

## CURRICULUM VITAE, BODIL KAVLI

**Born** 17<sup>th</sup> July 1966, Norway  
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**Present position** Professor  
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**Research interests:** Molecular, structural, and cellular biology; Enzyme kinetics; DNA repair and genome stability; Adaptive immunity; Cancer

### Academic degree

2001: Doctor Philosophia, Molecular Medicine, Faculty of Medicine, NTNU, Trondheim

1992: Master of Science in Engineering, Biotechnology, University of Trondheim, NTH

1989: Bachelor's degree in chemical engineering, Biotechnology, Oslo College of Engineering

### Positions and employments

Jan 2024-present: Professor (100%), Department of Clinical and Molecular Medicine, NTNU

2018-2024: Professor (50%) and Researcher (50%, funded by Central Norway Regional Health Authority), Department of Clinical and Molecular Medicine, NTNU

2014-2018: Professor (15% position) and Senior Investigator (85% position, funded by the Norwegian Cancer Association), Department of Cancer Research and Molecular Medicine, NTNU

2008-2014: Senior Investigator (Central Norway Regional Health Authority and The Research Council of Norway), Department of Cancer Research and Molecular Medicine, NTNU

2001-2008: Post doctor positions (The Research Council of Norway and The Norwegian Cancer Association), Department of Cancer Research and Molecular Medicine, NTNU

1994-2001: PhD position (The Norwegian Cancer Association), Department of Cancer Research and Molecular Medicine, NTNU (including 2 years maternity leave).

1993-1994: Research associate, DNA repair group, Unigen, University of Trondheim

1989-1990: Research assistant, Institute for Medical Genetics, University of Oslo

### Scientific achievements and capacity to initiate and execute research projects

My major research interests are within DNA repair and adaptive immunity, two fields that are molecularly linked together by induction and processing of the non-canonical DNA base uracil. Within these fields, I have contributed to ground-breaking research; e.g. structural and functional characterization of the human DNA-repair enzyme uracil-DNA glycosylase (UNG), representing the first published structure of a mammalian DNA repair enzyme and eukaryotic DNA repair protein:DNA complex (Cell and Nature). I further engineered variants of the UNG enzyme that excise the normal DNA bases thymine and cytosine (US patents "DNA glycosylases and their use") and used these enzymes as a tool to study repair of genomic abasic (AP) sites *in vivo* (Embo J). Other highlights are the Landmark papers in Nature Immunology and J Exp Med, demonstrating that patients harbouring inactivating mutations in the *UNG* gene suffer from immunodeficiency (hyper-IgM syndrome) due to impaired Ig class switching. Based on these findings, I initiated new research activity on the enzyme; activation-induced cytidine deaminase (AID). AID is a mutator enzyme that acts by introducing uracil in DNA (Ig genes), and it works in concert with UNG to drive antibody (Ig) affinity maturation and isotype switching (e.g. IgA to IgG) during the adaptive immune response. In addition, AID is recognized as a driver in the development of B-cell lymphomas and other cancers. Together with coworkers, I have published several papers describing cellular localization, subcellular trafficking, and regulation of AID. From 2010, I have received personal funding as project leader. This has contributed to increased knowledge of the molecular mechanism of adaptive immunity and the link between genomic uracil, DNA repair and antibody diversification, including the role of

AID in B-cell lymphoma. Recently, we described a novel repair pathway of mutagenic uracil lesions at the replication fork that depends on interaction between UNG and Replication Protein A (RPA) (two publication in Nucleic Acids Research).

#### **Personal Funding (project leader)**

2017: Central Norway Regional Health Authority "Identification of novel biomarkers in B-cell lymphomas" 4 875 000 NOK (Researcher positions and project funding, started August 2018)

2013 and 2014: The Norwegian Cancer Society "Role of activation-induced cytidine deaminase (AID) in development of B-cell lymphoma", 6 617 000 NOK (Researcher position, post doc position and project funding)

2010: Central Norway Regional Health Authority "Uracil in DNA; from repair of the genome to antibody variation and development of B-cell lymphoma ", 2 475 000 NOK (researcher position)

**Awards & honours:** SINTEF/NTNU/RIT award in Medical Technology (2001)

**Patents:** "DNA glycosylases and their use", Patent No.: US 7,662,601 B2 (Feb. 16, 2010)

**Academy membership:** "The Royal Norwegian Academy of Science and Letters" (since January 2015)

#### **Most important academic and administrative tasks**

Head of Master's Programme in Molecular Medicine (2024) at MH-NTNU; Vice unit manager, Unit for Molecular Biology, Department of Cancer Research and Molecular Medicine (2012-2018); Opponent/administrator in PhD committees; Reviewer for NAR, DNA Repair, Plos One and Nature Cell Biology; Member of the Strategy Group, Department board Cancer Research and Molecular Medicine, NTNU (2012)

#### **Most important teaching and supervision**

Course coordinator (MS level): MOL3000/MOL3100-Introduction to Molecular Medicine (2012-2024); MOL3101-Practical Molecular Medicine Laboratory Course (2024); MOL3901-Thesis in Molecular Medicine (2024-Master's program-MH-NTNU). Lecturer: MOL3000/MOL3100 (2012-2024); MOL3101 (2018-2024); MOL3005-Immunology (2013, 2022-2023); MOL8002 (PhD level)- Molecular Mechanisms in Host Defence-DMF-NTNU (2008-2012). Supervision: PhD-four completed one in process (co-supervisor), MS-six completed (including three MD students), one MD and one MS in process.

#### **Invited presentations to international conferences**

3rd Erling Seeberg Symposium on DNA repair, Trondheim and Brekstad, Norway, 19-23 June 2012, Title "Regulation of AID by intracellular targeting". Zing Genomic Integrity Conference 2015, Cairns, Australia, Aug. 2015, Title "AID and BER enzymes in Adaptive Immunity and Genomic Integrity"

#### **International collaborators**

Dr. Javier Di Noia, Institute de Recherches de Montreal, Canada; Prof. Thomas Grundström, Umeå University, Sweden; Dr. Anne Durandy, Hôpital Necker Enfants Malades, Paris, France

#### **Publication statistics**

Total citations **4891** by 3469 documents, **h-index: 29** (Scopus).

46 documents (32 original articles, 4 reviews, 2 conference papers, 8 book Chapters ) 38 in peer-reviewed international journals including many with high-impact: Nature, Cell (2), Nature Immunology, Nat Struct Mol Biol., J Exp Med, EMBO J (3), Nucleic Acids Res.(7), J Mol Med., J Biol Chem.(3), J Mol Biol., Prog Nucleic Acid Res Mol Biol, Mutation Res., DNA Repair (7), Exp Cell Res., Biochemistry (2), Mol Immunol.