

Joachim Habel

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Born 25.02.1987 in Gundelfingen, Germany, German citizen

Summary

I am a researcher highly specialized on **biomimetic membranes** - a field combining **membrane technology, biotechnology, nanotechnology, polymer- and biochemistry**. I have **2 years of research and academia** experience and **3 years of experience in industry** enabled mainly by an Industrial PhD at Aquaporin A/S. I worked with various **colloidal characterization methods, polymer synthesis and membrane coating and analysis**. I am focussed, structured and independently working but at the same time a good teamplayer. My final goal is to develop **high performance water treatment applications for people who lack access to clean water** - more than 2 billion worldwide.

Professional experience

06.2016 - **Postdoc Researcher**, *Pennsylvania State University*, University Park, PA, USA.
current Free-standing polymeric films with artificial channels incorporated for artificial biomimetic membranes

09.2015 - **Biomimetic membrane developer**, *Aquaporin A/S*, Copenhagen, Denmark.

03.2016 Characterization of water transporting membrane-protein-based biomimetic membranes and quantification of these proteins in polymeric vesicles

Key tasks → **accomplishments.**

Responsible for quantification of membrane proteins in polymer vesicles: vesicle production, membrane protein incorporation, fluorescence measurements, data analysis.

→ New scientific findings on the polymeric vesicles and membrane, as well as new possibility to access equipment for the company

Responsible for biomimetic membrane characterization: Membrane coating, electron microscopy, atomic force microscopy, infrared spectroscopy, surface charge measurement, Fluorescence microscopy, negotiations and using own network to get access to equipment.

→ Project completed where there are new findings and new possibilities for company to use equipment

2012-2015 **Industrial PhD**, *Aquaporin A/S & Department of Environmental Engineering, Technical University of Denmark*, Copenhagen & Kgs. Lyngby, Denmark.

Optimization of membrane-protein-based biomimetic membranes for water treatment: Incorporation of membrane proteins in polymeric vesicles and integration of these vesicles in a porous membrane support

Key tasks → **accomplishments.**

Development of membrane-protein-based biomimetic membranes with novel additives during a research stay at Twente University, Enschede, Netherlands.

→ Successful characterization and implementation of membrane resulting in a publication

X-ray-based vesicle characterization research project with external partners.

→ Completion of project resulting in several high level publications

Research on polymer-protein-interaction and self-assembly in water.

→ Three publications in polymer-specialized journals

Polymer synthesis and synthesis optimization towards exact polymer unit stoichiometry.

Mentor of two student assistants about vesicle formation and membrane protein incorporation into vesicles.

Negotiations and establishment of regional network to get access new equipment and for new projects.

03-08.2012 **Research assistant**, *Aquaporin A/S*, Copenhagen, Denmark.

Research on optimization of incorporation efficiency of membrane proteins into polymeric vesicles and establishment of characterization methods of the same

04.2007 **Student apprentice**, *Department of Chemistry, University of Freiburg*, Freiburg, Germany.

Standard tasks in chemistry laboratory

2006-2007 **Project manager & assistant**, *Jazz & Rock Schulen Freiburg*, Freiburg, Germany.

Project with vision-impaired children, project assistance in intercultural projects, administrative tasks

Key tasks → **accomplishments.**

Project management for vision-impaired children: Money and information acquisition, contact with project members, cost calculation.

→ Successful project implementation

Project assistance for EU-funded french-german intercultural project: Website update, article writing, meeting protocol writing and translation, concert and seminar preparation.

→ Successful project implementation

Administrative tasks: greater shipping tasks, room reservation, customer reservation service, room instrument/equipment maintenance, transport services.

Education

2012-2015 **Industrial PhD**, *Aquaporin A/S & Department of Environmental Engineering, Technical University of Denmark*, Copenhagen & Kgs. Lyngby, Denmark.

Title: Biomimetic polymeric membrane for water treatment

2010-2012 **MSc in Nanosciences with Major in Chemistry**, *University of Basel*, Basel, Switzerland.

Title: Structural and functional characterization of Aquaporin 0 incorporated in block copolymers and their resulting aggregate morphologies

Including a half-year research stay at Harvard Medical School, Boston, MA, USA, a 2-month research stay at Aquaporin A/S, Copenhagen, Denmark and a 3-month research stay at Fraunhofer Institute of Solar Energy, Freiburg, Germany.

2007-2010 **BSc in Nanosciences**, *University of Basel*, Basel, Switzerland.

2000-2006 **Secondary school examination**, *Wenziger Gymnasium*, Freiburg, Germany.

1997-1999 **Secondary school**, *Nikolaus-Kistner Gymnasium*, Mosbach, Germany.

1993-1997 **Primary school**, *Müller-Guttenbrunn-Schule*, Mosbach, Germany.

Courses

Membrane technology

Business Course for Industrial PhDs

Bioanalytical Sciences

Synthesis and physical properties of nanoscale systems

Writing an effective scientific article
Micro- and nanofluidics: from unicellular parasites to lab on a chip and back
Patenting of research results
Applied ethics
General chemistry with lab training
Mathematical methods
Nano sciences
Tools of computer sciences
Biochemistry
Molecular microbiology
Biophysical chemistry
Organic chemistry with lab training
Physical chemistry

Publications

Habel, J., Ogonna, A., Larsen, N., Krabbe, S., Almdal, K., Helix-Nielsen, C. (2016). How preparation and modification parameters affect PB-PEO polymersome properties in aqueous solution. *Journal of Polymer Science Part B: Polymer Physics*. <http://doi.org/10.1002/polb.24059>

Habel, J., Ogonna, A., Larsen, N., Schulte, L., Almdal, K., & Helix-Nielsen, C. (2016). How molecular internal-geometric parameters affect PB-PEO polymersome size in aqueous solution. *Journal of Polymer Science Part B: Polymer Physics*, 54(7), 699-708.

Habel, J., Ogonna, A., Larsen, N., Cherré, S., Kynde, S., Midtgaard, S. R., et al. (2015). Selecting analytical tools for characterization of polymersomes in aqueous solution. *RSC Advances*, 5, 79924-79946.

Habel, J., Hansen, M., Kynde, S., Larsen, N., Midtgaard, S., Jensen, G., et al. (2015). Aquaporin-Based Biomimetic Polymeric Membranes: Approaches and Challenges. *Membranes*, 5(3), 307-351.

Kumar, M., **Habel, J.**, Shen, Y.-X., Meier, W. P., & Walz, T. (2012). High-Density Reconstitution of Functional Water Channels into Vesicular and Planar Block Copolymer Membranes. *Journal of the American Chemical Society*, 134(45), 18631-18637.

Skills

Cleantech
Nanotechnology
Biotechnology
Biochemical Engineering
Engineering
Polymer Chemistry
Water Treatment
Characterization techniques
Chemistry
Science
Matlab
Molecular Biology
Materials Science
R&D
Spectroscopy

Computing

Office MS Office

Programming LaTeX, Unix basics, LabView basics

Image processing Image J, Adobe Photoshop, Gimp, Vision Assistant

Calculation MATLAB, Origin Lab, qti Plot (Origin for Mac), pro Fit

Languages

German *Mother tongue*

English *European standard, B2: Written and oral fluency*

Danish *European standard, B2: Written and oral fluency*

French *European standard, A2: Daily conversations and reading/writing of extended text*

Spanish *Basics*

Grants & awards

2011 Granted an academic scholarship by Harvard Medical School.

2011 Granted an travel scholarship by Swiss Nano Institute.

Free time

Music Exploration of world music, own composition, former member of bands

Literature Writing of short-stories, former member of literature club

Sports Swimming, cycling

References

Upon request