CV – Thomas Boesen **January 2024**

Education
PhD Medicine, Aarhus University (AU), DK, 2002
MSc Molecular Biology, AU, DK, 1998
BSc Chemistry-Biotechnology, AU, DK, 1995

Appointments/Research Center affiliations
Senior Researcher, Interdisciplinary Nanoscience Center, iNANO-MBG, AU, 2021-
Core group leader CEM, Danish National Research Foundation (DNRF) Center of Excellence, 2017-2027
iNANO/EMBION Cryo-EM Facility Manager, AU, 2016-
Affiliated researcher in DANDRITE, Danish EMBL Nordic node, 2013-
Junior group leader in PUMPKIN, DNRF Center of Excellence, 2010 - 2017
Junior group leader in CARB, DNRF Center of Excellence, 2007 - 2010
Associate Professor, MBG, AU, 2006 - 2016
Assistant Professor, MBG, AU, 2001 - 2006
PhD Fellow, Dept. of Med. Microbiology and Immunology, AU, 1998 - 2001
Scientist, Loke Diagnostics ApS, Aarhus, Denmark, 1998
Research Assistant, Dept. of Med. Microbiology and Immunology, AU, 1998

Recent grants
2024-2026 AUFF NOVA, co-applicant (anaerobic cryo-EM sample preparation – unique in Europe)
2024 HALRIC Pilot Project, co-applicant, (cryo-EM with Swedish research group)
2024 HALRIC Pilot Project, co-applicant, 200,000 DKK (cryo-EM with Norwegian research group)
2024-2026 Villum Foundation, main applicant, 1,999,914 DKK (cryo-EM methods development)
2023-2025 FNU DFF2, co-applicant, ~460,000 DKK allocated my group (cryo-CLEM/ET project)
2023-2024 Novo Nordisk Foundation (NNF), co-applicant, 2,516,847 DKK (CO2 Research Center)
2022-2025 NNF, co-applicant, 2,000,000 DKK (single cells and molecules course)
2021-2022 HALOS, EU funding, main applicant, ~170,000 DKK
2021-2025 NNF, co-applicant, 13,270,779 DKK (cryo-EM infrastructure)
2020-2024, NNF, co-applicant, 15,000,000 DKK (~4 mio DKK allocated my group)
2017-2027, DNRF, co-applicant, 100,000,000 DKK (approx. 12 mio DKK allocated my group)

Supervision/teaching/examination
2001 – present: Teaching on 23 different undergraduate/graduate courses in molecular biology and structural biology (2005-2009 five courses/year); since 2006 supervisor/co-supervisor for more than 40 project students (experimental projects, BSc projects, MSc projects), 20 PhD students and 15 postdoctoral fellows, 6 research assistants. Opponent on PhD theses from Lund University, University of Copenhagen and University of Southern Denmark, appointed external examiner for engineering educations in chemistry and mathematics (2007-2022), appointed external examiner for pharmaceutical educations (2018-2021), external examiner on >45 bachelor reports, project reports, master's theses and 4 oral exams (20+ students/exam)

Management
European framework COST Action CA15126 management committee substitute for MOBIEU (Between Atom and Cell: Integrating Molecular Biophysics Approaches for Biology and Healthcare, 2016-); Organization of national meeting in macromolecular crystallography (CoLuAa) 2007; Organization of crystallographic computing workshop (X-CoW 1 and 2) 2007 and 2012; Organization of 'Cryo-EM Days' workshop at AU in 2016. Organization of 3rd CryoNET Symposium at AU in 2020, '1st cryoNET course on advanced single particle cryo-EM analysis', Organization of 3rd CryoNET Symposium at AU in 2020, '1st cryoNET course on advanced single particle cryo-EM analysis',Member of the Department Council at MBG (2004-2010), AU; Group leader since 2006 - Project management, EMBION Cryo-EM facility manager, iNANO, AU (2016-), Member of Research Information Security Committee for iNANO (2023-)

Publications
62 peer-reviewed publications, including three publications in Nature, four in Nature Communications, one in Nature Nanotechnology, two in ACS Nano, one in EMBO Reports and one in PNAS; one patent. H index: 26, 2354 citations (Google Scolar). First authorships: 7. Corresponding authorships: 6. ORCID: 0000-0002-5633-6844

Recent invited talks
CryoCLEM Symposium, Hamburg, Germany, May 2023
Electromicrobiology conference EM23, Aarhus, Denmark, May 2023
Cable Bacteria Workshop, Drongen, Belgium, December 2022
HALOS Symposium 2022, online meeting January 2022
Building Bridges 2021, online meeting December 2021
Cryo-EM Seminar, Stanford University, Palo Alto, California, USA, February 2020
Cryo-EM Seminar, Center for Molecular Medicine (NCMM), Oslo, Norway, December 2019
China-Denmark Electromicrobiology Forum, Guangdong, China, October 2019

International collaborators
Professor **Julea Butt,** Department of Chemistry, University of East Anglia, UK
Associate Professor **Carlos Salgueiro**, Department of Chemistry, Universidade NOVA de Lisboa, Lisbon, Portugal.
Beamline Scientist **Kajsa Sigfridsson** Clauss, MAX IV Laboratory, Lund University, Lund, Sweden
Professor **Ute Krengel**, Department of Chemistry, University of Oslo, Norway
Professor **Sandip Kanse**, Institute of Basic Medical Sciences, University of Oslo, Norway

Publications (10 selected)
1) Kobberø SD, Gajhede M, Mirza OA, Kløverpris S, Kjær TR, Mikkelsen JH, **Boesen T**, Oxvig C. Structure of the proteolytic enzyme PAPP-A with the endogenous inhibitor stanniocalcin-2 reveals its inhibitory mechanism. Nat Commun. 2022
2) Nielsen J, Brandt J, **Boesen T**, Hummelshøj T, Slaaby R, Schluckebier G, Nissen P. J Mol Biol. 2022 Mar 15;434(5):167458.167458. Epub 2022 Jan 21. PMID: 35074483.
3) Aminzadeh A, Larsen CE, **Boesen T**, Jørgensen R. EMBO Rep. 2022 Jan 5;23(1). PMID: 34817920
4) Roeters SJ, Golbek TW, Bregnhøj M, Drace T, Alamdari S, Roseboom W, Kramer G, Šantl-Temkiv T, Finster K, Pfaendtner J, Woutersen S, **Boesen T**, Weidner T. Nat Commun. 2021 Feb 19;12(1):1183. PMID: 33608518
5) Yang C, Aslan H, Zhang P, Zhu S, Xiao Y, Chen L, Khan N, **Boesen T**, Wang Y, Liu Y, Wang L, Sun Y, Feng Y, Besenbacher F, Zhao F, Yu M. Nat Commun. 2020 Mar 13;11(1):1379. PMID: 32170166.
6) Gotfryd K, **Boesen T**, Mortensen JS, Khelashvili G, Quick M, Terry DS, Missel, JW, LeVine MV, Gourdon P, Blanchard SC, Javitch JA, Weinstein H, Loland CJ,, Nissen P, Gether U. Nat Commun. 2020 Feb 21;11(1):1005. PMID: 32081981;
7) Kidmose RT, Juhl J, Nissen P, **Boesen T**, Karlsen JL, Pedersen BP. IUCrJ. 2019 Jun 27;6(Pt 4):526-531. eCollection 2019 Jul. PMID: 31316797
8) Kjeldsen KU, Schreiber L, Thorup CA, **Boesen T**, Bjerg JT, Yang T, Dueholm MS, Larsen S, Risgaard-Petersen N, Nierychlo M, Schmid M, Bøggild A, van de Vossenberg J, Geelhoed JS, Meysman FJR, Wagner M, Nielsen PH, Nielsen LP, Schramm A. Proc Natl Acad Sci U S A. 2019 Sep 17;116(38):19116-19125. PMID: 31427514
9) Timcenko M, Lyons JA, Januliene D, Ulstrup JJ, Dieudonné T, Montigny C, Ash MR, Karlsen JL, **Boesen T**, Kühlbrandt W, Lenoir G, Moeller A, Nissen P. Nature. 2019 Jul;571(7765):366-370. PMID: 31243363.
10) Gorgel M, Bøggild A, Ulstrup JJ, Weiss MS, Müller U, Nissen P, **Boesen T**. Acta Crystallogr D Biol Crystallogr. 2015 May;71(Pt 5):1095-101. PMID: 25886849

Summary of own research
I am a structural biologist and trained protein crystallographer from the Center for Structural Biology at AU. Since 2010 I have been heavily involved in establishing a cryo-electron microscopy (cryo-EM) facility at AU and has been appointed as Cryo-EM Facility Manager since 2016 heading a facility team of five including three application specialists, an EM engineer and an EM technician. I employ a state-of-the-art cryo-EM methods in my research including single particle analysis and tomography with subtomogram averaging and I also use correlative light and electron microscopy and cryogenic focused ion beam milling techniques. I am involved in cryo-EM methods development which includes novel ways of reducing air-water-interface effects during sample preparation, developing experimental tool to allow in situ structural biology by subtomogram averaging of small proteins and complexes and implementation of a unique facility in Europe for anaerobic cryo-EM sample preparation. The primary focus of my current research is the molecular and structural biology associated with the three research themes (1) ***biological electron transfer reactions,*** (2) ***Ice nucleating proteins*** and (3) ***bacterial pathogenesis.***