

Teaching portfolio

1. Teaching CV: A list of teaching and supervision tasks, including specification of academic fields, scope, level (bachelor, master, continuing education, PhD). Please state the teaching method used (e.g. lecture, class teaching, exercises, supervision, examination, coexamination, distance teaching, internet-based teaching and evaluation of teaching). Please also indicate the language of instruction.

Lecture courses

- 2021- present** 8th semester course Medis. Content cover genetic architecture plot, population genetics, monogenic versus multifactorial etiology, twin studies, variant interpretation, genome-wide association study, polygenic risk scores, consumer genetics, UK Biobank, PheWAS, other omics technologies and personalized medicine. English.
- 2023- present** Lecturer on course 4th semester course Medis and Medicine. Videregående biokemi og genetik. Danish.
- 2022- present** Lecturer on the course "Module 1: Basis for personalised medicine" which is part of the new national Master in Personalised Medicine. The course is the mandatory module 1 at Aarhus University. Danish.
- 2021-present** Lecturer and organizer of small exercises on the course "Module 2: From omics to personalised medicine" which is part of the new national Master in Personalised Medicine. The course is the mandatory module 2 at Aalborg University. Course responsible at AAU are Professor Inge Søkilde, professor Mette Nyegaard and professor Lone Sunde. Danish.
- 2021:** Lecturer at PhD course – Translational neurobiology of the pain system xxvi: translational pain models in preclinical, human experimental, and clinical sciences. AAU. English.
- 2022:** Lecture at PhD-course in reproductive genetics. Copenhagen University. English.
- 2012- 2021:** 6 lectures twice a year, as part of course "Medical genetics" (BA, 10 ECTS), Medicine, Health, AU. Covering subjects: Monogenic and multifactorial inheritance, gene mapping in complex disease. (GWAS), variant interpretation, polygenic risk scores and Personalised medicine. Danish.
- 2012- 2021:** Lecturer on "Medical genetics" (BA, 10 ECTS) at Odontology, Health, AU. Danish.
- 2015- 2021:** Lecturer on "Medical genetics" (BA, 10 ECTS) at Molecular Medicine at Science and Technology, AU. Danish.
- 2020:** Lecturer at the Genetic winter school, deCODE genetics, Iceland, as part of a larger course for researcher at deCODE genetics and the Danish Blood donor study. English.
- 2013-14:** Lecturer in Gene Hunting for medical students 5th semester, Health, AU. Danish.
- 2012-2021:** >300 hands on exercises as part of the course Medical Genetics, 1st semester on Medicine, Health, AU (BA, 10 ECTS). Danish.
- 2011:** Teaching at the Danish Hematology Graduate School Annual Meeting. English
- 2006-2009:** >160 hours in practical laboratory course in as part of the course Medical Genetics, 1st semester on Medicine, Health, AU (BA, 10 ECTS). Danish.

PhD supervision

- 2021-24 Main supervisor. Faezeh Darki. Molecular mechanism of endometriosis. Health, Aalborg University.
- 2021-24 Co-supervisor. Gitte Stokvad Brix. Improvement of predictive risk models of obstructive coronary artery disease using biomarkers and genetic susceptibility- A study from the Dan-NICAD program. Health, Aarhus University
- 2019-22 Main supervisor. Peter Loof Møller. From genome-wide association studies to mechanistic insight using CRISPR-Cas9 and nanopore sequencing in coronary artery disease. Health, Aarhus University.
- 2017-20 Co-supervisor: Giulia Monti. The role of a novel SORL1 transcript in Alzheimer's Disease. Health, Aarhus University. Planned defense November 2020.
- 2018-21 Co-supervisor: Caspar Bundgaard Nielsen. Tarm mikrobiotaens indvirkning på ADHD og autismespektrumsforstyrrelser, Sundhedsvidenskab, Aalborg University.
- 2013-16 Main supervisor: Anna Starnawska. Title of PhD dissertation: Blood DNA methylation in mental health. Health, Aarhus University.
- 2013-16 Co-supervisor: Berit Lindum Waltoft. Title of PhD dissertation: Designs and Methods for Association Studies and Population Size Inference in Statistical Genetics. 2013-2016.
- 2010-14 Main supervisor: Liesbeth Bieghs, Title of PhD dissertation: The IGF system in multiple myeloma. Joint PhD contract, Health, Aarhus University and Vrije University, Brussel, Belgium.
- 2010-13 Main supervisor: Kim Steve Bergkvist. Studies of small discrete populations of B cells by microarray - Faculty of Health Science, Aarhus University. Became co-supervisor in 2012 due to change of position (from AAU to AU).
- 2010-13 Co-supervisor: Falgreen Larsen Steffen. Statistical Models Studying Potential Biomarkers for Prediction of Chemotherapy Outcome, Department of haematology, Aalborg Hospital.

Master and bachelor supervision

- 2022 MEDIS Master project. Eir Nanny Joensen, Ragnhild Leifsdóttir Jacobsen. Polygenic risk scores for IBD and differences in the microbiome and abdominal pain on the Faroe Islands.
- 2022 MEDIS 7th semester. Astrid Larsen Levisen, Dorentina Mehmeti, Lukas-Benjamin Stephanell, Maryan Xasan. Improving pre-test probability using polygenic risk scores - an evaluation in the Dan-NICAD cohort.

2022 MEDIS7th semester, Maria Quist Olsen, Mia Wongngor Kolding Johansen, NatalieReimer Borregaard, Sara Nielsen. A Proteomic Comparison of Unexplained HealthyPeople and Patients Diagnosed with Coronary Artery Disease.

2022 MEDIS6th semester. Cathrine Linnea Hegtmann, Esben Tore Bundgaard Larsen, Emma Lildholdt, SaraKorsgaard Sørensen. Validitet af bestemmelse af ploidi på FFPE-væv til formålet forbedre diagnostik og videreforløb af mola hydatidosa.

2021 Masterproject. Co-supervisor. Gabriela Dobromirova Nikolova.

2019 Bachelorin Medicine. CelinaStecher Pontoppidan. Thefunction of tRNA-derivates in fertilization.

2019 Bachelorin Medicine. Mia Kjær Mieritz. The role of small RNA molecules in the embryoselection process.

2019 Bachelorin Medicine. Svend Buus. The genetics of absolute pitch – an overview.

2019 Masterthesis in Medicine. Mathis Ersted Rasmussen. APOMMIR: a novel pipeline using MinIONreads in search for new diagnostic tools in infectious endocarditis.

2019 ExperimentalBachelor Thesis in Molecular Biology. Erik Fogh Sørensen. Identifying speciesand resistance genes of pathogens from infective endocarditis patients throughnanopore sequencing.

2018 Experimentalbachelor in Molecular Medicine. Carina Thusgaard Refsgaard. Profiling smallNoncoding RNAs secreted by human embryos into spent culture media.

2018 Bachelorin Medicine. Johannes Högfeldt Jedrzejczyk. Effectively diagnosing infectiousendocarditis: a review of the oxford nanopore technology minion.

2018 Bachelorin Medicine. Jacob Agerbo Thomsen. Infectious endocarditis- pathogenidentification and detection of antimicrobial resistance in 6 clinical samplesusing nanopore technology.

2017 Bachelorin Medicine. Sofie Fuglsang-Jensen. The role of microRNA in embryo implantation– a review.

2017 Bachelorin Medicine. Jakob Budde Jensen Helin. Coronary artery disease: Searching or disease-causingvariants using exome sequencing in small families with a presumed monogenicmode of inheritance.

2016 Bachelorin Medicine. Kristina Isberg Boysen. Genome-wide association study of cannabisdependency.

2016 Bachelorin Medicine. Theories on the Etiological Cause of Endometriosis. Laura FibigerPoulsen and Sofie Ortgren. Grade 12

2016 ExperimentalBachelor Thesis in Molecular Medicine. Josephine Deleuran Hendriksen. AcneInversa: Identifying disease-causing gene with exome sequencing. Grade 12.

2016 Masterthesis (external supervisor) Aalborg university department of chemistry andbioscience. Kirstine Kløve-Mogensen. Towards molecular understanding ofendometrial function and pathophysiology - Cytokine profiling and polygeneticrisk score. Grade 12

2015 Bachelorin Medicine. Anne Mette Forum. DNA methylation and Horvath's epigenetic clockand it's effects on fertility. Grade 12

2014 Bachelorin Medicine. Marie Zöga Diederichsen. A novel splice site mutation for ACNE ina large Cuban family. Grade 12

2014 Bachelorin Medicine. Johanne Steffensen. Investigation of Endometriosis-as-Tumorthory. Grade 10

2013 Bachelorin Medicine. Direct-to-consumer genome-wide profiling. Solvej Videbæk Andersen.Grade 12

2013 Bachelorsin Medicine. Lysosomal storage diseases and hearing loss Fabry and Pompeidisease. IdaMarie Bruun Grønnebæk og Maria Schøler Nørgaard. Grade 10

2013 Bachelor in Medicine. Ditte Thomsen. Endometriosis: The impact of somatic alterations on the pathogenesis. Grade 12

2013 Bachelorsin Medicine. Anders Krei. Rare penetrant inherited and de novo mutations inautism spectrum disorder. Grade 10

2012-13 Master thesis (medicine) AndersBilgaard Jensen: Nyt gen for nonsyndromisk høretab. Dept of Biomedicine, Aarhus University.

2011 Master thesis (medicine) MathiasGottschalck Heide: Regional differentiation of the human myometrium. AarhusUniversity Hospital (co-supervisor).

2010-11 Master thesis (MSc) Anne Sophie BechRasmussen: Cytogenetic profiling of Diffuse large B-cell lymphoma, The Faculty of Engineering and Science, AAU(grade12)

2008-09 Master thesis (MSc) Marta Vranas: ANew Gene for Familial Ventricular Tachycardia: Characterization of Gene andProtein, Aarhus University (grade 12)

2009 Bachelor thesis (BSc) : NicolaiLassen, Preliminary steps for setting up copy number variations on theSequenom: Determining EC50 on 15 primersets, Aarhus University

2008 Bachelor thesis (BSc). Copynumber variations on chromosome 3p21.1 and 17q21.31 and their association toschizophrenia and bipolar disorder in a case-control study - Per Qvist, AarhusUniversity

Assesments

2010-2016 Marking exams as external censor (onaverage 60 exams each time) in Medical Genetics at Copenhagen University andUniversity of Southern Denmark (Medicine). In 2016, external censoring onwritten exams changed to internal censoring only.

2018 Opponent on MedicinskForskningsspeciale, AAU. MarinaElmelund Sørensen. Refinementof Flow Cytometry based methods for identification and characterization of differentiations-specificintestinal epithelial cell (supervisor Karen Dybkær).

2018 Opponent on master thesis, Health,KU. Linea Trudsø. Genetics ofSudden Unexplained Death in Epilepsy Patients (SUDEP).

2017 Opponent on bachelor thesis,medicine, Health, KU. Kristina Dyrehave Rasmussen.

2017 Opponent on project thesis, AAU.Hanne Falkenberg Rebsdorf andChristina Wahl Larsen (supervisor Theis Esben Søndergaard)

2017 External censor (no oral exams) master thesis, medicine, Health SDU. Christine Fribert Sørensen. Liquid biopsy as a tool for detection of circulating tumor DNA in High Grade Serous Ovarian Carcinomas.

2016 Opponent, master thesis medicine, Health, KU. Morten Dybdahl Krebs. Associations Between Disease Trajectory and Genomics in Schizophrenia.

2016 External censor and examiner on eight group exams (group 409, 419, 420, 6015, 6016, 8002, 8006, 10023), AAU (supervisor Meg Duroux).

2015 External censor and examiner on 1-year pregraduate research project, Health, SDU. Marie Krab Henningsens. Forekomst af mutationer i gener associeret med Noonan syndrom hos børn med pulmonalstenose.

2015 External censor and examiner on three group exams (group 801, 807, 811), AAU (supervisor Meg Duroux).

2015 External censor and examiner on two group exams (group 629a, 823), AAU (supervisor Svend Birkelund).

2014 External censor and examiner on project 10th semester, AAU. Majbritt T. Svendsen (supervisors Meg Duroux, Suzette Sørensen og Ulrik Baandrup).

2014 Opponent on 1-year pregraduate research project, SDU. Siavosh Tabatabaieifar. Use of next-generation sequencing in oral cavity cancer: intra tumor heterogeneity and metastasis.

2014 Opponent on PhD pre-defence. Lea Ambühl. Impact of placental Human papilloma Virus (HPV) infection on spontaneous abortion/spontaneous preterm delivery (supervisor Ulrik Baandrup).

2014 External censor and examiner on one group exam (group 629A) (supervisor Linda Pilgaard).

2014 External censor and examiner on three group exams (group 407, 414, 605), AAU (supervisor Meg Duroux).

2013 External censor and examiner on two group exams (group 601, 615), AAU (supervisor Meg Duroux).

2013 Censor and examiner on ITEK, SDU. Kristina Magaard Koldby. Structural DNA-differences in twins, discordant for cognitive injury.

2012 Opponent on experimental master thesis (Medicine), University of Southern Denmark. Randi Egeland. Association analysis between bipolar disorder risk genetic variants and brain structural phenotype.

2011 Censor (no examination) on bachelor thesis, molecular medicine, AU. Jens Vinther Larsen. A quantitative trait loci analysis for total cholesterol and triglyceride plasma concentration in two inbred mouse strains.

2. Study/programme administration and management: Experience in programme management and coordination. A list of study administration tasks, e.g. study board membership, chair of study board, semester or course coordinator, accreditation tasks, etc. Experience in planning teaching activities. Experience in programme development. Participating in committees and commissions etc. on education issues.

2021-present Course responsible. National Master education in Personalised medicine. Course responsible together with Professor Inge Søkilde and Professor Londe Sunde for mandatory module 2 at Aalborg University 'From omics to personalized medicine' 7.5 ECTS <https://personligmedicin.ku.dk/kursus/omics/>

2021-present Module responsible. Medicine with Industrial specialization (MEDIS) 2nd semester candidate course 'Disease Processes and Diagnostics - Personalized Medicine' 5 ECTS.

2010-18 Member of the examiner Corps for the Medical education in Denmark

2017-present Member of CensorNet - Corps of external examiners for the engineering.

2012-2021 Every second semester coordinating all work around producing the written exam in Medical Genetics, Medicine, AU (280 students per semester). This includes producing the content, circulating among colleagues and censors for approval, marking exams.

3. Formal pedagogical training: A list of completed courses in university pedagogy, PBL courses, workshops, academic development projects, collegial guidance and supervision, etc. Written assessment from the course in university pedagogy for assistant professors. Participation in conferences on pedagogy and didactics. Please enclose any documentation of the above, such as course certificates, references, etc

2022 Course in research communication at SoMe, AAU, by invitation only (1 day).

2020 Attended online course "Problem-based learning" (9 short modules) on Coursera, University Teaching.

2020 Attended "Video I din undervisning" (online course) organized by Center for Sundhedsvidenskabelige Uddannelser (CESU)

2019 Attended EDU-IT week (3 days) in peer feedback, padlet, case based learning, blended learning, organized by Center for Sundhedsvidenskabelige Uddannelser (CESU)

2019 Linked-In course for biomedical researchers at Health, AU, by invitation only (1 day)

2011 Course in PhD supervision, AU (2 full days)

2009 Pædagogikum, AU (150 hours)

4. Other qualifications: Conference contributions and attendance, contributions to debates, scientific articles on pedagogical issues etc. Peer supervision, editorials, mentoring

experience or other types of competence development activities.

Expert witness in the Folbigg enquiry, Sydney, 2022-23

5. Pedagogical development and research: Development of new courses, teaching materials, teaching methods, examination types or other types of pedagogical development. Didactic and pedagogical research. Cooperation with external collaboration partners.

2021 Development of curriculum for complex disease genetics at Aalborg University. Curriculum include genetic architecture of rare and common diseases and traits, gene mapping, multifactorial inheritance, variant interpretation, and precision medicine.

2020 Member of working group for overall modernizing course in Medical Genetics on first semester Medicine at Aarhus University (10 ECTS).

2019 Organized training day in Ingenuity Pathway analysis, Aarhus University

2016 Responsible for major change in curriculum in 10 ECTS course Medical Genetics,

6. References on your teaching skills from superiors or colleagues. Teaching evaluations and any teaching awards received.

2022 Nominated to teacher of the year at the Department of Health Science and Medicine, Aalborg University.

7. Personal reflections and initiatives: Here you may state any personal deliberations as regards teaching and supervision, any wishes and plans for further pedagogical development, plans for following up on student feedback/evaluations, etc. Personal reflections on your own pedagogical practice, including objectives, methods and implementation. This should include an analysis and a reasoned description of your pedagogical activities in relation to your pedagogical understanding and student learning. Thoughts on the teaching method at Aalborg University (which is largely based on group-organised project work and problem-based learning)

I find that there are four areas that are essential in educating the strongest possible doctors, ready for the era of personalised medicine.

- What is the difference between a monogenic and a complex disease and what type of variants are involved. Genetic variation is like chili, they can be mild or strong, and this generates differences in the underlying genetic architecture of diseases. By understanding this difference, it will become easy for new doctors to understand genetics tests, and polygenic risk scores.

- What is the difference between technologies in detecting genetic variants. In particular genotyping, gene panels, exome sequencing and genome sequencing. If explained properly, it is quite simple. An understanding of the technologies will allow future doctors to make correct conclusion regarding test results, interpret and advise on genetic tests for example from consumer genetic companies which will give this generation a huge advantage which will benefit patients and society.

- Variant interpretation and penetrance. These two things are important in a clinical setting where DNA results from the National Genome Center may become available. Today new insight are generated almost on a daily basis on how pathogenic variants are not that penetrant in the general population. These databases and user friendly tools should be part of the curriculum for medicine so these important tools can get to hands of the clinicians.

- incidental findings and what to do about them. Incidental findings is an important aspects for coming clinicians as sequencing will become more and more a part of the clinical

picture. Of a given patient. It is therefore important to know, where to get the newest information on when a variant is an incidental finding, and when it is not. More insight will decrease fear of genomic research, as fear will only set Denmark compared to the rest of the world and exclude Danish citizens from harvesting the benefits of personalized medicine in the future.

If we as a society are to embrace personalized medicine in the near future it is necessary to have a better understanding of the human genome and what drives the decision making, than now. Teaching curriculum should and will be developed in close collaboration with important stakeholders such as clinical genetics, data scientists, statisticians, and clinicians.

8. Any other information or comments.

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