

Winnie Jensen
Professor, Leader
Department of Health Science and Technology
The Faculty of Medicine
Neural Engineering and Neurophysiology
Neural Engineering and Neurophysiology
Center for Neuroplasticity and Pain
Type of address: Visiting address.
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Research profile

RESEARCH VISION AND MISSION

I believe in improving quality of life for people with impaired sensory or motor capabilities through development of innovative, implantable technological solutions that are inspired by human biology. I work towards bridging animal and human research to create unique knowledge and novel rehabilitation systems.

RESEARCH STRATEGY AND EXAMPLE RESEARCH PROJECTS

My research was initiated within animal work, and most of my work has been carried out in animal models – however since 2013, my work also taken a translational step towards clinical work. All my work is ultimately dedicated to the development of future clinical sensory and motor rehabilitation devices and therapies for use in human patients.

Example research projects: Animal model of ischemic stroke, Animal models of neuropathic and phantom limb pain, Direct sensory feedback to alleviate phantom limb pain, Invasive brain computer interfacing.

RESEARCH EXPERTISE

Specialist knowledge within the area of neural engineering, including new implantable technologies to assess, understand and modulate neuroplasticity for treatment of diseased or damaged neural system.

Experience with development and test of medical device equipment in collaboration with national and international companies.

Experience with development and test of medical equipment (invasive and non-invasive) at multi-national level (approvals obtained at the national ethical committee systems and national competent authorities for human tests, knowledge of performing animal and human tests to comply with the EU medical device directive).

Broad knowledge of national and international policies, strategies, mega-trends ect. within health.

Employment

Professor

Professor, Leader
Department of Health Science and Technology
The Faculty of Medicine
Gistrup, Denmark
1 Jan 2000 → 31 Dec 4712

Professor

Professor, Leader
The Faculty of Medicine
Gistrup, Denmark

1 Jan 2000 → 31 Dec 4712

Neural Engineering and Neurophysiology

The Faculty of Medicine

Gistrup, Denmark

1 Dec 2015 → present

Professor

Professor, Leader

Neural Engineering and Neurophysiology

The Faculty of Medicine

Gistrup, Denmark

1 Jan 2000 → 31 Dec 4712

Center for Neuroplasticity and Pain

The Faculty of Medicine

Aalborg East, Denmark

1 Feb 2015 → present

Research outputs

Backward translation of human pain models - CNAP 10yr anniversary

Jensen, W., 2025

Direct Nerve Stimulation for Induction of Sensation and Treatment of Phantom Limb Pain

Jensen, W. (Editor), Dec 2019, River Publishers. 262 p. (River Publishers Series in Biomedical Engineering).

Introduction

Jensen, W., Dec 2019, *Direct Nerve Stimulation for Induction of Sensation and Treatment of Phantom Limb Pain*. River Publishers, p. 1-6 (River Publishers Series in Biomedical Engineering).

Introduction

Jensen, W., 15 Apr 2019, *Direct Nerve Stimulation for Induction of Sensation and Treatment of Phantom Limb Pain*. River Publishers, p. 1-6 6 p.

Natural sensory feedback for phantom limb pain modulation and therapy

Jensen, W., 2017, *Converging Clinical and Engineering Research on Neurorehabilitation II: Proceedings of the 3rd International Conference on NeuroRehabilitation (ICNR2016), October 18-21, 2016, Segovia, Spain*. Springer, p. 719-723 (Biosystems and Biorobotics; No. 15).

Preface

Jensen, W., Andersen, O. K. & Akay, M., 2014, *Replace, Repair, Restore, Relieve : Bridging Clinical and Engineering Solutions in Neurorehabilitation: Proceedings of the 2nd International Conference on NeuroRehabilitation, ICNR2014, 24-26 June 2014, Aalborg, Denmark*. Jensen, W., Andersen, O. K. & Akay, M. (eds.). Springer, p. V-VI 2 p. (Biosystems and Biorobotics; No. 7).

Preface

Jensen, W., Andersen, O. K. & Akay, M., 2014, In: *Biosystems and Biorobotics*. 7, p. V-VI

Replace, Repair, Restore, Relieve : Bridging Clinical and Engineering Solutions in Neurorehabilitation: Proceedings of the 2nd International Conference on NeuroRehabilitation, ICNR2014, 24-26 June 2014, Aalborg, Denmark

Jensen, W. (Editor), Andersen, O. K. (Editor) & Akay, M. (Editor), 2014, Springer. (Biosystems and Biorobotics; No. 7).

Selectivity of peripheral neural interfaces

Jensen, W. & Harreby, K. R., 2013, *Introduction to Neural Engineering for Motor Rehabilitation*. Farina, D., Jensen, W. & Akay, M. (eds.). Wiley-IEEE press, p. 433-459 (IEEE Press Series in Biomedical Engineering).

Development of an implantable transverse intrafascicular multi-channel electrode (TIME) system for relieving phantom limb pain

Jensen, W., Micera, S., Navarro, X., Stieglitz, T., Guiraud, D., Divoux, J. L., Rossini, P. M. & Yoshida, K., 2010, *2010 Annual International Conference of the IEEE Engineering in Medicine and Biology Society (EMBC), 31 August-4 September 2010, Buenos Aires, Argentina*. IEEE Press, p. 6214-6217 (IEEE Engineering in Medicine and Biology Society. Conference Proceedings).

Transverse intrafascicular multichannel electrode (TIME) system for treatment of phantom limb pain in amputees

Jensen, W., Micera, S., Navarro, X., Stieglitz, T., Guiraud, D., Divoux, J., Rossini, P. M. & Yoshida, K., 2010, *Abstracts of the XVIII Congress of the International Society of Electrophysiology and Kinesiology, ISEK 2010, 16-19 June 2010, Aalborg, Denmark [CD-ROM]*. Falla, D. & Farina, D. (eds.). Aalborg: Department of Health Science and Technology. Aalborg University, p. No. P507

Integration af menneske og maskine: proteser til nervesystemet

Jensen, W. & Sinkjær, T., 2009, *Hjernen i bevægelse*. Bøgeskov, J., Ellemann, K. & Nielsen, J. B. (eds.). København: HjerneForum, p. 122-131

Tactile discrimination based on intracortical microstimulation in primary somatosensory cortex in Sprague-Dawley rats

Jensen, W. & Rousche, P., 2008, In: *Biomedizinische Technik*. 53, Suppl. 1, p. 302-304

In vivo implant mechanics of single-shaft microelectrodes in peripheral nervous tissue

Jensen, W., Yoshida, K. & Hofmann, U. G., 2007, *Proceedings of the 3rd International IEEE EMBS Conference on Neural Engineering, 2-5 May 2007, Kohala Coast, Hawaii, USA*. Electrical Engineering/Electronics, Computer, Communications and Information Technology Association, p. 1-4

A method for monitoring intra-cortical motor cortex responses in an animal model of ischemic stroke

Jensen, W., Rousche, P. J. & Chiganos, T. C., 2006, *Proceedings of the 28th IEEE EMBS Annual International Conference, Engineering in Medicine and Biology Society, 30 August-3 September 2006, New York City, USA*. Electrical Engineering/Electronics, Computer, Communications and Information Technology Association, p. 1201-1203

In-vivo implant mechanics of flexible, silicon-based ACREO microelectrode arrays in rat cerebral cortex

Jensen, W., Yoshida, K. & Hofmann, U. G., 2006, In: *IEEE Transactions on Biomedical Engineering*. 53, 5, p. 934-940

On variability and use of rat primary motor cortex responses in behavioral task discrimination

Jensen, W. & Rousche, P. J., 2006, In: *Journal of Neural Engineering*. 3, 1, p. L7-L13

Characterization of M1 local-field potentials preceding repetitive forelimb movement in rats

Jensen, W. & Rousche, P. J., 2005, *Proceedings of the 2005 BMES Annual Fall Meeting, Biomedical Engineering Society, 28 September-1 October 2005, Baltimore, MD, USA*.

Movement discrimination based on rat primary motor cortex responses

Jensen, W. & Rousche, P. J., 2005, *Proceedings of the 2nd Annual IEEE EMBS Conference on Neural Engineering, 16-19 March 2005, Washington DC, USA*. IEEE Signal Processing Society, p. v-viii

Encoding of self-paced, repetitive forelimb movements in rat primary motor cortex

Jensen, W. & Rousche, P. J., 2004, *26th Annual International Conference of the IEEE Engineering in Medicine and Biology Society [EMBS] : conference proceedings, 1-4 September 2004, San Francisco, CA, USA*. Hudson, D. L., Liang, Z.-P. & Dumont, G. (eds.). Electrical Engineering/Electronics, Computer, Communications and Information Technology Association, p. 4233-4236

Assessment of subdural insertion force of single-tine microelectrodes in rat cerebral cortex

Jensen, W., Hofmann, U. G. & Yoshida, K., 2003, *25th Annual International Conference of the IEEE Engineering in Medicine and Biology Society, IEEE EMBS, EMBC 2003, Cancun, Mexico, 17-21 September*. Electrical Engineering/Electronics, Computer, Communications and Information Technology Association, p. 2168-2171

Improving signal reliability for on-line joint angle estimation from nerve cuff recordings of muscle afferents

Jensen, W., Sinkjær, T. & Sepulveda, F., 2002, In: *IEEE Transactions on Neural Systems and Rehabilitation Engineering*. 10, 3, p. 133-139

Long-term recording properties of longitudinal intra-fascicular electrodes

Jensen, W. & Yoshida, K., 2002, *7th Annual Conference of the International Functional Electrical Stimulation Society, IFESS 2002, 25-29 June 2002, Ljubljana, Slovenia*. p. 138-140

Angular resolution and working ranges of flexion-extension information in nerve cuff recordings of muscle afferent activity

Jensen, W., Riso, R. R., Sepulveda, F. & Sinkjær, T., 2001, *Proceedings of the 6th Annual Conference of the International Functional Electrical Stimulation Society, IFESS 2001, 17-20 June 2001, Cleveland, OH, USA*.

Effect of agonist-antagonist electrical stimulation on muscle afferent recordings in anesthetized rabbits

Jensen, W. & Sinkjær, T., 2001, In: *Neuromodulation: Technology at the Neural Interface*. 4, 3, p. 127-137

Effect of initial joint position on nerve cuff recordings of muscle afferents in rabbits

Jensen, W., Lawrence, S. M., Riso, R. R. & Sinkjær, T., 2001, In: *IEEE Transactions on Neural Systems and Rehabilitation Engineering*. 9, 3, p. 265-273

Measurement of intrafascicular insertion force of a tungsten needle into peripheral nerve

Jensen, W., Yoshida, K., Malina, T. & Hofmann, U., 2001, *23rd Annual International Conference of the IEEE Engineering in Medicine and Biology Society, EMBC 2001, 25-28 October 2001, Istanbul, Turkey*. Vol. 3. p. 3108-3109

Muscle afferent signals for FES systems

Jensen, W., 2001, Aalborg: Center for Sensory-Motor Interaction (SMI), Department of Health Science and Technology, Aalborg University.

The rabbit model and LIFE as a neural interface

Jensen, W. & Yoshida, K., 2001, *Scandinavian Society for Laboratory Animal Science, Scand-LAS, 13-15 May 2001, Aarhus, Denmark*. p. 100, No. A76

Effect of intertrial delay on whole nerve cuff recordings of muscle afferents in rabbits

Jensen, W., Riso, R. R. & Sinkjær, T., 2000, In: *Neuromodulation: Technology at the Neural Interface*. 3, 1, p. 43-53

On-line joint angle estimation based on nerve cuff recordings from muscle afferents

Jensen, W., Riso, R. R. & Sepulveda, F., 2000, *IFESS 2000. NP 2000, Proceedings, 5th Annual Conference of the International Functional Electrical Stimulation Society, 6th Triennial Conference "Neural Prostheses: Motor Systems", 18-24 June 2000, Aalborg, Denmark*. Sinkjær, T., Popovic, D. & Struijk, J. J. (eds.). Center for Sensory-Motor Interaction (SMI), Department of Health Science and Technology, Aalborg University, p. 376-377

Nerve cuff recordings of muscle afferents during electrical stimulation of agonist-antagonist muscle pain

Jensen, W., Riso, R. R. & Sinkjær, T., 1999, *IFESS 1999, Proceedings of the 4th Annual Conference of the International Functional Electrical Stimulation Society, 23-27 August 1999, Sendai, Japan*. p. 303-306

Effect of initial position on nerve cuff recordings of muscle afferents during passive rotation of the ankle joint in rabbit

Jensen, W., Riso, R. R. & Sinkjær, T., 1998, *Abstract Book, 4th International Congress, INS/IFESS, 16-20 September 1998, Lucerne, Switzerland*. p. 252, No. PP19

Position information in whole nerve cuff recordings of muscle afferents in a rabbit model of normal and paraplegic standing

Jensen, W., Riso, R. R. & Sinkjær, T., 1998, *Proceedings of the 20th Annual International Conference of the IEEE Engineering in Medicine and Biology Society, Vol. 20, No. 5, 29 October-1 November 1998, Hong Kong*. p. 2528-2531

Identification of the relationship between center of pressure and ankle angle during standing of normal subjects

Jensen, W., Struijk, L. N. S. A., Veltink, P. H. & Mayagoitia, R., 1996, *Proceedings of the 18th Annual International Conference of the IEEE Engineering in Medicine and Biology Society, 31 October-3 November 1996, Amsterdam, the Netherlands*. Vol. 2. p. 575-576

Activities**EU High-Level Conference on Reform of Research Assessment**

Jensen, W. (Participant)
3 Dec 2025 → 4 Dec 2025

<https://www.embs.org/event/47th-annual-international-conference-of-the-ieee-engineering-in-medicine-and-biology->

Jensen, W. (Participant)
14 Jul 2025 → 17 Jul 2025

Backward translation of human pain models - CNAP 10yr anniversary

Jensen, W. (Lecturer)
6 May 2025

Leading together at AAU

Jensen, W. (Other)
2025 → 2026

Facilitatoruddannelsen (Playmakers.dk)

Jensen, W. (Other)
2024

AAU Interdisciplinary Leadership Course

Jensen, W. (Other)
2023

Udvalget til konstruktion af forskningsindikator på AAU (Event)

Stoustrup, J. (Chairperson), Jensen, W. (Member), Kristensen, T. N. (Member), Larsen, B. (Member), Albretsen, J. (Member), Müller, C. (Member), Nielsen, T. (Member), Bjerg Bennike, K. (Member), Melchiorsen, P. M. (Member) & Sivertsen, G. (Member)
Sept 2022 → Feb 2023

Aalborg Universitet - proceskonsulentuddannelse (Mannaz.dk)

Jensen, W. (Other)
2020

Studielederkursus (SyddanskUniversitet.dk)

Jensen, W. (Other)
2014

Opponent on Ph.D-defense (External organisation)

Jensen, W. (Member)
30 Mar 2012

Forskeren som leder - ledelse af forskere på AAU

Jensen, W. (Other)
2012

UIC animal Care Committee Training (University of Illinois at Chicago)

Jensen, W. (Other)
2003

Univesitetspædagogik for adjunkter (Aalborg Universitet)

Jensen, W. (Other)
2001 → 2003

Dyreforsøgskunskab

Jensen, W. (Other)
1997

Prizes

3rd Best Paper Award

Rettore Andreis, F. (Recipient), Jensen, W. (Recipient), Janjua, T. (Recipient), Meijs, S. (Recipient) & Nielsen, T. G. N. D. S. (Recipient), Oct 2023

Order of the Dannebrog

Jensen, W. (Recipient), 9 Oct 2024

Vanførefondens forskningspris

Jensen, W. (Recipient), 2016

Press/Media

10 teknologiske tendenser, du bør kende: #4. Trådløse signaler mellem hjerne og muskel erstatter ødelagt rygmær

Jensen, W.

03/05/2017

1 item of Media coverage

Banebrydende metode kan hjælpe amputerede

Jensen, W. & Sørensen, P.

23/02/2016

1 item of Media coverage

Behandling af fantomsmerter hos amputerede

Lontis, R. & Jensen, W.

20/02/2024

1 item of Media coverage

Bionisk protese

Jensen, W.

26/02/2015

1 item of Media coverage

Commentary: Geometric Characterisation of Local Changes in Tungsten Microneedle Tips after In-Vivo Insertion into Peripheral Nerves

Jensen, W.

06/09/2022

1 item of Media coverage

Danske forsøgspersoner skal have elektroder opereret ind i nerverne

Jensen, W.

25/03/2014

6 items of Media coverage

Dansker med fingerprotese føler teksturer for første gang i verden

Jensen, W.
09/03/2016

1 item of Media coverage

Det hele kommer fra hjernen af

Jensen, W.
30/11/2013

1 item of Media coverage

Elektroniske nerver

Jensen, W.
12/12/2008

1 item of Media coverage

En robotarm og to bioniske øjne, tak!

Jensen, W.
18/10/2015

1 item of Media coverage

En robotarm og to bioniske øjne, tak!

Jensen, W.
19/10/2015

2 items of Media coverage

En underlig "kriblen-krablen"

Jensen, W.
01/11/2008

1 item of Media coverage

Forskere vil manipulere med fantomsmerter

Jensen, W.
22/02/2008

1 item of Media coverage

Forskere vil snyde kroppens fantomsmerter

Jensen, W.
13/12/2013

50 items of Media coverage

Forskning i fantomsmerter

Jensen, W.
22/02/2008

1 item of Media coverage

Forskning i fantomsmerter

Jensen, W.
22/02/2008

2 items of Media coverage

Forskning i neuroteknologi giver store muligheder

Struijk, J., Rijkhoff, N., Jensen, W. & Sinkjær, T.
12/12/2008

1 item of Media coverage

Forsøgsdyr i forskningens tjeneste

Jensen, W.
01/12/2007
1 item of Media coverage

Fremtidens menneske kan trække på to typer reservedele

Jensen, W.
10/04/2015
2 items of Media coverage

Grise hjælper forskere med at bekæmpe fantomsmerter

Jensen, W.
17/03/2016
2 items of Media coverage

Hjerne-Madsen underholder fuld AAU-sal

Hüttel, H., Hansen, K. T. & Jensen, W.
04/11/2014
2 items of Media coverage

Implantat i hjernen viser vej til helbredelse

Jensen, W.
16/06/2011
1 item of Media coverage

Jagten på supermennesket

Jensen, W. & Birkholm, K.
06/02/2015
4 items of Media coverage

Lam teenager i robotdragt skal sparke VM i gang

Jensen, W.
12/06/2014
1 item of Media coverage

Medicinske muligheder

Jensen, W.
25/08/2015
1 item of Media coverage

Moderne mirakler

Struijk, L. N. S. A., Bentsen, B., Jensen, W. & Lontis, E. R.
27/03/2017
1 Media contribution

Navnenyt

Graven-Nielsen, T., Arendt-Nielsen, L., Andersen, O. K. & Jensen, W.
21/10/2014
1 item of Media coverage

Nye medlemmer af ATV

Jensen, W. & Kanstrup, A. M.
07/05/2014
5 items of Media coverage

Nye medlemmer af ATV

Kanstrup, A. M. & Jensen, W.

28/05/2014

1 item of Media coverage

Nyt forskningsprojekt skal komme fantomsmerter til livs

Jensen, W.

13/12/2013

1 item of Media coverage

Nyt forskningsprojekt skal komme fantomsmerter til livs

Jensen, W.

25/03/2014

1 item of Media coverage

Ny viden om nerverne kan genskabe organer og sanser

Rijkhoff, N., Struijk, J., Jensen, W. & Sinkjær, T.

13/12/2008

2 items of Media coverage

Når de lamme skal gå

Jensen, W.

24/06/2014

1 item of Media coverage

Professorer modtager ridderkorset

Duedahl, P., Jensen, W. & Kørnøv, L.

20/11/2024 → 21/11/2024

2 items of Media coverage

Robotteknologi: Dansker føler med kunstig hånd

Jensen, W.

05/02/2014

13 items of Media coverage

Rotter skal løse blodprop-gåde

Jensen, W.

16/06/2011

2 items of Media coverage

Spørg Scientariat: Hvor meget elektricitet kan menneskekroppen holde til?

Jensen, W.

06/05/2017

1 item of Media coverage

Stor bevilling skal mindske antallet af invalide efter slagtilfælde

Andersen, O. K. & Jensen, W.

24/06/2014

10 items of Media coverage

Sundhedsteknologi: Så tæt er vi på at være cyborgs

Jensen, W.

16/10/2012

2 items of Media coverage

Superkroppe og fantomsmerter

Jensen, W.
03/02/2025
1 item of Media coverage

Superkroppe og fantomsmerter

Jensen, W.
14/07/2025
1 item of Media coverage

Supermennesker

Jensen, W.
24/10/2014
1 item of Media coverage

Tre professorer fra AAU modtager ridderkors

Duedahl, P., Jensen, W. & Kørnøv, L.
13/12/2024
1 item of Media coverage

Vanførefondens Forskerpris til AAU forsker

Jensen, W.
15/06/2016
3 items of Media coverage

Vanførefondens Forskerpris til AAU-professor

Jensen, W.
24/05/2016
12 items of Media coverage

Winnie Jensen

Jensen, W.
05/10/2011
2 items of Media coverage

Winnie Jensen - returned associate professor at Aalborg University

Jensen, W.
05/02/2009
1 item of Media coverage

Aalborg-forskere fjerner fantomsmerter med strøm

Jensen, W.
14/11/2016
2 items of Media coverage

Aalborg Universitet vil behandle fantomsmerter

Jensen, W.
01/02/2016
2 items of Media coverage

Projects**Advancing Peripheral Nerve Interfaces in a Large Animal Model**

Rettore Andreis, F. (PI), Jensen, W. (Project Manager) & Nielsen, T. G. N. D. S. (Supervisor)
01/04/2019 → 01/07/2022

Bevica Center for NeuroEngineering Solutions in Stroke Rehabilitation

Andersen, O. K. (PI), Jensen, W. (PI), Jørgensen, H. R. M. (Project Participant), Moeslund, T. B. (Project Participant), Mrachacz-Kersting, N. (Project Participant), Nielsen, J. F. (Project Participant), Petrini, L. (Project Participant), Spaich, E. G. (Project Participant), Modrau, B. (Project Participant), Svaneborg, N. (Project Participant), Larsen, B. (Project Participant) & Knudsen, G. H. (Project Participant)

01/09/2014 → 31/08/2019

Construction of a Research Indicator for Aalborg University

Stoustrup, J. (PI), Jensen, W. (Col), Kristensen, T. N. (Col), Larsen, B. (Col), Müller, C. (Col), Nielsen, T. (Col), Albrechtsen, J. (Col), Bjerg Bennike, K. (Col), Melchiorsen, P. M. (Col) & Sivertsen, G. (Col)

Aalborg University

14/09/2022 → 31/12/2023

EPIONE: EPIONE- Natural sensory feedback for phantom limb modulation and therapy

Jensen, W. (PI), Nielsen, T. G. N. D. S. (Project Participant), Lontis, E. R. (Project Participant), Geng, B. (Project Participant) & Harreby, K. R. (PI)

01/07/2013 → 01/07/2017

Neural Mechanisms in Ischemic Stroke

Jensen, W. (PI), Nielsen, T. G. N. D. S. (Project Participant) & Nielsen, R. K. (Project Participant)

01/04/2005 → ...

Phantom Limb Pain - Neural Mechanisms And Innovative Treatments

Jensen, W. (PI), Lontis, E. R. (Col), Jadidi, A. F. (Project Participant) & Zarei, A. A. (Project Applicant)

01/09/2015 → 01/09/2025

Translational Animal Models of Pain

Jensen, W. (PI), Meijs, S. (Project Participant), Rettore Andreis, F. (Project Participant), Atchuthan, N. A. (Project Participant), Nielsen, T. G. N. D. S. (Project Participant), Janjua, T. (Project Participant), Tøttrup, L. (Project Participant) & Nielsen, R. K. (Project Participant)

01/09/2015 → 01/09/2025

TIME: Transverse, Intrafascicular Multichannel Electrode system for Induction of sensation and treatment of phantom limb pain in amputees

Jensen, W. (Project Participant), Geng, B. (PI), Kundu, A. (Project Participant), Harreby, K. R. (Project Participant) & Lontis, E. R. (Project Applicant)

01/05/2008 → 30/04/2012

TEST

TEXT SECTION can be added.