Ansættelser

2021-	Professor, Institut for Molekylærbiologi og Genetik, Aarhus Universitet
2017-2020	Gæsteprofessor, Università di Parma, Italien
2008-2021	Lektor, Institut for Molekylærbiologi og Genetik, Aarhus Universitet
2003-2008	Forskningslektor, Molekylærbiologisk Institut, Aarhus Universitet
1999-2003	Post doc, MRC Laboratory of Molecular Biology, Cambridge, England

Uddannelse

2000	Ph.d.-graden i molekylærbiologi
1997	Cand. scient.-graden i kemi-bioteknologi
1995	Bachelor-graden i kemi

Videnskabelige fokusområder

Mikrobielle overlevelsesmekanismer
Bakterielle toxin-antitoxin-komplekser
CRISPR-Cas
Store enzymkomplekser
Protein-RNA og protein-DNA-komplekser
Hybridmetoder i strukturbiologi (røntgenkrystallografi og elektronmikroskopi)
Udvikling af undervisningsmetoder på universitetsniveau

Udvalgte publikationer

63 publicerede, peer-reviewede tidskriftsartikler (herunder 3 i Nature, 2 i Science og 3 i Cell med 14 som første- eller delt førsteforfatter og 25 som sidsteforfatter) med totalt 6,879 citationer (Scopus h index 29, i10 index 47), 3 bogkapitler 2 US-patenter.

Manav, M. C., Van, L. B., Lin, J., Fuglsang, A., Peng, X., and Brodersen, D. E. (2020) "Structural basis for inhibition of an archaeal CRISPR-Cas type I-D large subunit by an anti-CRISPR protein", Nature Commun, 11(1):5993.

Bertelsen, M. B., Senissar, M., Nielsen, M. H., Bisiak, F., Cunha, M. V., Molinaro, A. L., Daines, D. A., and Brodersen, D. E. (2020) "Structural Basis for Toxin Inhibition in the VapXD Toxin-Antitoxin System", Structure, S0969-2126(20)30373-7.

Hansen, B. K., Larsen, C. K., Nielsen, J. T., Svenningsen, E. B., Van, L. B., Jacobsen, K. M., Bjerring, M., Flygaard, R. K., Jenner, L. B., Nejsum, L. B., Brodersen. D. E., Mulder, F., Tørring, T., Poulsen, T. B. (2020) "Structure and function of the bacterial toxin phenomycin, Structure, 28(5): 528-39.

Bærentsen, R. L., Brodersen, D. E., and Zhang, Y. (2019) "Evolution of the bacterial nucleosidase PpnN and its relation to the stringent response", Microbial Cell, 6(9):450-453.

Manav, M. C., Turnbull, K. J., Jurenas, D., Garcia-Pino, A., Gerdes, K., and Brodersen, D. E. (2019), "The structure of E. coli HicAB reveals a unique helix-turn-helix DNA-binding domain and higher-order structure", Structure, 27(11):1675-1685.e3.

Nielsen, S. V., Turnbull, K. J., Roghaniana, M., Bærentsen, R., Semanjskic, M., Brodersen, D. E., Macek, B., and Gerdes, K. (2019), "Serine-threonine kinases encoded by split hipA homologous genes inhibit tryptophanyl-tRNA synthetase", mBio, 10(3). pii: e01138-19.

Zhang, Y., Bærentsen, R. L., Fuhrer, T., Sauer, U., Gerdes, K., and Brodersen, D. E. (2019) "(p)ppGpp regulates a bacterial nucleosidase by an allosteric two-domain switch", Mol Cell, 74(6):1239-1249.

Hove-Jensen, B., Brodersen, D. E., and Manav, M. C. (2018) "The Prodigal Compound: Return of Ribosyl 1,5-Bisphosphate As Important Player in Metabolism", Microbiol and Mol Biol Reviews, accepted.

Skjerning, R. B., Senissar, M., Winther, K. S., Gerdes, K., and Brodersen, D. E. (2018) "The RES domain toxins of RES-Xre toxin-antitoxin modules induce cell stasis by degrading NAD+", Mol Microbiol, e-pub ahead of print.

Manav, M. C., Sofos, N., Hove-Jensen, B., and Brodersen, D. E. (2018) "The ABC of phosphonate breakdown: A mechanism for bacterial survival", BioEssays, e-pub ahead of print.

He, F., Bhoobalan-Chitty, Y., Van, L. B., Kjeldsen, A. L., Dedola, M., Makarova, K., Koonin, E. V., Brodersen, D. E., Peng, X. (2018) "Anti-CRISPR proteins encoded by archaeal lytic viruses inhibit subtype I-D immunity", Nat Microbiol, 3(4):461-9.

Harms, A., Brodersen, D. E., Mitarai, N., Gerdes, K. (2018) "Toxins, targets, and triggers: An overview of toxin-antitoxin biology", Mol Cell, 70(5):768-784.

Manav, M. C., Beljantseva, J., Bojer, M. S., Tenson, T., Ingmer, H., Hauryliuk, V., Brodersen, D. E. (2018) "Structural basis for (p)ppGpp synthesis by the Staphylococcus aureus small alarmone synthetase RelP", J Biol Chem, 293(9):3254-326.

Senissar, M., Manav, M. C., Brodersen, D. E. (2017) "Structural conservation of the PIN domain active site across all domains of life", Protein Sci, 26(8):1474-1492.

Bendtsen, K. L., Xu, K., Luckmann, M., Winther, K. S., Shah, S. A., Pedersen, C. N. S., and Brodersen, D. E. (2017) "Toxin inhibition in C. crescentus VapBC1 is mediated by a flexible pseudo- palindromic protein motif and modulated by DNA binding", Nucleic Acids Res, 45(5):2875-2886.

Agerschou,, E. D., Christiansen, G., Schafer, N. P., Madsen, D. J., Brodersen, D. E., Semsey, S., and Otzen, D. (2016) “The transcriptional regulator GalR self-assembles to form highly regular tubular structures”, Scientific Reports, 6:27672.

Romans-Fuertes, P., Sondergaard, T. E., Sandmann, M. I., Wollenberg, R. D., Nielsen, K. F., Hansen, F. T., Giese, H., Brodersen, D. E., and Sørensen, J. L. (2016) “Identification of the non-ribosomal peptide synthetase responsible for biosynthesis of the potential anti-cancer drug sansalvamide in Fusarium solani”, Curr Genet., 62(4):799-807.

Xu, K., Dedic, E., and Brodersen, D. E. (2016) “Structural analysis of the active site architecture of the VapC toxin from Shigella flexneri”, Proteins, 84(7):892-899.

Sofos, N., Winkler, M. B., and Brodersen D. E. (2016) “RRM domain of human RBM7: purification, crystallization and structure determination”, Acta Crystallogr F Struct Biol Commun, 72(Pt 5):397-402.

Knudsen, M., Søndergaard, D., Tofting-Olesen, C., Hansen, F.,T., Brodersen, D. E., Pedersen, C. N. (2016) "Computational discovery of specificity-conferring sites in non-ribosomal peptide synthetases", Bioinformatics, 32(3):325-9.

Gytz, H., Mohr, D., Seweryn, P., Yoshimura, Y., Kutlubaeva, Z., Dolman, F., Chelchessa, B., Chetverin, A. B., Mulder, F. A. A., Brodersen, D. E. and Knudsen, C. R. (2015) " Structural basis for RNA-genome recognition during bacteriophage Qβ replication", Nucleic Acids Res, 43(22):10893-906

Seweryn, P., Van, L. B., Kjeldgaard, M., Russo, C. J., Passmore, L. A., Hove-Jensen, B., Jochimsen, B., Brodersen, D. E. (2015) "Structural insights into the bacterial carbon-phosphorus lyase machinery", Nature, 525(7567): 68-72.

Poulsen, J. B., Agerschou, E. D., Sanderson, L. E., Van, L. B., Boesen, T., and Brodersen, D. E. (2014) "Structural characterization and positioning of subunits in the THO complex by small-angle X-ray scattering (SAXS)", PLoS One, 9(7): e103470.

Winther, K. S., Brodersen, D. E., Brown, A. K., Gerdes, K. (2013), "VapC of Mycobacterium tuberculosis Inhibits Translation by Endonucleolytic Cleavage of the Sarcin-Ricin Loop of 23S rRNA", Nature Commun, 4: 2796.

Bøggild, A. Sofos, N., Andersen, K. R., Feddersen, A., Easter, A. D., Passmore, L., and Brodersen, D. E. (2012), “The Crystal Structure of the Intact E. coli RelBE Toxin-Antitoxin Complex Provides the Structural Basis for Conditional Cooperativity”, Structure, 20(10):1641-8.

Neubauer, C., Gao, Y., Andersen, K. R., Dunham, C. D., Kelley, A. C., Hentschel, J., Gerdes, K., Ramakrishnan, V., and Brodersen, D. E. (2009) ” The structural basis for mRNA recognition and cleavage by the ribosome-dependent endonuclease RelE”, Cell, 139(6): 1084-1095.

Jonstrup, A. T., Andersen, K. R., Van, L. B., Brodersen, D. E. (2007) “The 1.4 Å crystal structure of the S. pombe Pop2p deadenylase subunit unveils the configuration of an active enzyme”, Nucleic Acids Res., 35: 3153-3164.

Midtgaard, S. F., Assenholt, J., Jonstrup, A. T., Van, L. B., Jensen, T. H., Brodersen, D. E. (2006) “Structure of the nuclear exosome component Rrp6p reveals an interplay between the active site and the HRDC domain”, Proc Natl Acad Sci USA, 103(32):11898-903.

Brodersen, D. E., Clemons Jr., W. M., Carter, A. P., Wimberly, B. T., and Ramakrishnan, V. (2002) “Crystal Structure of the 30S Ribosomal Subunit from Thermus thermophilus: Structure of the Proteins and Their Interactions with 16S RNA”, J. Mol. Biol., 316(3):725-768.

Ogle, J. M., Brodersen, D. E., Clemons Jr., W. M., Tarry, M. J., Carter, A. P., and Ramakrishnan, V. (2001) “Recognition of Cognate Transfer RNA by the 30S Ribosomal Subunit”, Science, 292: 897-902.

Brodersen, D. E., Clemons Jr., W. M., Carter, A. P., Morgan-Warren, R. J., Wimberly, B. T., and Ramakrishnan, V. (2000) “The Structural Basis for the Action of the Antibiotics Tetracycline, Pactamycin, and Hygromycin B on the 30S Ribosomal Subunit”, Cell, 103: 1143-1154.

Carter, A. P.*, Clemons Jr., W. M.*, Brodersen, D. E.*, Morgan-Warren, R. J.*, Wimberly, B. T., and Ramakrishnan, V. (2000) “Functional insights from the structure of the 30S ribosomal subunit and its interactions with antibiotics”, Nature, 407: 340-348.

Wimberly, B. T.*, Brodersen, D. E.*, Clemons Jr., W. M.*, Morgan-Warren, R. J.*, Carter, A. P.*, Vonrhein, C., Hartsch, T., and Ramakrishnan, V. (2000) “Structure of the 30S ribosomal subunit”, Nature, 407: 327-339.

Brodersen, D. E., Etzerodt, M., Madsen, P., Thøgersen, H. C., Celis, J. E., Nyborg, J., and Kjeldgaard, M. (1998) “EF-hands at atomic resolution: The structure of human psoriasin (S100A7) solved by MAD phasing”, Structure, 6: 477-489.

Medlemsskaber og tillidshverv

Bedømmer for det tjekkiske nationale forskningsråd, GACR, 2016-.
Medlem af "The American Society for Biochemistry and Molecular Biology", 2016-
Bedømmer for det franske nationale forskningsråd, ANR, 2011-.
Medlem af bestyrelsen for Biokemisk Forening, 2007-2010.
Medlem af "The RNA Society", 2008-.

Nylige videnskabelige præsentationer

University of Tartu, Estonia, 2018, invited speaker
European Workshop on (p)ppGpp and stringent response, Nelijärve, Estonia, 2018, invited speaker
CoLuAa XXV conference, Copenhagen, 2017, invited speaker
Università di Parma, Italy, 2017, invited speaker
16th Protein.DTU workshop, Danmarks Tekniske Universitet, 2017, invited speaker
Annual Meeting of the American Society of Biochemistry and Molecular Biology (ASBMB), Chicago, IL, 2017, speaker
Protein Science Day, Lund University, Sweden, 2016, invited speaker
CEA, Grenoble, 2016, invited speaker.
Lund University, Sweden, 2015, CMPS mini symposium, invited speaker.
Karolinska Instituttet, Sweden, 2014, invited speaker.
Uppsala University, Sweden, 2013, invited speaker.

Finansiering

Novo Nordisk Foundation Hallas Møller Ascending Investigator, 2018-2023.
Partner i Danmarks Grundforskningsfonds center "Bacterial Stress Response and Persistence" (BASP), 2015-.
Centerleder, AU Ideas/AUFF pilotcenter, Nanoripes – Centre for Natural Non-Ribosomal Peptide Synthesis, 5 mio. kr, 2012-2014.
Partner i Danmarks Grundforskningsfonds center "mRNP biogenesis and metabolism”, 2005-2015.
Modtager af Novo Nordisk Fondens Seniorforskerstipendium, 5 mio. kr., 2003-2008.

Forskningsformidling

"Bakteriernes hemmelige sprog afkodes", Viden & Forsknings, Kristeligt Dagblad, 16.1.2017.
Interview til Radioavisen på P1, Danmarks Radio, 4.2.2011.
Interview til Videnskabens Verden, P1, Danmarks Radio, 8.5.2010.
Interview til Radioavisen, P4 Østjylland, Danmarks Radio, 14.12.2009.
”Århusianske forskere på vej med fremtidens antibiotika”, DR Nyheder Online, 14.12.2009.
”3D-billeder af cellegift giver håb om ny antibiotika”, Videnskab.dk, 14.12.2009.
”Fremtidens antibiotika er små sakse”, Politiken Viden, 13.12.2009.
”Århus er også med, når Nobelprisen i kemi overrækkes”, Århus Stiftstidende, 10.12.2009.
”Århus-forskere hjalp med til Nobelpris”, Århus Stiftstidende, 16.10.2009.
”Nobelaura over Århus-forskere”, Campus, 12.10.2009.
”Stort dansk bidrag til Nobelpris”, Politiken, 7.10.2009.
”Danskere bag Nobelpris i kemi”, Videnskab.dk, 7.10.2009.

Patenter og priser

“Crystal structure of the 30s ribosome”, U. S. patent no. 6925394.
“Crystal structure of antibiotics bound to the 30S ribosome and its use”, U. S. patent no. 7079956.

ST Education Award 2017.
Human Frontier Science Program (HFSP) Career Development Award, 2003.

Novo Nordisk Senior Researcher Award, 2003.