Name: Marie E. Rognes
Born: October 7 1982
Nationality: Norwegian
Gender: Female
Present position: Chief Research Scientist, Simula Research Laboratory, Norway

Education

2009	PhD in Applied Mathematics/Numerical Analysis (Date of conferred degree: 17.09.2009), Centre for Mathematics for Applications (Centre of Excellence), University of Oslo (UiO), Norway. Thesis title: *Mixed finite element methods for viscoelasticity and gels*
2005	MSc in Applied Mathematics, Department of Mathematics, UiO

Current and previous professional positions

2016–	Chief Research Scientist, Simula Research Laboratory, Oslo, Norway
2020–2022	Professor II, Department of Mathematics, University of Bergen, Norway (20%)
2014–2017	Consultant, Melior Innovations, Houston, TX, USA (part-time)
2012–2016	Head of Biomedical Computing Department, Simula Research Laboratory
2015–2016	Associate Professor II, Department of Mathematics, UiO (20%)
2012–2016	Senior Research Scientist, Simula Research Laboratory, Norway
2012–2013	Lecturer, Department of Informatics, UiO (part-time)
2009–2012	Postdoctoral fellow, Center for Biomedical Computing, Simula Research Laboratory
Jan–Jun 2007	Visiting scholar, University of Minnesota Twin Cities, Minneapolis, MN, USA
2005–2008	Research fellow, Centre for Mathematics for Applications, UiO

Awards, prizes, and academy memberships

- ◇ 2022 Fulbright Scholarship Award, U.S.-Norway Fulbright Foundation for Educational Exchange.
- ◇ 2018 Royal Norwegian Society of Sciences and Letters Prize for Young Researchers within the Natural Sciences. This prize is awarded once annually to researchers in Norway below the age of 40 who have accomplished exceptional results within their field, with documented originality and talent.
- ◇ 2015 Wilkinson Prize for Numerical Software. The Wilkinson prize for Numerical Software is the most prestigious prize in the numerical software research community, awarded once every four years to the authors of an outstanding piece of numerical software. I won the 2015 prize for the dolfin-adjoint project (dolfin-adjoint.org), together with my co-authors P. E. Farrell, S. W. Funke and D. A. Ham.
- ◇ Founding Member of the Young Academy of Norway (2015–2019). The Young Academy of Norway was initiated by the Norwegian Academy of Science and Letters and targets talented, young researchers interested in working interdisciplinarily with broader issues. Only 20 members were selected from all scientific disciplines out of 160 applicants in this first cycle.
- ◇ 2015 Simula Research Award. This award is presented annually to honour excellent contributions to research undertaken at Simula that lead to new insight within the field.

Research, innovation and mobility grants

2022–2026	UiO Life Science Convergence Environment: *AUTORHYTHM: an interdisciplinary research environment to elucidate the role of autophagy in healthy aging* (16 MNOK) (co-PI)
2021–2025	FRIPRO Research Grant, Research Council of Norway (Researcher project for scientific renewal): *Exciting times: Extreme modelling of excitable tissue* (12 MNOK) (Project leader)
2017–2023	ERC Starting Grant (PE1 Mathematics), European Research Council: *Mathematical and computational foundations for modelling cerebral fluid flow* (1.5 MEUR) (Project leader)
2016–2023	EPSRC CDT Oxford-Simula InFoMM Collaboration ($\sim$1 MNOK) (co-PI)
2016–2019	FRIPRO Research Grant, Research Council of Norway (Young Research Talent): *The Numerical Waterscape of the Brain* (8.7 MNOK) (Project leader)
2015–2018	Nordforsk Research Grant (the Nordic Council of Ministers): *Automated uncertainty quantification for numerical solution of partial differential equations* (6.7 MNOK) (Project leader)
2015–2016	Horizon 2020 MSCA RISE Research and Mobility Grant: *Unique Biomaterial-Drug Solution for Multifunctional Central Venous Catheters* (1.8 MNOK total) (Work package leader)

2014–2018	Horizon 2020 MSCA ITN Grant: *TheLink* (34 MNOK total) (Associated partner)
2012–2018	RCN Centre of Excellence Center for Biomedical Computing: Robust Solvers and High-level adjoints: software and applications ($\sim$0.5 MEUR/year, Work package leader/PI)
2007	Leiv Eiriksson Programme Mobility Grant, Research Council of Norway (60 KNOK) (Project leader)

Career breaks

May–Dec 2018	Maternity leave
Jun–Dec 2013	Maternity leave

Lectures, short courses and other teaching activities

2021	Lecture series on Brain modelling: from magnetic resonance imaging to finite element simulation, Porous Media Math Short Course Series, University of Bergen (online)
2015, 2016	Lecturer, 3-day course on FEniCS and Dolfin-adjoint, EPSRC CDT NGCM Summer Academy, University of Southampton, UK (top-rated course of the Academy)
2015	Lecturer, UCSD/UiO/Simula 2015 Summer School in Computational Physiology
2015–2016	Lecturer, Solid mechanics (MEK2500, 10 ECTS), Department of Mathematics, UiO
2012–2013	Lecturer, Numerical methods (INF-MAT2351, 10 ECTS), Department of Informatics, UiO
2008–2013	Lecturer and demonstrator, FEniCS short courses, including at the American Institute of Mathematics, California, USA; Imperial College London, UK; King Abdullah University of Science and Technology, Saudi Arabia; and University of Southampton.
2001–2003	Assistant teacher in different courses in mathematics and computer science (introduction to programming, programming with high-level languages, numerical linear algebra) at the Faculty for Mathematics and Natural Sciences, University of Oslo.

Organization of scientific meetings (selection since 2013, upcoming events marked by $*$)

2022$*$	ECCOMAS Congress 2022, 8th European Congress on Computational Methods in Applied Sciences and Engineering, Oslo, Norway (Young Investigators Initiative Chair)
2022$*$	Minisymposium at ECCOMAS 2022 (Advances in automatic code-generation software for for simulations in science and engineering), Oslo, Norway
2020	2nd Oslo Brainphatics Seminar, Simula, Norway
2019	Minisymposium at ENUMATH 2019 (Discretizations of mixed-dimensional PDEs), Egmond aan Zee, the Netherlands
2019	2019 SIAM Conference on Computational Science and Engineering, Spokane, US (Scientific committee)
2018	PDESOFT 2018, Bergen, Norway
2018	Minisymposium at ECCM-ECFD 2018 (Mathematical and computational modelling of fluid flow and transport in the brain and spinal cord), Glasgow, UK
2016	FEniCS'16, Simula Research Laboratory, Norway
2015	Minisymposium at 2015 SIAM Conference on Computational Science and Engineering (Efficient Solvers for PDE-Constrained Optimization mini-symposium) Salt Lake City, UT, USA
2013	26th Nordic Seminar on Computational Mechanics, Simula Research Laboratory, Norway

Scientific software projects (selection)

2007–	Core developer and, since its establishment in 2016, member of the FEniCS Steering Council
2011–	Founding member and core developer of the Dolfin-adjoint project

Editorial board memberships

2022–	Associate editor, ESAIM: Mathematical Modelling and Numerical Analysis (ESAIM: M2AN)
2020–	Associate editor, SIAM Journal of Scientific Computing (SISC)
2020–	Topic editor, Journal of Open Source Software (JOSS)
2020–	Editorial board member, Springer Nature Partial Differential Equations and Applications
2020–	Editorial board member, BMC Fluids and Barriers of the Central Nervous System

Reviewer for international journals

I have acted as a reviewer for the following scientific journals

Mathematics of Computation, Journal of Numerical Mathematics, Annals of Biomedical Engineering, Numerical Methods in Biomedical Engineering, Fluids and Barriers of the Central Nervous System, Journal of Fluid Mechanics, SIAM Journal on Scientific Computing, ACM Transactions on Mathematical Software, Mathematical Models and Methods in Applied Sciences, BIT Numerical Mathematics, Journal of Computational Physics and Geoscientific Model Development.

Evaluation committee

- ◇ Member of **PhD thesis evaluation committees** at the MOX, Politechnico di Milano (2018, 2020); Department of Mathematics and Computer Science, University of Southern Denmark, Odense (2018); Department of Computer Science, Imperial College London (2014); Department of Informatics, University of Grenoble, France (2013); and the Department of Informatics, University of Bergen, Norway (2012);
- ◇ Member of **faculty evaluation committees** at the Department of Mathematics, University of Uppsala (2020), the Department of Mathematics/Informatics, Oslo and Akershus University College (2014), and the Department of Informatics, UiO (2001);

Supervision of postdoctoral fellows and graduate students

Postdoctoral fellows

VI) Dr. Marte Julie Sætra studies *modelling and simulation of electrodiffusion and interstitial fluid flow* as a Postdoctoral Fellow with me at Simula (2021–2024);

V) Dr. Ingeborg Gjerde studies *predictive modelling of perivascular flows* as a Postdoctoral Fellow in the Waterscales (ERC) project at Simula (2020–2022);

IV) Dr. Cécile Daversin-Catty studies *mixed dimensional mathematical and computational modelling* as a Postdoctoral Fellow in the Waterscales (ERC) project (2017–2021). Daversin-Catty will continue her research as a Research Scientist at Simula;

III) Dr. Travis B. Thompson studied *mixed finite element methods for multiple-network poroelasticity* as a Postdoctoral Fellow in the Waterscape (RCN) project (2017–2019). Thompson is now a Postdoctoral Research Associate at the Department of Mathematics, University of Oxford;

II) Dr. Rocio Rodriguez-Cantano studied *uncertainty quantification in cardiac electromechanics* as a Postdoctoral Fellow in the AUQ-PDE (NordForsk) project (2016–2018);

I) Dr. Simon Funke studied *predictive modeling in physiological flow* as a postdoctoral fellow with me at Simula (2013–2015). Funke was subsequently awarded a FRIPRO Young Research Talent Grant, became a Senior Research Scientist and Research Director at Simula, and is now CEO of a deep technology start-up company.

PhD students

xiii) Ms. Eirill Strand Hague is currently pursuing her PhD on the topic of *cellular modelling of electrochemical interactions in neural tissue* under my supervision at Simula.

xii) Ms. Georgia Brennan is currently pursuing her DPhil on the topic of *Mathematical modelling of clearance-mediated proteopathy with application to Alzheimer's disease* under my co-supervision (with A. Goriely as main supervisor) at the University of Oxford.

xi) Mr. Marius Causemann is currently pursuing his PhD on the topic of *Mathematical and numerical foundations for modelling deforming excitable tissue* under my supervision at Simula.

x) Mr. Martin Hornkjøl is currently pursuing his PhD under my co-supervision (with K. A. Mardal as main supervisor) at the University of Oslo.

ix) Ms. Eleonora Piersanti is currently pursuing her PhD on the topic of *Modelling of brain mechanics via multiple-network poroelasticity* under my supervision at Simula .

viii) Mr. Nicolas Boullé is currently pursuing his DPhil under my co-supervision (with P. E. Farrell as main supervisor) at the University of Oxford.

vii) Dr. Ada J. Ellingsrud completed her PhD on *Computational modelling of electrodiffusion and osmosis in cerebral tissue* under my supervision at Simula in 2021. Ellingsrud is now a Research Scientist at Simula, Coordinator for the Simula@BI Research Centre, and Head of Simula's Scientific Computing and Numerical Analysis Department.

vi) Dr. Lars M. Valnes completed his PhD on *Patient-specific Modeling of the Human Brain using Magnetic Resonance Imaging* under my co-supervision (with K.-A. Mardal as main supervisor) at the University of Oslo in 2020. Valnes is now a Research Engineer at Oslo University Hospital – Rikshospitalet, Norway.

v) Dr. Vegard Vinje completed his PhD on *Mathematical Modeling of Cerebrospinal Fluid Pulsatility and Pathways* under my supervision at Simula in 2019. Vinje is now a Research Scientist and Research Director for Scientific Computing at Simula.

iv) Dr. Matteo Croci completed his DPhil (PhD) in Mathematics on *Multilevel Monte Carlo Methods for Uncertainty Quantification in Brain Simulations* under my co-supervision (with P. E. Farrell and M. Giles as main supervisors) at the University of Oxford in 2019. Croci is now a Postdoctoral Research Fellow at the Oden Institute, University of Texas at Austin, US.

iii) Dr. Gabriel Balaban completed his PhD on *Adjoint Data Assimilation Methods for Cardiac Mechanics* under my supervision at Simula in 2017. He subsequently won a Postdoctoral Research Associate position at King's College London, UK, before continuing his research as a Postdoctoral Fellow in Bioinformatics at the University of Oslo.

ii) Dr. Giulia Pizzichelli completed part of her PhD studies with me (and with E. Sinibaldi as main supervisor) at Simula in 2015 and graduated from the School of Advanced Studies, Pisa/Istituto Italiano di Tecnologia, Italy in 2016.

i) Dr. Andre Massing completed his PhD on *Analysis and Implementation of Finite Element Methods on Overlapping and Fictitious Domains* under my co-supervision (with A. Logg as main supervisor) at Simula in 2012. He was subsequently offered an Assistant Professorship at Umeå University, Sweden, and is now an Associate Professor at the Norwegian University of Technology and Science, Trondheim, Norway.

MSc students

I have supervised or actively co-supervised the following MSc students in their thesis research at the Departments of Informatics and/or Mathematics at the UiO, at the Norwegian University of Technology and Science, Trondheim, Norway, at the University of Trento, Italy, and at Karlsruhe Institute of Technology, Germany:

Åsmund Aamodt Resell (current), Nanna Berre (current), Marius Causemann (2020), Emilie Ødegaard (2018), Valentyna Pysarieva (2018), Carlo Cisale (2017), Janis Grobovs (2017), Vegard Vinje (2016), Ada J. Ellingsrud (2015), Ingeborg Sauge Torpe (2014), Nina Ødegaard (2014), Eline Sundt (2012), Fredrik Valdmanis (2012),

Preprints

44. N. Boullé, P. E. Farrell, M. E. Rognes. Optimal control of Hopf bifurcations. https://arxiv.org/abs/2201.11684, 2022.
43. Q. Hong, J. O. Kraus, M. I. Kuchta, M. A. Lymbery, K.-A. Mardal, M. E. Rognes. Robust approximation of generalized Biot-Brinkman problems. https://arxiv.org/abs/2112.13618, 2021.
42. E. Eliseussen, M. E. Rognes, T. B. Thompson. A-posteriori error estimation and adaptivity for multiple-network poroelasticity, https://arxiv.org/abs/2111.13456, 2021.
41. C. Daversin-Catty, I. G. Gjerde, and M. E. Rognes. Geometrically reduced modelling of pulsatile flow in perivascular networks, https://arxiv.org/abs/2111.12451, 2021.
40. A. J. Ellingsrud, D. B. Dukefoss, R. Enger, G. Halnes, K. Pettersen and M. E. Rognes. Validating a computational framework for ionic electrodiffusion with cortical spreading depression as a case study, https://doi.org/10.1101/2021.11.29.470301, 2021.

Articles in peer-reviewed international journals

39. X. Lai, H. A. Taskén, T. Mo, S. W. Funke, A. Frigessi, M. E. Rognes and A. Köhn-Luque. A scalable solver for a stochastic, hybrid cellular automaton model of personalized breast cancer therapy. International Journal on Numerical Methods for Biomedical Engineering e3542, 2021
38. A. J. Ellingsrud, N. Boullé, P. E. Farrell and M. E. Rognes. Accurate numerical simulation of electrodiffusion and water movement in brain tissue. IMA Mathematical Medicine & Biology, 2021
37. C. Daversin-Catty, C. N. Richardson, A. J. Ellingsrud and M. E. Rognes. Abstractions and automated algorithms for mixed-dimensional finite element methods. ACM Transactions on Mathematical Software, 2021
36. V. Vinje, E. N. Bakker and M. E. Rognes. Brain solute transport is more rapid in periarterial than perivenous spaces. Nature Scientific Reports, 2021

35. E. Piersanti, J. J. Lee, K.-A. Mardal, M. E. Rognes and T. Thompson. Parameter robust preconditioning by congruence for multiple-network poroelasticity. SIAM Journal on Scientific Computing, 2021
34. K.-A. Mardal, M. E. Rognes and T. B. Thompson. Accurate discretization of poroelasticity without Darcy stability – Stokes-Biot revisited. BIT Numerical Mathematics, 2021.
33. C. Daversin-Catty, V. Vinje, K.-A. Mardal and M. E. Rognes. The mechanisms behind perivascular fluid flow. PLOS ONE, 2020.
32. V. Vinje, A. Eklund, K.-A. Mardal, M. E. Rognes and K.-H. Støverud. Intracranial pressure elevation alters CSF clearance pathways. Fluids and Barriers of the CNS, 2020.
31. M. Croci, V. Vinje and M. E. Rognes. Fast uncertainty quantification of tracer distribution in the brain interstitial fluid with multilevel and quasi Monte Carlo. International Journal for Numerical Methods in Biomedical Engineering, 2020.
30. A. J. Ellingsrud, A. Solbraa, G. T. Einevoll, G. Halnes and M. E. Rognes. Finite element simulation of ionic electrodiffusion in cellular geometries. Frontiers in Neuroinformatics, 2020
29. M. Croci, V. Vinje and M. E. Rognes. Uncertainty quantification of parenchymal tracer distribution using random diffusion and convective velocity fields. Fluids and Barriers of the CNS, 2019
28. X. Lai, O. Geier, T. Fleischer, Ø. Garred, E. F. Borgen, S. Funke, S. Kumar, M. E. Rognes, T. Seierstad, A.-L. Børresen-Dale, V. N. Kristensen, O. Engebraaten, A. Kohn-Luque and A. Frigessi. Towards personalized computer simulation of breast cancer treatment: a multi-scale pharmacokinetic and pharmacodynamic model informed by multi-type patient data. Cancer Research, 2019
27. V. Vinje, G. Ringstad, E. K. Lindstrom, L. M. Valnes, M. E. Rognes, P. K. Eide and K.-A. Mardal. Respiratory influence on cerebrospinal fluid flow – a computational study based on long-term intracranial pressure measurements. Nature Scientific Reports, 2019
26. P. E. Farrell, J. E. Hake, S. W. Funke and M. E. Rognes. Automated adjoints of coupled PDE-ODE systems. SIAM Journal on Scientific Computing, 2019.
25. J. J. Lee, E. Piersanti, K.-A. Mardal and M. E. Rognes. A mixed finite element method for nearly incompressible multiple-network poroelasticity. SIAM Journal on Scientific Computing, 2019.
24. R. Rodriguez-Cantano, J. Sundnes and M. E. Rognes. Uncertainty in cardiac myofiber orientation and stiffnesses dominate the variability of left ventricle deformation response. International Journal for Numerical Methods in Biomedical Engineering, 2019.
23. M. Croci, M. B. Giles, M. E. Rognes and P. E. Farrell. Efficient white noise sampling and coupling for multilevel Monte Carlo with non-nested meshes. SIAM Journal on Uncertainty Quantification, 2018
22. V. Vinje, J. Bruckner, M. E. Rognes, K.-A. Mardal and V. Haughton. Fluid dynamics in syringomyelia cavities: Effects of heart rate, CSF velocity, CSF velocity waveform and craniovertebral decompression. The Neuroradiology Journal, 2018
21. G. Balaban, H. Finsberg, S. Funke, T. F. Håland, E. Hopp, J. Sundnes, S. Wall and M. E. Rognes. Data assimillation allows for in-silico identification of cardiac elastic heterogeneity in an infarcted human. Biomechanics and Modeling in Mechanobiology, 2018
20. G. Pizzichelli, B. Kehlet, Ø. Evju, B. Martin, M. E. Rognes, K.-A. Mardal and E. Sinibaldi. Numerical study of intrathecal drug delivery to a permeable spinal cord: effect of catheter position and angle. Computer Methods in Biomechanics and Biomedical Engineering, 2017
19. A. Tveito, K. H. Jæger, M. Kuchta, K.-A. Mardal and M. E. Rognes. A cell-based framework for numerical modelling of electrical conduction in cardiac tissue. Frontiers in Physics, Computational Physics, 2017
18. S. Kallhovd, M. M. Maleckar and M. E. Rognes. Inverse estimation of cardiac activation times via gradient-based optimisation. International Journal for Numerical Methods in Biomed. Engineering, 2017
17. M. E. Rognes, P. E. Farrell, S. W. Funke, J. E. Hake and M. M. C. Maleckar. cbcbeat: an adjoint-enabled framework for computational cardiac electro-physiology. Journal of Open Source Software, 2017
16. G. Balaban, H. Finsberg, H. H. Odland, M. E. Rognes, S. Ross, J. Sundnes and S. Wall. High resolution data assimilation of cardiac mechanics applied to a dyssynchronous ventricle. International Journal for Numerical Methods in Biomedical Engineering, 2017
15. G. Balaban, M. S. Alnæs, J. Sundnes and M. E. Rognes. Adjoint multi-start based estimation of cardiac hyperelastic material parameters using shear data. Biomechanics and Modeling in Mechanobiology, 2016
14. M. Alnæs, J. Blechta, J. Hake, A. Johansson, B. Kehlet, A. Logg, C. Richardson, J. Ring, M. E. Rognes and G. N. Wells. The FEniCS Project Version 1.5. Archive of Numerical Software, 2015

13. A. Massing, M. G. Larson, A. Logg and M. E. Rognes. A Nitsche-based cut finite element method for a fluid-structure interaction problem. Communications in Applied Mathematics and Comput. Science, 2015
12. A. Massing, M. G. Larson, A. Logg and M. E. Rognes. A stabilized Nitsche overlapping mesh method for the Stokes problem. Numerische Mathematik, 2014
11. A. Massing, M. G. Larson, A. Logg and M. E. Rognes. A stabilized Nitsche fictitious domain method for the Stokes problem. Journal of Scientific Computing, 2014
10. M. S. Alnæs, A. Logg, K. B. Ølgaard, M. E. Rognes and G. N. Wells. Unified Form Language: A domain-specific language for weak formulations of partial differential equations. ACM Transactions on Mathematical Software, 2014
9. M. E. Rognes, D. A. Ham, C. J. Cotter and A. T. T. McRae. Automating the solution of PDEs on the sphere and other manifolds in FEniCS 1.2. Geoscientific Model Development, 2013
8. P. E. Farrell, D. A. Ham, S. W. Funke and M. E. Rognes. Automated derivation of the adjoint of high-level transient finite element programs. SIAM Journal on Scientific Computing, 2013.
7. M. E. Rognes and A. Logg. Automated goal-oriented error control I: stationary variational problems. SIAM Journal on Scientific Computing, 2013
6. L. Vynnytska, M. E. Rognes and S. R. Clark. Benchmarking FEniCS for mantle convection simulations. Computers & Geosciences, 2013.
5. A. Tveito, G. T. Lines, M. E. Rognes and M. M. Maleckar. An analysis of the shock strength needed to achieve defibrillation in a simplified mathematical model of cardiac tissue. International Journal of Numerical Analysis and Modeling, 2012.
4. M. E. Rognes and R. Winther. Mixed finite element methods for linear viscoelasticity with weak symmetry. Mathematical Models and Methods in Applied Science, 2010.
3. M. E. Rognes, M. C. Calderer and C. A. Micek. Modelling of and mixed finite element methods for gels in biomedical applications. SIAM Journal of Applied Mathematics, 2009.
2. M. E. Rognes, R. C. Kirby and A. Logg. Efficient assembly of H(div) and H(curl) conforming finite elements. SIAM Journal on Scientific Computing, 2009.
1. D. N. Arnold and M. E. Rognes. Stability of Lagrange elements for the mixed Laplacian. Calcolo, 2009.

Peer-reviewed books and edited volumes

2. K.-A. Mardal, M. E. Rognes, T. B. Thompson and L. M. Valnes. Mathematical modeling of the human brain: from magnetic resonance images to finite element simulation, Simula SpringerBriefs on Computing (2022)
1. K.-A. Mardal, M. E. Rognes and A. Tveito. Modeling excitable tissue: the EMI framework, Simula SpringerBriefs on Computing (2021)

Peer-reviewed chapters in books (selection)

4. G. Halnes, K. H. Pettersen, L. Øyehaug, M. E. Rognes and G. T. Einevoll. Astrocytic ion dynamics: implications for potassium buffering and liquid flow. In Computational Glioscience, Springer Series in Computational Neuroscience, 2019.
3. M. E. Rognes. Automated Testing of Saddle Point Stability Conditions. In Automated solution of differential equations by the finite element method, Springer-Verlag, 2012.
2. A. Logg, K. B. Ølgaard, M. E. Rognes and G. N. Wells. FFC: the FEniCS Form Compiler. In Automated solution of differential equations by the finite element method, Springer-Verlag, 2012.
1. L. Vynnytska, S. R. Clark and M. E. Rognes. Dynamic Simulations of Convection in the Earth's Mantle. In Automated solution of differential equations by the finite element method, Springer-Verlag, 2012.

Scientific presentations (selection since 2016, upcoming events marked by $*$)

I have given more than 70 scientific presentations (keynotes, plenary lectures, invited talks) since 2007 including

2022* Invited lecture, 30 years of Acta Numerica, Bedlewo, Poland
2022* Invited semi-plenary lecture, ECCOMAS, Oslo, Norway
2022* Invited seminar, University of Stuttgart, Stuttgart, Germany
2022* Invited seminar, Laboratoire de Mécanique des Solides, Ecole Polytechnique, Paris, France
2021 Invited lecture, *Modelling intracranial pressure, fluid flow and solute transport in surface perivascular space*, BrainH20 Symposium, Copenhagen, Denmark

2021 Invited lecture, *Understanding the mechanisms of the brain's waterscape*, 2021 InterPore Conference
2021 Invited talk, *Depressed brain cells - a numerical perspective*, 6th Oxford International Neuron and Brain Mechanics Workshop
2021 Invited seminar, *Numerical foundations of the brain's waterscape*, Laboratoire Jacques-Louis Lions, Sorbonne University, Paris, France
2021 Plenary keynote, *Computational brainphatics*, 2021 SIAM Conference on Computational Science and Engineering
2020 Invited lecture, Springer Partial Differential Equations and Applications webinar
2020 Invited seminar, Oxford Center for Industrial and Applied Mathematics, Oxford, UK
2019 Invited talk, *UQ of parenchymal tracer distribution using random diffusion and convective velocity fields*, 5th biennial CSF Dynamics Symposium, Oslo, Norway
2019 Invited talk, *Nearly incompressible generalized poroelasticity - discretization and preconditioning*, International workshop in connection with Ragnar Winther's 70th birthday, Oslo, Norway
2018 Invited talk, 2nd Workshop on computational aspects of perfusion and flow in live tissue, Bergen
2017 Invited seminar, *The numerical waterscape of the brain*, Universite libre du Bruxelles, Belgium
2017 Invited talk, Biomechanics of living systems, from cells to organisms workshop, Oslo, Norway
2017 Plenary lecture, *Compatible discretizations in our hearts and minds*, European Conference on Numerical Mathematics and Advanced Applications, Voss, Norway
2017 Invited talk, *Accurate numerical modelling of small collections of cardiac cells*, FEniCS'17, Luxembourg
2017 Plenary lecture, *Impact of high abstraction/high performance finite element software in biomedical computing, 24th International Conference on Domain Decomposition Methods*, Svalbard, Norway
2017 Keynote lecture, *The PDEs of our hearts and minds*, Women in PDEs, Karlsruhe, Germany
2016 Plenary lecture, *High-level abstractions, algorithms and applications in forward and inverse finite element solution of PDEs*, Nordic Seminar on Computational Mechanics, Chalmers, Sweden
2016 Invited seminar, *Developing simulation technology to solve biomedical problems: analysis, implementation and applications*, University of Uppsala, Sweden
2016 Invited talk, University of Southampton, UK
2016 Invited talk, *The FEniCS and Dolfin-adjoint projects*, Higher-order DG methods and finite element software for modern architectures workshop, University of Bath, UK

Outreach and popular science (selection since 2016, upcoming events marked by $*$)

2022* University of Bergen, Museum exhibit, Porous media flow
2018 *Hjernens vannveier*, Public lecture at the Norwegian Technical Academy of Science, Bergen, Norway
2018 *The research life*, invited talk for Young Scientist Contest Finalists, Research Council of Norway
2017 TEDx talk, Mathematics that cures us, TEDxOslo, Oslo, Norway
2017 Invited talk, *Making models of your brain's waterscape*, 2017 Cutting Edge Festival, Oslo
2016 Invited talk, *Time scales of mathematics: from basic research to societal application* RCN workshop on the importance of mathematics for value creation, Lysaker, Norway