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Teaching Experience and Qualifications

I have designed, developed, and delivered interdisciplinary teaching in computational biology, bioinformatics, and data science across BSc, MSc, and PhD levels. My primary teaching roles include leading MSc-level courses in biostatistics and omics data analysis (BMB830, BMB831), contributing to structural bioinformatics teaching (BMB834), and developing a PhD workshop module on protein structure prediction (BMB209). I have also delivered training and workshops through the National Health Data Science Sandbox and led the development of containerized proteomics teaching materials, which are deployed on the UCloud HPC platform. My teaching philosophy emphasizes accessibility, reproducibility, and project-based learning grounded in real-world biomedical applications.

In parallel, I bring more than 20 years of pedagogical experience from the Danish scouting movement, which has shaped my collaborative and experiential teaching style. I have also actively contributed to outreach and science communication as an Outreach Ambassador and participant in national science education initiatives.

Teaching Overview

Course Code	Course Title	Level	Role	Year(s)
BMB830	Biostatistics in R I	MSc	Lead instructor, course design	2023–2024
BMB831	Biostatistics in R II	MSc	Lead instructor, course design	2022–2024
BMB834	Protein Structure, Dynamics, and Modeling	MSc	Co-instructor, content development	2023–2024
BMB209	Workshops in Applied Bioinformatics	PhD	Module designer and co-instructor	2023–2024
–	National Health Data Science Sandbox	Mixed	Workshop lead (proteomics module)	2022–2024
BMB533	Molecular Biology and Protein Chemistry	BSc	Teaching assistant (labs and tutorials)	2020–2022
–	Outreach Activities (Outreach Ambassador)	Public	Facilitator: lectures, labs, camps, marketing	2019–2022

Course Development and Teaching (Design, Development, Delivery)

- **BMB834: Protein Structure, Dynamics, and Modeling**
  Level: MSc
  Role: Co-instructor and content developer
  - Focused on structural bioinformatics, protein folding, and molecular dynamics.
  - Used molecular visualization tools such as VMD to analyze structure–function relationships.
  - Integrated prediction tools including AlphaFold2, AlphaFold3, ColabFold, and ESMFold.
  - Delivered practical exercises in protein structure retrieval and modeling.
  - Contributed to shaping the course curriculum and delivering applied modules.

- **BMB830: Biostatistics in R I**
  Level: MSc
  Role: Lead instructor and course designer
  - Focused on advanced statistical methods including ANOVA, linear and generalized linear models.
  - Provided hands-on training in RStudio with emphasis on project-based learning.
  - Applied methods across omics disciplines, including RNA-seq, proteomics, and epidemiological data.
  - Emphasized critical evaluation, visualization, and interpretation of complex datasets.
  - Designed and taught course material.

- **BMB831: Biostatistics in R II**
  Level: MSc
  Role: Lead instructor and course designer
  - Introduced R and RStudio for omics data analysis across genomics, transcriptomics, metabolomics, and proteomics.
  - Emphasized data wrangling, visualization, and statistical analysis using real-world datasets.
  - Covered basic and intermediate programming concepts and reproducible reporting in R Markdown.
  - Focused on practical implementation and interpretation of statistical results.
  - Developed, designed, and taught the course.

- **BMB209: Workshops in Applied Bioinformatics**
  Level: PhD
  Role: Module designer and co-instructor
  - Focused on bioinformatics tools, databases, and computational workflows.
  - Included modules on sequence alignment, genome annotation, transcriptomics, and structural biology.
  - Emphasized reproducibility and scripting practices using R and Git.
  - Delivered practical modules covering protein data workflows.
  - Developed a ColabFold tutorial integrated into the HPC platform UCloud with Git-based version control.
  - Designed and delivered the protein structure prediction module.

Teaching Assistantship

- **BMB533: Molecular Biology and Protein Chemistry**
  Level: BSc
  Role: Teaching assistant (labs and tutorials)
  - Supported teaching on protein chemistry and molecular biology fundamentals.
  - Assisted in computational labs using VMD to explore protein structure and interactions.
  - Guided students through structure–function analysis and interpretation of molecular data.

Additional Teaching Contributions and Engagement

I contribute to bioinformatics and data science education across levels through hands-on workshops, digital infrastructure development, student supervision, and national outreach efforts. Highlights include:

- **National Health Data Science Sandbox**
  Level: Mixed (BSc to PhD and staff scientists)
  Role: Lead on proteomics module
  - Delivered hands-on training in R, protein modeling, and HPC workflows at national workshops and conferences, including the Danish Bioinformatics Conference and other events.
  - Led the development and design of the proteomics module in collaboration with HeaDS.

- **Containerized Teaching Tools**
  Role: Developer
  - Created a Docker container for MS-based proteomics on the UCloud HPC platform.
  - Enabled students and researchers with limited programming experience to analyze clinical datasets without local installation.
  - The open-source materials are available at: *github.com/hds-sandbox/proteomics-sandbox*.

- **Supervision and Mentoring**
  Role: Supervisor and mentor
  - Supervised BSc, MSc, and PhD students in computational biology and bioinformatics projects.
  - Mentored award-winning iGEM teams and co-founded the AI Special Interest Group (SIG) at SDU.

- **Science Outreach and Community Engagement**
  Role: Outreach Ambassador and jury member
  - Contribute to science communication through the DDSA Young Academy Panel.
  - Serve as a jury member for the Danish National AI Championship for university students.
  - Facilitated lectures and lab/bioinformatics workshops for high school students, supported biotechnology camps, and participated in university recruitment efforts as an Outreach Ambassador during my studies.

- **Teaching Committee Service**
  Role: Student representative
  - Served on the departmental Teaching Committee during my studies.
  - Contributed to curriculum review, course evaluations, and educational policy development.