience of the co-author, FHM, and his peer group in Granada, Spain. FHM, an extremely active pharmacist and sales man, now in his seventies a post-polio wheelchair-bound pensionary, did not give up his social competence, when having been delighted in doing classical and loving his Spanish folk dance, Flamenco. Some years ago he voluntary joined a

local charitable dance project, where healthy and handicapped dancers enjoy to meet for dancing and to spend some lifetime with other open minded people once a week. This group is named Danzat, which is part of the nonprofit association „Ogíjares Integra“, Granada, Spain. They are 13 people, 9 women (age 29- 64 yrs) and 4 men (age 11- 78 yrs), 5 dancers are healthy. While out of 9 disabled people, 1 woman and 3 men are in a wheelchair. They have a dancing master, can use free bus transportation and for free an exercise room at the town hall, all supported by local politicians, nonprofit institutions, and charitable societies. The choice of music, choreography, and costumes is only up to the members. Having been each asked by questionnaire procedure (KvW) about their motivation, social background, and dance- depended quality of life, all participants ranked happiness and to meet to dance with like-minded persons first, including regular public dance presentations for healthy / disabled people. We will discuss this beneficial effect of dance that has been part of all documented social functions of music (Merrimiam, 1964), when archaeologists are confident that both music and language were present in all prehistoric societies of Homo sapiens. Music has become known to speak directly and specifically to our mind, to our thoughts, feelings, sense, emotions, and movement. This will help to explain, why music and dance encourage social competence and integration as part of outpatients neurorehabilitation over many years to come..

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## *CURRICULUM VITAE*

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## *ANTÓN ÁLVAREZ*

### *SPAIN*

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#### CURRENT POSITION(S):

Director, Medinova Institute of Neurosciences  
Clinical Research Director, QPS-JSW Life Sciences Spain

#### ACADEMIC TRAINING AND MAIN POSITIONS:

- 1987 Medical Doctor (M.D.) Degree, Santiago de Compostela University  
1987 MD Grade Thesis, Dep. Psychiatry, Santiago de Compostela University  
1988 Neuroendocrinology Specialist Master Course, Santiago de Compostela University  
1988 Graduate in Psychology, Santiago de Compostela University  
1988-90 Doctorate in Psychiatry, Dep. Psychiatry, Santiago de Compostela University  
1988-92 Resident-Research Fellow of the Ministry of Education and Science (PNFPI):  
Dep. Psychiatry, Santiago University & Madrid Complutense University  
1992-97 Postgraduate Associated Researcher,  
Department of Psychiatry, Madrid Complutense University  
1997 Psychiatry Doctor, Academic Thesis, Ph.D.,  
Department of Psychiatry, Madrid Complutense University  
1997-1999 Post-doctoral Grant (National Plan of Scientific Research & Technical Development)  
Basic and Clinical Research Director, CIBE, A Coruña  
1999-2012 Director of Neuropharmacology and Medical Director  
EuroEspes Biomedical Research Centre, A Coruña, Spain  
2009- Associated Researcher, Granada University (SICA INVS59201)  
2009- Clinical Research Director  
QPS-JSW Life Sciences Spain, A Coruña (Spain)  
2010- Head of the Research Directorate,  
Fundación Antidemencia Al-Andalus, Spain  
2012- Director of the Medinova Institute of Neurosciences,  
Clinica RehaSalud, A Coruña, Spain  
2013- Visiting Professor, Department of Neurosciences, Faculty of Medicine,  
Iuliu Hatieganu University, Cluj Napoca (Romania)

RESEARCH PROFILE:

Antón Alvarez has 25 years expertise in Basic and Clinical Research on Alzheimer's disease and Neuropsychiatric disorders. He was involved in a number of research projects, including projects funded by Public Institutions, pharmaceutical R&D studies, industrial and R+D+I projects, epidemiological studies and projects funded by the EU. As the result of his research activity Antón Alvarez published more than 100 scientific papers and book chapters.

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***DANA BOERING***  
***GERMANY***

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After graduation in medicine at the University of Cluj Napoca clinical training in internal medicine at the University Hospital Cluj, then, after resettlement in Germany, achievement of clinical training in neurology and neurorehabilitation in Kettwig and of neurophysiology at the Alfried Krupp Hospital Essen.

Between 2002 and 2016 head of the early rehabilitation department at the St Mauritius Therapieklunik Meerbusch with focus on disorders of consciousness in severe brain injured patients.

Since 2016 assistant medical director at the Gesundheitszentrum Bad Wimpfen

1994-2002 Collaboration with the University of Essen in the field of plasticity after stroke, with an emphasis on the role of the cerebellum in motoric learning tasks

Since 2002 Collaboration with the University of Düsseldorf in the field of plasticity after stroke

Since 2009 Collaboration with the Coma Science Group Liege Belgium

Member of the DOC special interest group of the IBIA.



## **ALEXANDRU V. CIUREA**

### **ROMANIA**

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#### PROFESSIONAL EXPERIENCE

- 1997-Present      Profesor of Neurosurgery  
University of Medicine and Pharmacy "Carol Davila" Bucuresti  
Doctorate Coordinator (11 finished PhDs and seven ongoing,  
unfinished doctorates)
- 2004-2008      Pro Dean  
University of Medicine and Pharmacy "Carol Davila" Bucuresti,  
Decision 15209/07.07.2004  
Member of the Board of Professors (2000-2004) (2004-2008)  
Member of the University Senate (2004-2008)
- 2009-Present      Scientific Researcher First Degree (by national neurosurgical competition)

#### EDUCATION AND TRAINING

- 1974      Doctorate in Medicine – PhD.
- 1979-Present      MD Neurosurgeon (National neurosurgical competition)
- 2007      Master of Science degree in the Management of the Health System (M.Sc.)

#### PUBLICATIONS

106 PubMed published articles from which 52 indexed ISI Thompson;  
Author and co-author of 56 books and chapters published in Romania and abroad regarding  
neurosurgery, neurology, nutrition and the management of the health system (5 published  
books as author)

#### RESEARCH

18 finished research projects

#### IMPORTANT AWARDS

"Avicenna" Award, awarded by Prof. Dr. M. Samii with the occasion of the 5th WFNS Symposium, Teheran, 2016

Medical Excellence Award, awarded by the Romanian Ministry of Health, 2015

Health Gala Trophy for innovation in medical education, 2011

Emblem of Honor awarded by the Romanian Military Medicine for the exceptional medical activity, 2011

National Presidential Order " Faithful Service " as of Commander, 2000

Romanian Academy Award for the "Neurosurgical Pediatric Pathology" monograph, 1981.

#### DR. HONORIS CAUSA

Nominated at five universities (Oradea, Galati, Chisinau, Iasi, Constanta)

#### VISITING PROFESSOR

11 Universities (ex: Harvard University - Boston; INI - Hannover; Mercer University - Atlanta)

#### MEMBER OF EDITORIAL BOARDS AND SOCIETIES

16 important speciality Journals (ex : World Neurosurgery – USA ; Neurosurgery - USA)

21 memberships (World Federation of Neurosurgical Societies, Romanian Academy of Medical Sciences, European Association of Neurosurgical Societies, etc.)

#### SPECIAL SCIENTIFIC CONTRIBUTIONS

Construction of the first tumor tissue bank in Eastern Europe (2003)

Unitube drain – Registered patent at OSIM with no. 00994 / 2005

Coordination of construction of the Center of Excellence in Neurosurgery 2005 (under the Ministry of Health`s patronage)

Hidden Anatomy of Michelangelo (Certificate of Innovation registered at OSIM, 2012)



***KARIN DISERENS***  
***SWITZERLAND***

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Chief of the transversal Acute Neurorehabilitation Unit of the Division of Neurology, in the Department of Clinical Neurosciences, University Hospital (CHUV), Lausanne Switzerland

As a specialist in neurology and in physical medicine and rehabilitation was co-creator of the Swiss Society of Neurology, and on the head of the post acute neurorehabilitation clinics (1996-2005), then mobile team of neurorehabilitation in the University Hospital (2006-2009) before getting the chief of the transversal Acute Neurorehabilitation Unit of the division of Neurology in the Department of Clinical Neurosciences of the University Hospital in Lausanne. After contributing to the quality criteria of the acute and post acute neurorehabilitation in Switzerland, the main research domain concerns now, the evaluation of the diagnosis of the disorders of consciousness and of the effect of neurosensory stimulation during the acute phase reinforced by robotic mobilisation and brain computer interface.

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***IOAN ȘTEFAN FLORIAN***  
***ROMANIA***

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University of Medicine and Pharmacy "Iuliu Hatieganu" Cluj-Napoca  
President of the University's Senate, Head of Neurosurgery Department  
Cluj-Napoca, Romania

- Senior Neurosurgeon, Head of Department of Neurosurgery, Cluj County Emergency Hospital, Cluj-Napoca
- President of the Senate of the University of Medicine and Pharmacy "Iuliu Hatieganu" Cluj-Napoca, President of the Romanian Society of Neurosurgery, Corresponding



Member of the Romanian Academy of Medical Sciences

- As a senior neurosurgeon, up to now, he performed over 15000 surgeries, with no less than 750 surgeries per year in the last decade.
- His main areas of interest are aimed at the cerebrovascular pathology, neurooncology and paediatric neurosurgery
- As a university professor, the educational, scientific (7 books, 24 chapters, 48 indexed ISI publications) and research activities (16 research grants) are highly important to him. One of his major educational objectives is to offer continuous medical education to all young neurosurgeons (during the last 10 years he organised 2 international congresses and 7 national congresses with international participation, 5 neurosurgery masterclasses and 10 Romanian-German courses and also delivered over 230 lectures at various national and international meetings and congresses).
- Member of various international professional societies (WANS, EANS, EANO, WFNS, AANS, CNS, AMN, SSNN, SeENS, EASA), President of EMN (Euroacademia Multidisciplinaria Neurotraumatologica), Second Vice President at large of WFNS



**MAX HILZ**  
**GERMANY**

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Studied medicine in Cologne and Erlangen-Nuremberg, Germany. After initial training in Anesthesiology and Intensive Care Medicine and in Ear-Nose-and-Throat diseases, he trained in Neurology and Psychiatry at the University of Erlangen-Nuremberg.

He specialized in Neurology, Clinical Neurophysiology, Neurological Intensive Care Medicine and Disorders of the Autonomic Nervous System (ANS). He holds German board certificates in Neurology and Psychiatry and in Psychotherapy. He also passed the board examination of the American Board of Electrodiagnostic Medicine. He is licensed to practice medicine in Germany, the United Kingdom, and in the State of New York, USA.

From 1992 until 2013, he held appointments at New York University, New York, NY, as Professor of Neurology, Medicine and Psychiatry. Until 2007, he also served as the Associate Director of the NYU Dysautonomia Evaluation and Treatment Center. He was deeply involved in clinical research regarding the pathophysiology of Familial Dysautonomia, also known as Riley-Day syndrome or Hereditary Sensory and Autonomic Neuropathy Type III, and in studies of Fabry disease.

He is Professor of Neurology at the University of Erlangen-Nuremberg in Erlangen, Germany. Since June 2015, he is also Adjunct Professor of Neurology at Icahn School of Medicine at Mount Sinai, New York, NY, USA. From September 1, 2016 to August 31, 2017, he was

the Chair in Autonomic Neurology, and Director of the Clinical Department of Autonomic Neurology at the University College London, Institute of Neurology, Queen Square, London, UK.

Professor Hilz currently co-chairs the Autonomic Nervous System Subspecialty Panel of the European Academy of Neurology, EAN. He also is Past-President of the German Autonomic Society, Past-President of the European Federation of Autonomic Societies, and Past-Chair of the Autonomic Section of the American Academy of Neurology. He is a member of the editorial board of Clinical Autonomic Research, and Associate Clinical Editor of Autonomic Neuroscience: Basic and Clinical. He published more than 300 original and review articles in peer-reviewed journals and chapters in textbooks and presented his work at several hundred scientific conferences. He wrote textbook chapters on basic and sophisticated methods of autonomic testing, and co-authored various autonomic nervous system guidelines and consensus statements, e.g. the guidelines of the German Neurological Society on syncope, the guidelines on erectile dysfunction, the guidelines of the German Diabetes Society on diabetic neuropathy, the consensus statement of the American Academy of Neurology and the American Autonomic Society on the definition of orthostatic hypotension, neurally mediated syncope and the postural tachycardia syndrome, as well as the EFNS guidelines on the diagnosis and management of orthostatic hypotension. He served on the expert panel that developed the Autonomic Nervous System subspecialty examination of the American Academy of Neurology. He also served as an advisor to the European Medicines Agency, EMA, on issues related to autonomic nervous system dysfunction.

In summary, Prof. Hilz is experienced in the examination of small nerve fiber diseases and disorders of the autonomic nervous system, including hereditary sensory and autonomic neuropathies, diabetic neuropathies, and Fabry disease, and central autonomic disorders.



***VOLKER HÖMBERG***  
***GERMANY***

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Prof. Hömberg had his medical education at the Universities of Düsseldorf, Freiburg and Boston Massachusetts. After spending electives in Neurology at Boston City Hospital and the National Hospital for Nervous Diseases Queens Square London he was a research fellow at the C. and O. Vogt Institute for Brain Research in Düsseldorf. In 1981 he started a residency in neurology with Prof. Hans Freund at Heinrich Heine University Düsseldorf. In 1987 he was appointed Director of the Neurological Therapy Centre (NTC) a newly founded Institute

at Heinrich Heine University in Düsseldorf. He was also founding Director of the NTC in Cologne. He was involved in the setup of many in- and outpatient rehabilitation hospitals in Germany. In 2001 he started the St. Mauritius Therapy Clinic in Meerbusch near Düsseldorf and since 2011 he is Director of the Dept. of Neurology at the Gesundheitszentrum Bad Wimpfen and works as senior neurology group leader for the SRH-Group, one of the biggest hospital groups in Germany.

He was founder, president and vice president of the German Society for Neurorehabilitation for many years. He serves as Secretary General for the World Federation of Neurorehabilitation (WFNR) for more than 12 years and is Vice President of the European Federation of Neurorehabilitation Societies. (EFNR)

He is regular reviewer and co-editor for many international peer-reviewing journals.

He is regular (co)-programme chairman for neurorehabilitation for major international meetings as the World- and European Neurorehabilitation Congresses (WCNR, ECNR), Controversies in Neurology (CONy) and the European Stroke Congress (ESC).

He has published more than 250 articles in international peer-reviewed journals and many book chapters. His primary scientific interests are the fields of motor rehabilitation, cognition, epistemology, neurological music therapy and pharmacology in neurorehabilitation.



**DAFIN F. MUREȘANU**  
**ROMANIA**

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Professor of Neurology, Senior Neurologist, Chairman of the Neurosciences Department, Faculty of Medicine, University of Medicine and Pharmacy "Iuliu Hatieganu" Cluj-Napoca, Past President of the Romanian Society of Neurology, President of the Society for the Study of Neuroprotection and Neuroplasticity (SSNN), member of the Academy of Medical Sciences, Romania, secretary of its Cluj Branch. He is member of 16 scientific international societies (being member of the American Neurological Association (ANA) - Fellow of ANA (FANA) since 2012) and 10 national ones, being part of the executive board of most of these societies. Professor Dafin F. Mureșanu is a specialist in Leadership and Management of Research and Health Care Systems (specialization in Management and Leadership, Arthur Anderson Institute, Illinois, USA, 1998 and several international courses and training stages in Neurology, research, management and leadership). Professor Dafin F. Mureșanu is coordinator in international educational programs of European Master (i.e. European Master in Stroke Medicine, University of Krems), organizer and co-organizer of many educational projects: European and international schools and courses (International School of Neurology, European Stroke Organisation summer School, Danubian Neurological Society Teaching Courses, Seminars - Department of Neurosciences, European Teaching Courses on Neurorehabilitation) and scientific events: congresses, conferences, symposia (International Congresses of the Society for the Study of Neuroprotection and Neuroplasticity (SSNN), International Association of Neurorestoratology (IANR) & Global College for Neuroprotection and Neuroregeneration (GCNN) Conferences, Vascular Dementia Congresses (VaD), World Congresses on Controversies in Neurology (CONy), Danube Society Neurology Congresses, World Academy for Multidisciplinary Neurotraumatology (AMN) Congresses, Congresses of European Society for Clinical Neuropharmacology, European Congresses of Neurorehabilitation). His activity includes involvement in many national and international clinical studies and research projects, over 400 scientific participations as "invited speaker" in national and international scientific events, a significant portfolio of scientific articles (157 papers indexed on Web of Science-ISI, H-index: 17) as well as contributions in monographs and books published by prestigious international publishing houses. Prof. Dr. Dafin F. Mureșanu has been honoured with: the University of Medicine and Pharmacy "Iuliu Hatieganu" Cluj-Napoca, Faculty of Medicine, "Iuliu Hatieganu Great Award 2016" for the best educational project in the last five years; the Academy of Romanian Scientists, "Carol Davila Award for Medical Sciences / 2011", for the contribution to the Neurosurgery book "Tratat de Neurochirurgie" (vol.2), Editura Medicala, Bucuresti, 2011; the Faculty of Medicine, University of Medicine and Pharmacy "Iuliu Hatieganu" Cluj-Napoca "Octavian Fodor Award" for the best scientific activity of the year 2010 and the 2009 Romanian Academy "Gheorghe Marinescu Award" for advanced contributions in Neuroprotection and Neuroplasticity.



## *NICOLE VON STEINBÜCHEL*

**GERMANY**

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Since 2004/2005	Director of the Department of Medical Psychology and Medical Sociology, University Medical Center, Georg-August-University of Göttingen
2001-2004	Associate Professor (C4) of Gerontopsychology at Geneva University and Head of the Neurogerontopsychology Unit, Department of Psychogeriatrics, Geneva University Hospital
1999-2000	C3-Research Professor of the Dorothea-Erxleben Foundation, Magdeburg University
1993-1997	C3-Professor of Medical Psychology, Institute of Medical Psychology (IMP), Munich University (LMU)
1997	Postdoctoral thesis ("Habilitation") in „Clinical Psychology and Neuropsychology“, Leopold-Franzens University, Innsbruck
1987-1993	Graduation (Dr. rer. biol. hum.) and scientific researcher at the IMP, LMU
1985	Diploma in psychology at the Institute of Psychology, Munich University, studies in philosophy and history of art

### Main areas of work (Selection)

Neuropsychology (aging, dementia, stroke, TBI), cognition, (intercultural) health-related quality of life research, currently outcome work package leader of the CENTER-TBI-Study of 5000 patients after traumatic brain injury (TBI) at four time points in two years.

### Offices (Selection)

1998-2002	Vice-Chair of the German Society of Medical Psychology
2001-2005	Member of the board of the Swiss Society of Psychology
Since 2003	Member of the board, vice-treasurer of the Academia, currently Vice President of the Multidisciplinaria Neurotraumatologica (AMN)
2007-2010	Member of the board of the European Brain and Behaviour Society (Scientific Committee)
2008	Founding member of the International Society for Clinical Neuromusicology
2008-2011	President of the QOLIBRI Society



## *JOHANNES VESTER*

### *GERMANY*

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Born, 1952, he specialized in Veterinary Medicine between 1971 and 1974 at the University in Munich, then changed to the University in Cologne in 1974 and specialized in Human Medicine from 1974 to 1980. In 1976 to 1979, he additionally studied biometric methods for pharmacology and clinical research at the Institute for Data Analysis and Study Planning in Munich.

While studying human medicine, he completed research work on pattern recognition in the visual brain and developed a pharmacodynamic Neuron Simulation Model at the Institute for Medical Documentation and Statistics of the University at Cologne.

From 1985 to 1995, he was member of the Ultrahigh Dexamethasone Head Injury Study Group and the leading biometrician of the German GUDHIS project in Traumatic Brain Injury, involving 10 Departments of Neurosurgery in Germany.

Since 1982 he holds > 100 advanced training courses on biometry for professionals in clinical research as well as teaching courses for university institutions and international societies.

Since 1995 he is Senior Consultant for Biometry & Clinical Research. He planned and evaluated about 150 randomized clinical studies worldwide.

Since 2013 Elected Member of the International Scientific Committee of the Society for the Study of Neuroprotection and Neuroplasticity (SSNN).

Since 2013 Elected Member of the World Academy for Multidisciplinary Neurotraumatology (AMN), since 2016 Elected Member of the Presidium of the AMN.

Since 2015 Member of the PhD Neuroscience International Faculty, "Iuliu Hatieganu" University of Medicine and Pharmacy, Cluj-Napoca, Romania

Since 2017 Invited Associate Professor, Department of Neuroscience, "Iuliu Hatieganu" University of Medicine and Pharmacy, Cluj-Napoca, Romania

He is head of the Multidimensional Department at the Institute for Data Analysis and Study Planning, and statistical peer reviewer for leading medical journals such as Stroke (American Heart Association).

He is member of various international Advisory Boards and Steering Committees including participation as biometric expert in regulatory authority panels, in FDA, EMA, and BfArM hearings, and in workshops of the International Biometric Society (IBS)

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***KLAUS VON WILD***  
***GERMANY***

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von Wild, Klaus Ruediger Helmut, MD PhD, Dr.h.c. Distinguished Prof. mult.

Appointments: Professor for Neurosurgery and for functional neurorehabilitation and restorative neurosurgery of brain and spinal cord lesions, Med. Faculty Univ. Muenster & INI, International Neuroscience Institute, Hanover, D. Former head neurosurgical dept. and special unit for early neurosurgical rehabilitation at Clemens Academic Hospital, Muenster, D. Now

CEO kvw neuroscience consulting GmbH; CEO Dres. Klaus and Monika von Wild non-profit Foundation Muenster, D. Member of the Kuratorium non-profit ZNS- Hannelore-Kohl-Foundation, Bonn & non-profit Neurobionik Foundation, Hanover, D. Honorary member of numerous international and national Academies and Societies. Honorary founding president AMN, EMN, and QOLIBRI eV. Research in & lecturing of neurosurgical rehabilitation and HRQoL, e.g. social re-entry and competence after TBI and SCI lesions; "Music and Mind". Publication: 18 books; 37 book chapters; 230 articles in listed int journals; 2 scientific films. Editorial board member of national/international journals.

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