

Curriculum vitae with track record (for researchers)



Role in the project Project manager Project partner

Personal information

First name, Surname:	Kent-Andre Mardal		
Date of birth:	26/11/74	Sex:	Male
Nationality:	Norwegian		
Researcher unique identifier(s) (ORCID, ResearcherID, etc.):	ORCID: https://orcid.org/0000-0002-4946-1110 . ResearcherID: https://publons.com/researcher/1443383/kent-andre-mardal/		
URL for personal website:	https://kent-and.github.io/		

Education

2003	Faculty/department - University/institution - Country
2002	PhD, Thesis title: Software and Numerical Methods for the Incompressible NavierStokes Equations. Supervisors: Hans Petter Langtangen and Aslak Tveito Department of Informatics, University of Oslo.
1999	Cand. Scient, Department of Mathematics, University of Oslo, Norway

Positions - current and previous

Year	Job title – Employer - Country
2015-	Professor, Division of Mechanics, Department of Mathematics, University of Oslo, Norway
2014-	Adjunct Scientist, Scientific Computing Department, Simula Research Laboratory, Norway
2019-	Consultant for Expert Analytics
2014-2015	Associate Professor, Division of Mechanics, Department of Mathematics, University of Oslo, Norway
2007-2017	Group leader of Center of Excellence, Center for Biomedical Computing, Norway
2007-2014	Senior Scientific Researcher, Simula Research Laboratory, Norway
2003-2014	Associate Professor (20%), Department of Informatics, University of Oslo, Norway
2003-2007	Postdoctoral Fellow, Simula Research Laboratory, Norway

Project management experience

Year	Project – Funder – Role (last 5 years)
2020-2024	Alzheimer's physics, FRIPRO, 12 MNOK, PI
2019-2023	SciML – Scientific Machine Learning, IKTPLUSS 16 MNOK, PI
2018-2021	Novel cascade technology for optimal utilization of animal and marine by products, workpackage leader of 2MNOK, BIONÆR
2017-2018	Brain, aging and neurodegenerative disease - exchange with Neuroscientists in Toulouse , 80 KNOK., Co-PI

2017-2021	Industrial Ph.D. OPSECTS - Optimal Patient Specific Electro Convulsive Therapy Simulator with Expert Analytics, PI
2017-2019	Nordforsk grant for developing new scandinavian course in "Computational Mathematical Modeling", co-PI with Logg (Chalmers) and Mathiesen (Copenhagen), 900 KNOK.
2015-2016	Improved intracranial pressure estimations using cloud-based simulations of the cerebral blood flow. Fortissimo, EU-7th Framework Program, 200 000 euros, co-PI.
2007-2017	Group leader at the Center of Excellence "Center for Biomedical Computing"

Supervision of students

Master's students	Ph.D. students	Post Docs	University/institution - Country
44 (1 ongoing, 26 as main supervisor)	29 (9 ongoing, 11 as main supervisor)	9 (5 ongoing, 8 as main supervisor)	University of Oslo: 27, University of Siegen: 1, Istituto Italiano di Tecnologia: 1

Other relevant professional experiences

Year	Description – Role
	<i>Invited Referee for research councils</i>
2019	Université libre de Bruxelles (ULB)
2017	The French National Research Agency (ANR)
2016	Canadian Council for the Arts, Killam Fellowship
2016	Research Foundation Flanders (FWO) Belgium
2013	Research Foundation Flanders (FWO) Belgium
2012	The French National Research Agency (ANR)
	<i>Editorial responsibilities</i>
2019-	Fluids and Barriers in the CNS
2020-	Frontier Computational Physics
	<i>Habilitation / PhD evaluation committee</i>
2019	PhD thesis: Paolo Zuniga (Universidad del Bio Bio, Chile)
2019	PhD thesis: Lorenzo Sala (University of Strasbourg, France)
2019	PhD thesis: Mats Brun (University of Bergen, Norway)
2017	Habilitation thesis: Marcela Szopos (University of Strasbourg, France)
2017	PhD thesis: Helena Svihlova (University of Prague, Czech Republic)
2016	PhD thesis: Kartik Jain (University of Siegen, Germany)
2016	PhD thesis: Giulia Pizzichelli (Istituto Italiano di Tecnologia, Pisa, Italy)
2010	PhD thesis: Arne Morten Kvarving (NTNU, Trondheim, Norway)

Track record

Major scientific results:

Ringstad G, ..., Mardal KA, Eide PK. *Brain-wide glymphatic enhancement and clearance in humans assessed with MRI*. JCI Insight. 2018 in their daily assessment. The above paper in JCI Insight is **already rated as a highly cited paper** by Web of Science, 2020 (cited > 106, Google Scholar).

The paper *Preconditioning discretizations of systems of partial differential equations* from 2011 (with R. Winther) is **rated as a highly cited paper** (cited > 230, Google Scholar) by Web of Science, 2019.

The book about **the software framework FEniCS** :“Logg A, Mardal KA, Wells G, Automated solution of differential equations by the finite element. Springer 2012.” **has now been cited more than 2200 times since 2012** (Google Scholar).

Invited plenary presentations (selected)

Year	Conference – Location
2020	Monash Workshop on Numerical Differential Equations and Applications 2020, Melbourne, Australia, Feb 10-14, <i>keynote</i>
2018	Workshop - Mathematical models in health sciences, Nantes, June 20-22, <i>keynote</i>
2018	INdAM Workshop "Mathematical and Numerical Modeling of the Cardiovascular System" Roma, April 16 - 19, 2018, <i>keynote</i>
2017	ENUMATH 2017 Conference, Voss, Norway, Sept 25-29, <i>keynote</i>
2017	4th Cerebrospinal Fluid Dynamics Symposium, Atlanta, US, June 19&20, <i>invited plenary</i>
2017	HPCSE 2017, Ostrava, Czech Republic, May 22-25, <i>keynote</i>
2017	Interpore 2017, Rotterdam, May 8-11, <i>invited plenary</i>
2017	American Association of Spine Radiology San Diego 2017, Feb 23-26, <i>keynote</i>
2015	American Society of Neuroradiology, Chicago 2015, <i>keynote</i>
2015	International Hydrocephalus Imaging Working Group, Chicago 2015, April 25-30, <i>plenary</i>
2014	Gordon Conference on Flow & Transport in Permeable Media Portland, July 6-11, <i>keynote</i>
2013	Preconditioning Conference, Oxford 2013, June 19-21, <i>keynote</i>
2013	Modelling of physiological flows, Sardinia 2013, July 11-14, <i>keynote</i>

In addition, I have held more than 100 talks in workshops and conferences.

Dissemination

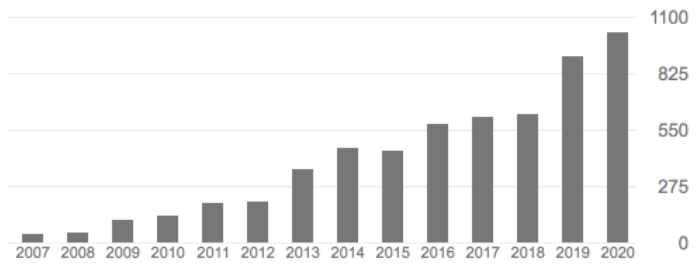
Year	Newspaper/magazine/TV-channel
2011	Our research on cerebral aneurysms was featured in 9 Norwegian newspapers, magazines, including VG
2017	Our research on Alzheimer and clearance of waste during sleep is featured on NRK (NRK skole, lærerike programmer og klipp): https://www.nrk.no/embed/PS*310437?autoplay=true
2018	Our research on Alzheimer appeared in VG, Norway's most selling newspaper. https://www.vg.no/forbruker/helse/i/VRwBK4/norske-forskere-soevn-kan-bremse-demens
2019	Both NRK, P1 and Forskning.no published reports concerning our paper that relates breathing with brain clearance.

Major contributions to the early careers of excellent researchers

Earlier students with permanent positions in the institute and university sector include Ole Elvetun, Simon Funke, Kartik Jain, Karen Støverud, Kristian Valen-Sendstad and Vegard Vinje. O. Elvetun is an associate Professor at Norwegian University of Life Science, K. Jain is an assistant Professor at U. of Twente, Netherland, K. Støverud is a researcher at Sintef, and S. Funke, K. Valen-Sendstad and V. Vinje are researchers at Simula Research Laboratory. M. Kuchta and L.M. Valnes are currently Post-Doctoral Fellows at Simula Research Laboratory and Oslo University Hospital, respectively.

BRIEF SUMMARY OF PUBLICATIONS:

96 articles with 162 co-authors, citations/H-index (March 2019): 2344/24 (Scopus), 6087/30 (Google Scholar). Publications with more than 100 citations: 11. Publications in top-tier journals Proceedings of National Science of Academy USA, Journal of Clinical Investigation Insight as well as top-tier journals in scientific computing, numerical analysis, biomechanics and neuroradiology; SIAM J. Sci Comput, SIAM J. Numer Anal., J. Biomech, Am J Neuroradiol, NeuroImage, Two co-authored and two co-edited books, one co-authored book accepted at Springer. 51 book chapters or refereed proceedings.



Citations last 13 years from Google Scholar, Des 20, 2020

TEN SELECTED PAPERS: (Impact factor of journal (IF), PI, citations from Google Scholar in bold; current or former PhD, Post doctoral fellows in italic):

[1] Ringstad G, *Valnes LM*, Dale AM, Pripp AH, Vatnehol SA, Emblem KE, **Mardal KA**, Eide PK. Brain-wide glymphatic enhancement and clearance in humans assessed with MRI. Journal of Clinical Investigations: Insight. 2018 Jul 26;3(13) (**IF: 13.3, citations: 105**).

[2] *Holter KE*, Kehlet B, Devor A, Sejnowski TJ, Dale AM, Omholt SW, Ottersen OP, Nagelhus EA, **Mardal KA**, Pettersen KH. Interstitial solute transport in 3D reconstructed neuropil occurs by diffusion rather than bulk flow. Proc. National Academy of Sciences. 2017 (**IF: 9.5, citations: 106**)

[3] *Valnes LM*, *Mitusch SK*, Ringstad G, Eide PK, *Funke SW*, **Mardal KA**. Apparent diffusion coefficient estimates based on 24 hours tracer movement support glymphatic transport in human cerebral cortex. Scientific reports. 2020 Jun 8;10(1):1-2 (**IF: 4, citations: 5**)

[4] Daversin-Catty C, *Vinje V*, Mardal KA, Rognes ME. The mechanisms behind perivascular fluid flow. Plos one. 2020 Dec 29;15(12):e0244442. (**IF: 3, citations: 1**)

[5] *Holter KE*, *Kuchta M*, Mardal KA. Robust preconditioning for coupled Stokes–Darcy problems with the Darcy problem in primal form. Computers & Mathematics with Applications. 2020 Sep 17 (**IF: 3**)

[6] *Lindstrøm EK*, Ringstad G, **Mardal KA**, Eide PK. Cerebrospinal fluid volumetric net flow rate and direction in idiopathic NPH. NeuroImage: Clinical. 2018; (**IF: 5.4, citations: 22**)

[7] Lee JJ, **Mardal KA**, Winther R. Parameter-robust discretization and preconditioning of Biot's consolidation model. SIAM J. on Scientific Computing. 2017. (**IF: 2, citations: 77**)

[8] Lee JJ, Piersanti E, Mardal KA, Rognes ME. A mixed finite element method for nearly incompressible multiple-network poroelasticity. SIAM Journal on Scientific Computing. 2019;41(2):A722-47 (**IF: 2, citations 28**)

[9] *Funke SW*, *Nordaas M*, *Evju Ø*, *Alnæs MS*, **Mardal KA**. Variational data assimilation for transient blood flow simulations: Cerebral aneurysms as an illustrative example. International journal for numerical methods in biomedical engineering. 2019;35(1):e3152 (**IF: 2.4, citations: 16**).

[10] **Mardal KA**, Winther R. Preconditioning discretizations of systems of partial differential equations. Numerical Linear Algebra with Applications. 2011 Jan;18(1):1-40. (**IF: 1.3, citations: 204**)