

Arvina Grahl, PhD

Spaulding Rehabilitation Hospital, Harvard Medical School
300 1st Ave, Room 2150C, Boston, MA 02129, USA

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Personal information

Place of birth: Berlin, Germany

Orcid: <https://orcid.org/0000-0002-9699-6329>

Education

- **University Medical Center Hamburg-Eppendorf (UKE)** Hamburg, Germany
PhD June 2014 – Nov. 2018
 - Thesis topic: *Experiencing Pain - The Impact of Variability on Pain Perception and the Placebo Effect*
 - Fields of interest: fMRI, Pain, Bayesian integration
- **University of Vienna** Vienna, Austria
Diploma studies Psychology, Mag.rer.nat. (equivalent M.Sc.) Oct. 2006 – Jan. 2014
 - Thesis topic: *Pain anticipation induced by electrical stimulation and the Stimulus Preceding Negativity (SPN) - An EEG study*
 - Fields of interest: Biological Psychology, EEG, Pain anticipation, Uncertainty

Working and Research Experience

- **Spaulding Rehabilitation Hospital, Harvard Medical School** Boston, MA, USA
Postdoc/research fellow Sept. 2021 – present
 - Topics: *fMRI hyperscanning, doctor-patient relationship, chronic pain, placebo analgesia*
 - Head of group: Prof Dr. Vitaly Napadow
 - Discovery Center for Recovery from Chronic Pain, Department of Physical Medicine & Rehabilitation
- **A. A. Martinos Center for Biomedical Imaging** Boston, MA, USA
Postdoc/research fellow (MGH/Harvard Medical School) Febr. 2019 – Sept. 2021
 - Topics: *fMRI hyperscanning, doctor-patient relationship, placebo analgesia*
 - Head of group: Ass. Prof Dr. Vitaly Napadow
 - Center for Integrative Pain NeuroImaging
- **University Medical Center Hamburg-Eppendorf (UKE)** Hamburg, Germany
PhD candidate/research fellow June 2014 – Febr. 2019
 - Topics: *fMRI, neural correlates of pain & placebo analgesia, Bayesian integration*
 - Supervisor: Prof Dr. Christian Büchel
 - Department of Systems Neuroscience
- **University Medical Center Hamburg-Eppendorf (UKE)** Hamburg, Germany
Guest Researcher March 2014 – June 2014
 - Topics: *EEG, fMRI, neural correlates of sleep*
 - Supervisor: Dr. Mareike Düesberg
 - Department of Systems Neuroscience
- **Social Cognitive and Affective Neuroscience Unit** Vienna, Austria
Research assistant March 2012 – March 2014
 - Lab coordinator (EEG, TMS, tDCS), teaching tutor
 - Topics: *EEG, fMRI, pain processing, neural correlates of feedback processing*
 - Head of group: Univ.-Prof. Mag. Dr. Claus Lamm
 - Department of Basic Psychological Research and Research Methods, Faculty of Psychology, University of Vienna

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Working and Research Experience [cont.]

- **University of Vienna** Vienna, Austria
Project assistant *Nov. 2011 – Jan. 2014*
 - EEG/fMRI data collection, EEG data analysis
 - Topic: *Multimodal neuroimaging in clinical neurosciences: Assessment of neurobiological markers for psychiatric disorders*
 - Supervisor: Univ.-Prof. Mag. Dr. Claus Lamm, MD PD A/Prof. Rupert Lanzenberger, Assoc.-Prof. Priv.-Doz. DI Dr. Christian Windischberger
- **University of Vienna** Vienna, Austria
Student Advisor *Mar. 2011 – Febr. 2012*
 - Freshmen advisor, teaching basic skills (literature research, adequate learning behavior)
 - Supervised Orientation Tutorium (SOT), Faculty of Psychology
- **The University of Newcastle** Newcastle, Australia
Internship *Nov. 2010 – Febr. 2011*
 - Topic: *Startle reflex modulation, EMG, emotion*
 - Supervisor: Prof. Dr. Peter Walla
 - Faculty of Science and Information Technology, School of Psychology

Skills

Programming/Data acquisition & analysis: Matlab, PsychToolbox, Presentation, SPM, FSL, Freesurfer, R, SPSS, EEGLab, Spike, AcqKnowledge, Ledalab, OpenFace

Languages: German (native), English (fluent), French (basic)

Awards & Funding

- **People's Choice Award Winner PAINtalks 2022** Montreal, QC, Canada
PAINtalks ("TED" style presentation format) *November 2022*
- **SfN Trainee Professional Development Award** San Diego, CA, USA
Society for Neuroscience (SfN) *November 2022*
- **Travel Award - 20th World Congress on Pain** Toronto, Canada
International Association for the Study of Pain (IASP) *September 2022*
- **North American Pain School Awardee** Montebello, Canada
North American Pain School (NAPS) *June 2022*
- **Travel Award - 18th World Congress on Pain** Amsterdam, Netherlands
International Association for the Study of Pain (IASP) *August 2020*
- **Funding - Post-doc position UKE (~65000€)** Hamburg, Germany
UKE Transition funding (young Postdoc positions) *March 2018 – February 2019*
- **DAAD RISE (~3400€)** Hamburg, Germany
Funding for undergrad intern from Canada *May 2018 – August 2018*
- **Travel Award - 1st SIPS conference** Leiden, Netherlands
Society for Interdisciplinary Placebo Studies (SIPS) *April 2017*

Publications

- Lee, J., Lazaridou, A., Paschali, M., Loggia, M. L., Berry, M. P., Ellingsen, D.-M., Isenburg, K., Anzolin, A., **Grahl, A.**, Wasan, A. D., Napadow, V., & Edwards, R. R. (2023). A Randomized, Controlled Neuroimaging Trial of Cognitive-Behavioral Therapy for Fibromyalgia Pain. *Arthritis & Rheumatology*, 76 (1), 130-140, doi: 10.1002/art.42672.
- Anzolin, A., Das, P., Garcia, R.G., Chen, A., **Grahl, A.**, Ellis, S., Purdon, P., & Napadow, V. (2023). Delta power during sleep is modulated by EEG-gated auricular vagal afferent nerve stimulation (EAVANS). 45th Annual International Conference of the IEEE Engineering in Medicine & Biology Society (EMBC), doi: 10.1109/EMBC40787.2023.10340971.
- Ellingsen, D.-M., Isenburg, K., Jung, C., Lee, J., Gerber, J., Mawla, I., Sclocco, R., **Grahl, A.**, Anzolin, A., Edwards, R., Kelley, J., Kirsch, I., Kaptchuk, T., & Napadow, V. (2023). Brain-to-brain mechanisms underlying pain empathy and social modulation of pain in the patient-clinician interaction. *Proceedings of the National Academy of Sciences*, 120 (26), e2212910120.
- Cheng, J., Anzolin, A., Berry, M., Honari, H., Paschali, M., Lazaridou, A., Lee, J., Ellingsen, D.-M., Loggia, M.L., **Grahl, A.**, Lindquist, M., Edwards, R.R., & Napadow, V. (2022). Dynamic functional brain connectivity underlying temporal summation of pain in fibromyalgia. *Arthritis & Rheumatology*, 74 (4), 700-710. doi: 10.1002/art.42013.
- Paschali, M., Lazaridou, A., Vilsmark, E.S., Lee, J., Berry, M., **Grahl, A.**, Anzolin, A., Loggia, M., Napadow, V. & Edwards, R.R., 2021. The "self" in pain: high levels of schema-enmeshment worsen fibromyalgia impact. *BMC Musculoskeletal Disorders*, 22(1), pp.1-9. doi: 10.1186/s12891-021-04740-5.
- Lee, J., Andronesi, O.C., Torrado-Carvajal, A., Ratai, E.-M., Loggia, M.L., Weerasekera, A., Berry, M.P., Ellingsen, D.-M., Isaro, L., Lazaridou, A., Paschali, M., **Grahl, A.**, Wasan, A.D., Edwards, R.R., & Napadow, V. (2021). 3D magnetic resonance spectroscopic imaging reveals links between brain metabolites and multidimensional pain features in fibromyalgia. *European Journal of Pain*, 00, 1-15. doi: 10.1002/ejp.1820.
- Grahl, A.**, Anzolin, A., Isenburg, K., Lee, J., Ellingsen, D.-M., Jung, C., Barton-Zuckerman, M., Gerber, J., Kelley, J., Kirsch, I., Kaptchuk, T., & Napadow, V. (2021). Brain and Behavioral Correlates of the Patient-Clinician Relationship: A longitudinal fMRI hyper-scanning study of chronic pain patients. *The Journal of Pain*, 22 (5), 602. doi: 10.1016/j.jpain.2021.03.097.
- Anzolin, A., **Grahl, A.**, Isenburg, K., Toppi, J., Ciaramidaro, A., Barton-Zuckerman, M., Yücel, M., Ellingsen, D.-M., Astolfi, L., Kaptchuk, T., & Napadow, V. (2021). Brain-to-brain patient-clinician connectivity is directionally modulated by chronic low back pain therapy: an electroencephalography hyperscan approach. *The Journal of Pain*, 22 (5), 601. doi: 10.1016/j.jpain.2021.03.093.
- Lee, J., Andronesi, O.C., Torrado-Carvajal, A., Ratai, E.-M., Loggia, M.L., Weerasekera, A., Berry, M.P., Isaro, L., Lazaridou, A., Paschali, M., **Grahl, A.**, Wasan, A.D., Edwards, R.R., & Napadow, V. (2021). Brain metabolite concentration in pain processing regions is linked with multidimensional morbidity in fibromyalgia—a voxel-wise 3D MR Spectroscopic Imaging study. *The Journal of Pain*, 22 (5), 579. doi: 10.1016/j.jpain.2021.03.009.

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Publications [cont.]

- Ellingsen, D.-M., Beissner, F., Alsady, T.M., Lazaridou, A., Paschali, M., Berry, M., Isaro, L., **Grahl, A.**, Lee, J., Wasan, A.D., Edwards, R.R., & Napadow, V. (2021). A picture is worth a thousand words: linking fibromyalgia pain widespreadness from digital pain drawings with pain catastrophizing and brain cross-network connectivity. *Pain*, 162 (5), 1352-1363.
- Anzolin, A., Isenburg, K., **Grahl, A.**, Toppi, J., Yücel, M., Ellingsen, D.-M., Gerber, J., Ciaramidaro, A., Astolfi, L., Kaptchuk, T.J., & Napadow, V. (2020). Patient-Clinician Brain Response During Clinical Encounter and Pain Treatment. *IEEE*, 1512-1515.
- Grahl, A.**, Onat, S., & Büchel, C. (2018). The periaqueductal gray and Bayesian integration in placebo analgesia. *eLife*, 7:e32930. doi: 10.7554/eLife.32930.
- Pfabigan, D.M., Seidel, E.-S., Paul, K., **Grahl, A.**, Sailer, U., A., Lanzenberger, R., Windischberger, C., & Lamm, C. (2015). Context-sensitivity of the feedback-related negativity for zero-value feedback outcomes. *Biological Psychology*, 104, 184-192. doi: 10.1016/j.biopsycho.2014.12.007.
- Seidel, E.-S., Pfabigan, D.M., Hahn, A., Sladky, R., **Grahl, A.**, Paul, K., Kraus, C., Küblböck, M., Kranz, G.S., Hummer, A., Lanzenberger, R., Windischberger, C., & Lamm, C. (2015). Uncertainty During Pain Anticipation: The Adaptive Value of Preparatory Processes. *Human Brain Mapping*, 36 (2), 744-55. doi: 10.1002/hbm.22661.
- Pfabigan, D.M., Seidel, E.-S., Sladky, R., Hahn, A., Paul, K., **Grahl, A.**, Küblböck, M., Kraus, C., Hummer, A., Kranz, G.S., Windischberger, C., Lanzenberger, R., & Lamm, C. (2014). P300 amplitude variation is related to ventral striatum BOLD response during gain and loss anticipation: An EEG and fMRI experiment. *NeuroImage*, 96, 12-21. doi:10.1016/j.neuroimage.2014.03.077.
- Hahn, A., Kranz, G.S., Seidel, E.-S., Sladky, R., Kraus, C., Küblböck, M., Pfabigan, D.M., Hummer, A., **Grahl, A.**, Ganger, S., Windischberger, C., Lamm, C., & Lanzenberger, R. (2013). Comparing neural response to painful electrical stimulation with functional MRI at 3 and 7 Tesla. *NeuroImage*, 82, 336-343. doi: 10.1016/j.neuroimage.2013.06.010.
- Grahl, A.**, Greiner, U., & Walla, P. (2012). Bottle Shape Elicits Gender-Specific Emotion: A Startle Reflex Modulation Study. *Psychology*, 3, 548-554. doi: 10.4236/psych.2012.37081.

Poster/Oral Presentations, Invited Talks & Media Coverage

- Invited Talk:** The patient-clinician relationship: a love story. PAINtalks. Nov. 2022, Montreal, Canada. Recording: <https://youtu.be/MldJ0JrDPkE>
- Invited Talk:** Novel Research Approaches for Psychedelics and Pain Disorders. 2nd Annual Conference on Psychedelics and Psychedelic Medicine, Massachusetts General Hospital. Nov. 2022, Boston USA.
- Invited Talk:** How the patient-clinician relationship influences pain treatment and outcomes in chronic pain patients. Faculty Meeting, Spaulding Rehabilitation Hospital. Nov. 2022, Boston USA.
- Invited Talk:** Bayesian brain, variability and placebo. Program in Placebo Studies & Therapeutic Encounter (PiPS). Jan. 2021, Boston USA.

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Poster/Oral Presentations, Invited Talks & Media Coverage [cont.]

- Poster: *29th Annual Meeting of the Organization for Human Brain Mapping (OHBM), Montreal, Canada, July 22 - 26, 2023*: **Grahl, A.**, Anzolin, A., Ellis, S., Lee, J., Barton-Zuckerman, M., Jung, C., Isenburg, K., Ellingsen, D.-M., Kaptchuk, T., & Napadow, V. (2023). Hyperscan fMRI as a tool to investigate the patient-clinician relationship.
- Oral: *4th official conference on placebo studies of the Society for Interdisciplinary Placebo Studies (SIPS), Duisburg, Germany, May 10 - 13, 2023*: **Grahl, A.**, Anzolin, A., Ellis, S., Barton-Zuckerman, M., Lee, J., Isenburg, K., Ellingsen, D.-M., Jung, C., Kelley, J., Kaptchuk, T., & Napadow, V. (2023). Treatment adherence and the patient-clinician relationship: a longitudinal fMRI hyperscan study in chronic pain patients.
- Poster: *US Association for the Study of Pain Meeting, Durham, NC, USA, April 11 - 13 2023*: **Grahl, A.**, Anzolin, A., Ellis, S., Barton-Zuckerman, M., Lee, J., Jung, C., Isenburg, K., Ellingsen, D.-M., Kelley, J., Kaptchuk, T., & Napadow, V. (2023). The patient-clinician relationship, expectancy and prior experience can modulate fibromyalgia treatment outcomes: a longitudinal fMRI hyperscan study.
- Media: *Humans of MGRI series (Mass General Research Institute), February 2, 2023*: Featured Researcher Profile - Arvina Grahl.
- Poster: *52nd Annual Meeting of the Society for Neuroscience (SfN), November 12 - 15, 2022*: **Grahl, A.**, Anzolin, A., Barton-Zuckerman, M., Lee, J., Isenburg, K., Ellingsen, D.-M., Jung, C., Gerber, J., Kelley, J., Kirsch, I., Kaptchuk, T., & Napadow, V. (2022). Brain activity in nociceptive processing areas is modulated by the patient-clinician relationship: a longitudinal hyperscan fMRI study.
- Poster: *IASP 2022 World Congress on Pain, Toronto, Canada, September 19 - 23, 2022*: **Grahl, A.**, Anzolin, A., Barton-Zuckerman, M., Lee, J., Isenburg, K., Ellingsen, D.-M., Jung, C., Gerber, J., Edwards, R.R., Kelley, J., Kaptchuk, T., & Napadow, V. (2022). Patient-Clinician Relationship and Willingness to Continue Treatment: A Longitudinal fMRI Hyperscan Study in Chronic Pain Patients.
- Virtual Poster: *28th Annual Meeting of the Organization for Human Brain Mapping (OHBM), June 19 - 23, 2022*: **Grahl, A.**, Anzolin, A., Barton-Zuckerman, M., Lee, J., Isenburg, K., Ellingsen, D.-M., Jung, C., Gerber, J., Kelley, J., Kirsch, I., Kaptchuk, T., & Napadow, V. (2022). Synchronized real-time dual-brain fMRI investigating the patient-clinician relationship: a longitudinal hyperscan study in chronic pain patients.
- Poster: *US Association for the Study of Pain Meeting, Cincinnati, OH, USA, May 18 - 21 2022*: **Grahl, A.**, Anzolin, A., Barton-Zuckerman, M., Lee, J., Isenburg, K., Ellingsen, D.-M., Jung, C., Gerber, J., Kelley, J., Kirsch, I., Kaptchuk, T., & Napadow, V. (2022). How the patient-clinician relationship influences treatment experiences and outcomes in chronic pain patients: an fMRI hyperscan study.
- Virtual Poster + Video: *51st Annual Meeting of the Society for Neuroscience (SfN), November 8 - 11, 2021*: **Grahl, A.**, Anzolin, A., Barton-Zuckerman, M., Isenburg, K., Lee, J., Ellingsen, D.-M., Jung, C., Gerber, J., Kelley, J., Kirsch, I., Kaptchuk, T., & Napadow, V. (2021). FMRI hyperscanning in chronic pain: neural and behavioral correlates of the patient-clinician relationship.

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Poster/Oral Presentations, Invited Talks & Media Coverage [cont.]

Virtual Poster + Video: *27th Annual Meeting of the Organization for Human Brain Mapping (OHBM), June 21 - 25, 2021*: **Grahl, A.**, Anzolin, A., Isenburg, K., Lee, J., Barton-Zuckerman, M., Ellingsen, D.-M., Jung, C., Gerber, J., Kelley, J., Kirsch, I., Kaptchuk, T., & Napadow, V. (2021). Neural-Behavioral Correlates of Patient-Clinician Relationships: a Longitudinal fMRI Hyperscan Study.

Virtual Poster + Video: *Society for Acupuncture Research (SAR) International Research Conference, June 14 - 17, 2021*: **Grahl, A.**, Anzolin, A., Isenburg, K., Lee, J., Barton-Zuckerman, M., Ellingsen, D.-M., Jung, C., Gerber, J., Kelley, J., Kirsch, I., Kaptchuk, T., & Napadow, V. (2021). Neural and behavioral correlates of patient-clinician therapeutic alliance in a longitudinal acupuncture intervention: an fMRI hyper-scanning study.

Virtual Oral: *3rd official conference on placebo studies of the Society for Interdisciplinary Placebo Studies (SIPS), May 26 - 28, 2021*: **Grahl, A.**, Anzolin, A., Isenburg, K., Lee, J., Barton-Zuckerman, M., Ellingsen, D.-M., Jung, C., Gerber, J., Kelley, J., Kirsch, I., Kaptchuk, T., & Napadow, V. (2021). The patient-clinician relationship in a longitudinal fMRI hyper-scanning study of chronic pain patients: Neural and behavioral correlates.

Virtual Poster + Video: *IASP 2020 World Congress on Pain, September 2020 - March 2021*: **Grahl, A.**, Isenburg, K., Anzolin, A., Ellingsen, D.-M., Lee, J., Jung, C., Gerber, J., Kelley, J., Kirsch, I., Kaptchuk, T., & Napadow, V. (2020). Harnessing Psychosocial Treatment Aspects of the Patient-Clinician Relationship: A Longitudinal fMRI Hyperscanning Study with Chronic Pain Patients.

Virtual Poster: *IASP 2020 World Congress on Pain, September 2020 - March 2021*: Anzolin, A., Isenburg, K., **Grahl, A.**, Yücel, M., Ellingsen, D.-M., Toppi, J., Gerber, J., Astolfi, L., Kaptchuk, T., & Napadow, V. (2020). Patient-clinician brain activity during pain treatment: an EEG hyperscanning study.

Virtual Poster: *IASP 2020 World Congress on Pain, September 2020 - March 2021*: Lee, J., Andronesi, O.C., Torrado-Carvajal, A., Ratai, E.-M., Loggia, M.L., Weerasekera, A., Berry, M.P., Isaro, L., Lazaridou, A., Paschali, M., **Grahl, A.**, Wasan, A.D., Edwards, R.R., & Napadow, V. (2020). Pain Catastrophizing in Fibromyalgia is associated with insula and cingulate metabolite concentrations - a voxel-wise 3D MR Spectroscopic Imaging study.

Virtual Poster + Video: *US Association for the Study of Pain Meeting, December 2020*: **Grahl, A.**, Anzolin, A., Isenburg, K., Lee, J., Ellingsen, D.-M., Jung, C., Barton-Zuckerman, M., Gerber, J., Kelley, J., Kirsch, I., Kaptchuk, T., & Napadow, V. (2020). Brain and Behavioral Correlates of the Patient-Clinician Relationship: A longitudinal fMRI hyper-scanning study of chronic pain patients.

Virtual Poster: *US Association for the Study of Pain Meeting, December 2020*: Anzolin, A., **Grahl, A.**, Isenburg, K., Toppi, J., Ciaramidaro, A., Barton-Zuckerman, M., Yücel, M., Ellingsen, D.-M., Astolfi, L., Kaptchuk, T., & Napadow, V. (2020). Brain-to-brain patient-clinician connectivity is directionally modulated by chronic low back pain therapy: an electroencephalography hyperscan approach.

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Poster/Oral Presentations, Invited Talks & Media Coverage [cont.]

Virtual Poster: *US Association for the Study of Pain Meeting, December 2020*: Cheng, J., Anzolin, A., Berry, M., Honari, H., Paschali, M., Lazaridou, A., Lee, J., **Grahl, A.**, Lindquist, M., Edwards, R.R., & Napadow, V. (2020). Dynamic functional connectivity underlying temporal summation of pain in fibromyalgia.

Virtual Poster: *US Association for the Study of Pain Meeting, December 2020*: Lee, J., Andronesi, O.C., Torrado-Carvajal, A., Ratai, E.-M., Loggia, M.L., Weerasekera, A., Berry, M.P., Isaro, L., Lazaridou, A., Paschali, M., **Grahl, A.**, Wasan, A.D., Edwards, R.R., & Napadow, V. (2020). Brain metabolite concentration in pain processing regions is linked with multidimensional morbidity in fibromyalgia - a voxel-wise 3D MR Spectroscopic Imaging study. US Association for the Study of Pain Meeting (virtual poster presentation).

Oral: *2nd official conference on placebo studies of the Society for Interdisciplinary Placebo Studies (SIPS), Leiden, Netherlands, July 7 - 9, 2019*: **Grahl, A.**, M. Feldhaus, & Büchel, C. (2019). Using Bayesian integration in two independent studies to predict placebo treatment outcomes.

Poster: *25th Annual Meeting of the Organization for Human Brain Mapping (OHBM), Rome, Italy, June 9 - 13, 2019*: Anzolin, A., Ellingsen, D.M., Toppi, J., Isenburg, K., **Grahl, A.**, Gerber, J., Lee, J., Astolfi, L., Kaptchuk, T., & Napadow, V. (2019). Patient-clinician brain to brain connectivity during pain treatment: an EEG hyperscanning study.

Poster: *17th World Congress on Pain (IASP), Boston, MA, USA, September 12 - 16, 2018*: **Grahl, A.**, Feldhaus, M., & Büchel, C. (2018). Treatment Expectations and the Placebo Effect - Using Bayesian Integration to Account for Variability.

Media: *eLife Podcast interview, June 2018*: Great expectations (<https://elifesciences.org/podcast/episode48#1166>).

Media: *NDR Info radio interview (in German), April 6, 2018*: Better pain treatment via the placebo effect (original title: Bessere Schmerzbehandlung durch Placeboeffekt).

Oral: *1st official conference on placebo studies of the Society for Interdisciplinary Placebo Studies (SIPS), Leiden, Netherlands, April 2 - 4, 2017*: **Grahl, A.**, & Büchel, C. (2017). Neural correlates of treatment variability and placebo effects - better be certain.

Poster: *46th Annual Meeting of the Society for Neuroscience (SfN), San Diego, CA, USA, November 12 - 16, 2016*: **Grahl, A.**, & Büchel, C. (2016). Treatment variability affects placebo responses through prediction error signaling.

Poster: *19th Annual Meeting of the Organization for Human Brain Mapping (OHBM), Seattle, WA, USA, June 16 - 20, 2013*: Seidel, E.-S., Pfabigan, D.M., Hahn, A., Sladky, R., **Grahl, A.**, Kraus, C., Küblböck, M., Kranz, G.S., Hummer, A., Lanzenberger, R., Windischberger, C., & Lamm, C. (2013). Uncertainty during pain anticipation - An fMRI and EEG experiment.

Poster: *19th Annual Meeting of the Organization for Human Brain Mapping (OHBM), Seattle, WA, USA, June 16 - 20, 2013*: Hahn, A., Kranz, G.S., Seidel, E.-S., Sladky, R., Kraus, C., Küblböck, M., Pfabigan, D.M., Hummer, A., **Grahl, A.**, Ganger, S., Windischberger, C., Lamm, C., & Lanzenberger, R. (2013). Imaging the periaqueductal grey during pain processing at 3 and 7 Tesla functional MRI.

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Teaching

- **Mentoring** Hamburg, Germany & Boston, USA
Mentor to Research Assistants, Coordinators, Interns, Students *since 2014 - present*
- **Underrepresented Minorities Internship in STEM** Boston, USA
Martinos Center Education & Diversity Committee for High School Students *Spring/Summer 2021*
Spring/Summer 2020
- **SPM12 Workshop - fMRI Data Analysis** Hamburg, Germany
Department of Systems Neuroscience *Sept. 25th 2017 – Sept. 27th 2017*
Sept. 26th 2016 – Sept. 28th 2016
- **Matlab Beginners Workshop** Hamburg, Germany
Department of Systems Neuroscience *Sept. 24th 2017*
Sept. 25th 2016

Memberships & Committees

- Social and Affective Neuroscience Society (SANS), since 2023
- Society for Neuroscience (SfN), 2016, since 2021
- Organization for Human Brain Mapping (OHBM), 2014, since 2021
- WiS-Education, Martinos Center Women in Science: Education Sub-committee, since 2021
- Society for Acupuncture Research (SAR), since 2021
- US Association for the Study of Pain (USASP), since 2020
- Program in Placebo Studies & Therapeutic Encounter (PiPS), since 2019
- International Association for the Study of Pain (IASP), since 2018

Review Activity

- The Journal of Pain
- Scientific Reports
- Pain
- Imaging Neuroscience
- NeuroImage
- NeuroImage Clinical
- Frontiers in Behavioural Brain Research
- Frontiers in Behavioural Neuroscience
- Frontiers in Pain Research (Non-Pharmacological Treatment of Pain)
- Frontiers in Psychology
- Health Psychology
- Mindfulness
- Brain Sciences
- Biological Psychiatry (guest reviewer)