

CV

Emil Knut Stenersen Espe
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NORWAY
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Married, 2 kids
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Education

- PhD** *University of Oslo, 2014*
Title of PhD thesis: *Measuring in vivo Regional Myocardial Function using High-Field MRI*
- Master's degree in physics** *University of Oslo, 2009*
Title of master thesis: *The effect of chronic hypoxia and low dose-rate beta-irradiation on the MCF-7 human cancer cell*

Misc.

- Supervision** 3 PhD students (ongoing)
2 research curriculum medical students
- Teaching experience**
- Developing and teaching courses in biophysics and statistics for medical students
 - Arranging and teaching in several seminars on MR physics and cardiac research at Oslo University Hospital
 - Teaching in several courses for NORHEART (Norwegian PhD school for Medical Imaging)
 - Guest lecturer in several courses at University of Oslo
 - Popular science communication, including to patient groups.
- Lecturer/invited speaker:** The Mayo Clinic (2019)
University of Illinois Chicago (2019)
University of Bergen (2016, 2017, 2018)
Oslo University Hospital (2010-)
University of Oslo (2008-)
- Grants:**
- Postdoc (personal), *Nasjonalforeningen for folkehelsen* 2017-2023
 - *Olav Raagholt og Gerd Meidel Raagholt's stiftelse for forskning* (personal) 2014
 - Travel and research grant (personal), *Norwegian research school in Medical Imaging* 2011
 - Bridging grant (personal), *Norwegian research school in Medical Imaging* 2010
 - Have written or co-written several funding applications that were granted (*K.G. Jebsen, South-Eastern Norway Regional Health Authority, Nasjonalforeningen for folkehelsen*).
- Awards:** Triple Gold Star Reviewer Award, *Journal of Cardiovascular Magnetic Resonance* (2021)
Gold Star Reviewer Award, *Journal of Cardiovascular Magnetic Resonance* (2018, 2019, 2020, 2021)
Poster prize winner, 16th Annual CHFR Symposium (2018)
Magna cum laude (top 15% abstracts), ISMRM annual meeting (2015)
- Reviewer** *Journal of Cardiovascular Magnetic Resonance*

experience: Journal of Magnetic Resonance Imaging
PLOS ONE
Magnetic Resonance in Medicine

Conference abstracts accepted for oral presentations: *Society of Cardiovascular Magnetic Resonance* ann.meeting in Orlando, 2020
ISMRM ann.meeting in Montréal, Canada, 2019
National PhD Conference in Medical Imaging (Norwegian research school in Medical Imaging) 2011, 2012, 2013

Research administration and organizational activities:

- Leader of *K.G. Jebsen Akademi for yngre forskere* (2021-)
- Arranged and chaired session at *Society of Cardiovascular Magnetic Resonance* annual meeting in Orlando 2020
- Committee member, “*Young researchers in translational medicine*”, Stiftelsen Kristian Gerhard Jebsens 2019-2020
- Leader, focus area “*Diastolic function in cardiac disease*”, Oslo University Hospital 2018
- Member, *Animal Welfare Committee* (Oslo University Hospital) 2018->
- Administrative coordinator, *K.G. Jebsen Center for Cardiac Research* (University of Oslo) 2017->
- Arranged several research seminars and workshops in imaging and cardiac research, Oslo University Hospital (2015->)
- Safety representative, Institute for Experimental Medical Research, 2016-2017
- Program committee, National PhD Conference in Medical Imaging (Norwegian research school in Medical Imaging) 2015
- Administrative coordinator, *Center for Cardiac Research* (Oslo University Hospital) 2014-2016

Employment history

Postdoc/researcher (<i>Institute for Experimental Medical Research, University of Oslo/Oslo University Hospital</i>)	2014–
Associate Professor (<i>Oslo New University College, Oslo</i>)	2017–
Coordinator (<i>KG Jebsen Center for Cardiac Research, Oslo University Hospital</i>)	2017–
Coordinator (<i>Center for Cardiac Research, Oslo University Hospital</i>)	2014–2016
Senior engineer/PhD student (<i>Institute for Experimental Medical Research, University of Oslo/Oslo University Hospital</i>)	2010–2014
Scientific assistant (<i>Institute for Experimental Medical Research, University of Oslo/Oslo University Hospital</i>)	2009–2010
Lecturer (popular science) (<i>Department of Physics, University of Oslo</i>)	2008
Lab technician (<i>Department of Physics, University of Oslo</i>)	2008

Courses

Research Management and Supervision (<i>University of Oslo, Oslo</i>)	2021
Career and Leadership Course (<i>University of Oslo, Oslo</i>)	2016
Course for safety representatives (<i>University of Oslo, Oslo</i>)	2016
Nature Masterclass on Scientific Writing (<i>Norwegian PhD School of Heart Research</i>)	2016
Course in Laboratory Animal Science: FELSA category C (<i>Norwegian School of Veterinary Science, Oslo</i>)	2010

Publications (as of August 2022)

- 1: Smith L, Skulberg V, Zhang L, Sjaastad I, **Espe** E. The effects of geometry on stiffness measurements in high-field magnetic resonance elastography: A study on rodent cardiac phantoms. *J Mech Behav Biomed Mater*. 2022 Sep;133:105302. doi: 10.1016/j.jmbbm.2022.105302. Epub 2022 Jun 2. PMID: 35688038.
- 2: Shen X, van den Brink J, Bergan-Dahl A, Kolstad TR, Norden ES, Hou Y, Laasmaa M, Aguilar-Sanchez Y, Quick AP, **Espe** EKS, Sjaastad I, Wehrens XHT, Edwards AG, Soeller C, Louch WE. Prolonged β -adrenergic stimulation disperses ryanodine receptor clusters in cardiomyocytes. *Elife*. 2022 Aug 1;11:e77725. doi: 10.7554/eLife.77725. Epub ahead of print. PMID: 35913125.
- 3: Udjus C, Sjaastad I, Hjørnholm U, Tunestveit TK, Hoffmann P, Hinojosa A, **Espe** EKS, Christensen G, Skjønberg OH, Larsen KO, Rostrup M. Extreme altitude induces divergent mass reduction of right and left ventricle in mountain climbers. *Physiol Rep*. 2022 Feb;10(3):e15184. doi: 10.14814/phy2.15184. PMID: 35146955; PMCID: PMC8831961.
- 4: Harbo MB, Stokke MK, Sjaastad I, **Espe** EKS. One step closer to myocardial physiology: From PV loop analysis to state-of-the-art myocardial imaging. *Acta Physiol (Oxf)*. 2022 Feb;234(2):e13759. doi: 10.1111/apha.13759. Epub 2022 Jan 16. PMID: 34978759.
- 5: Tønnessen TC, Melleby AO, Hauge-Iversen IM, **Espe** EKS, Ahmed MS, Ueland T, Haavardsholm EA, Atkinson SM, Melum E, Attramadal H, Sjaastad I, Vinge LE. Impact of delayed type hypersensitivity arthritis on development of heart failure by aortic constriction in mice. *PLoS One*. 2022 Jan 25;17(1):e0262821. doi: 10.1371/journal.pone.0262821. PMID: 35077491; PMCID: PMC8789180.
- 6: Nordén ES, Bendiksen BA, Andresen H, Bergo KK, **Espe** EK, Hasic A, Hauge-Iversen IM, Veras I, Hussain RI, Sjaastad I, Christensen G, Cataliotti A. Sacubitril/valsartan ameliorates cardiac hypertrophy and preserves diastolic function in cardiac pressure overload. *ESC Heart Fail*. 2021 Apr;8(2):918-927. doi: 10.1002/ehf2.13177. Epub 2021 Jan 26. PMID: 33497525; PMCID: PMC8006657.
- 7: Bendiksen BA, McGinley G, Sjaastad I, Zhang L, **Espe** EKS. A 4D continuous representation of myocardial velocity fields from tissue phase mapping magnetic resonance imaging. *PLoS One*. 2021 Mar 1;16(3):e0247826. doi: 10.1371/journal.pone.0247826. PMID: 33647070; PMCID: PMC7920379.
- 8: Frisk M, Le C, Shen X, Røe ÅT, Hou Y, Manfra O, Silva GJJ, van Hout I, Norden ES, Aronsen JM, Laasmaa M, **Espe** EKS, Zouein FA, Lambert RR, Dahl CP, Sjaastad I, Lunde IG, Coffey S, Cataliotti A, Gullestad L, Tønnessen T, Jones PP, Altara R, Louch WE. Etiology-Dependent Impairment of Diastolic Cardiomyocyte Calcium Homeostasis in Heart Failure With Preserved Ejection Fraction. *J Am Coll Cardiol*. 2021 Feb 2;77(4):405-419. doi: 10.1016/j.jacc.2020.11.044. PMID: 33509397; PMCID: PMC7840890.
- 9: **Espe** EKS, Bendiksen BA, Zhang L, Sjaastad I. Analysis of right ventricular

mass from magnetic resonance imaging data: a simple post-processing algorithm for correction of partial-volume effects. *Am J Physiol Heart Circ Physiol*. 2021 Feb 1;320(2):H912-H922. doi: 10.1152/ajpheart.00494.2020. Epub 2020 Dec 18. PMID: 33337965.

10: Harbo MB, Nordén ES, Narula J, Sjaastad I, **Espe** EKS. Quantifying left ventricular function in heart failure: What makes a clinically valuable parameter? *Prog Cardiovasc Dis*. 2020 Sep-Oct;63(5):552-560. doi: 10.1016/j.pcad.2020.05.007. Epub 2020 Jun 2. PMID: 32502560.

11: Longobardi S, Lewalle A, Coveney S, Sjaastad I, **Espe** EKS, Louch WE, Musante CJ, Sher A, Niederer SA. Predicting left ventricular contractile function via Gaussian process emulation in aortic-banded rats. *Philos Trans A Math Phys Eng Sci*. 2020 Jun 12;378(2173):20190334. doi: 10.1098/rsta.2019.0334. Epub 2020 May 25. PMID: 32448071; PMCID: PMC7287330.

12: Blom KB, Bergo KK, **Espe** EKS, Rosseland V, Grøtta OJ, Mjøen G, Åsberg A, Bergan S, Sanner H, Bergersen TK, Bjørnerheim R, Skauby M, Seljeflot I, Waldum-Grevbo B, Dahle DO, Sjaastad I, Birkeland JA. Cardiovascular rEmodelling in living kidney donorS with reduced glomerular filtration rate: rationale and design of the CENS study. *Blood Press*. 2020 Apr;29(2):123-134. doi: 10.1080/08037051.2019.1684817. Epub 2019 Nov 13. PMID: 31718316.

13: **Espe** EKS, Aronsen JM, Nordén ES, Zhang L, Sjaastad I. Regional right ventricular function in rats: a novel magnetic resonance imaging method for measurement of right ventricular strain. *Am J Physiol Heart Circ Physiol*. 2020 Jan 1;318(1):H143-H153. doi: 10.1152/ajpheart.00357.2019. Epub 2019 Nov 27. PMID: 31774693.

14: McGinley G, Bendiksen BA, Zhang L, Aronsen JM, Nordén ES, Sjaastad I, **Espe** EKS. Accelerated magnetic resonance imaging tissue phase mapping of the rat myocardium using compressed sensing with iterative soft-thresholding. *PLoS One*. 2019 Jul 5;14(7):e0218874. doi: 10.1371/journal.pone.0218874. PMID: 31276508; PMCID: PMC6611593.

15: Udjus C, Cero FT, Halvorsen B, Behmen D, Carlson CR, Bendiksen BA, **Espe** EKS, Sjaastad I, Løberg EM, Yndestad A, Aukrust P, Christensen G, Skjønberg OH, Larsen KO. Caspase-1 induces smooth muscle cell growth in hypoxia-induced pulmonary hypertension. *Am J Physiol Lung Cell Mol Physiol*. 2019 Jun 1;316(6):L999-L1012. doi: 10.1152/ajplung.00322.2018. Epub 2019 Mar 25. PMID: 30908936.

16: Røe ÅT, Ruud M, **Espe** EK, Manfra O, Longobardi S, Aronsen JM, Nordén ES, Husebye T, Kolstad TRS, Cataliotti A, Christensen G, Sejersted OM, Niederer SA, Andersen GØ, Sjaastad I, Louch WE. Regional diastolic dysfunction in post-infarction heart failure: role of local mechanical load and SERCA expression. *Cardiovasc Res*. 2019 Mar 15;115(4):752-764. doi: 10.1093/cvr/cvy257. PMID: 30351410; PMCID: PMC6432054.

17: **Espe** EKS, Aronsen JM, Eriksen M, Sejersted OM, Zhang L, Sjaastad I. Regional Dysfunction After Myocardial Infarction in Rats. *Circ Cardiovasc Imaging*. 2017 Sep;10(9):e005997. doi: 10.1161/CIRCIMAGING.116.005997. PMID: 28838960.

18: **Espe** EKS, Skårdal K, Aronsen JM, Zhang L, Sjaastad I. A semiautomatic method for rapid segmentation of velocity-encoded myocardial magnetic resonance imaging data. *Magn Reson Med*. 2017 Sep;78(3):1199-1207. doi: 10.1002/mrm.26486. Epub 2016 Oct 3. PMID: 27699840.

19: Aronsen JM, **Espe** EKS, Skårdal K, Hasic A, Zhang L, Sjaastad I. Noninvasive stratification of postinfarction rats based on the degree of cardiac dysfunction using magnetic resonance imaging and echocardiography. *Am J Physiol Heart Circ Physiol*. 2017 May 1;312(5):H932-H942. doi: 10.1152/ajpheart.00668.2016. Epub 2017 Feb 10. PMID: 28188213.

20: Frisk M, Ruud M, **Espe** EK, Aronsen JM, Røe ÅT, Zhang L, Norseng PA, Sejersted OM, Christensen GA, Sjaastad I, Louch WE. Elevated ventricular wall stress disrupts cardiomyocyte t-tubule structure and calcium homeostasis. *Cardiovasc Res*. 2016 Oct;112(1):443-51. doi: 10.1093/cvr/cvw111. Epub 2016 May 25. PMID: 27226008; PMCID: PMC5031949.

21: Skårdal K, **Espe** EK, Zhang L, Aronsen JM, Sjaastad I. Three-Directional Evaluation of Mitral Flow in the Rat Heart by Phase-Contrast Cardiovascular Magnetic Resonance. *PLoS One*. 2016 Mar 1;11(3):e0150536. doi: 10.1371/journal.pone.0150536. PMID: 26930073; PMCID: PMC4773091.

22: **Espe** EK, Aronsen JM, Eriksen GS, Zhang L, Smiseth OA, Edvardsen T, Sjaastad I, Eriksen M. Assessment of regional myocardial work in rats. *Circ Cardiovasc Imaging*. 2015 Feb;8(2):e002695. doi: 10.1161/CIRCIMAGING.114.002695. PMID: 25673647.

23: Hillestad V, **Espe** EK, Cero F, Larsen KO, Sjaastad I, Nygård S, Skjønsberg OH, Christensen G. IL-18 neutralization during alveolar hypoxia improves left ventricular diastolic function in mice. *Acta Physiol (Oxf)*. 2015 Feb;213(2):492-504. doi: 10.1111/apha.12376. Epub 2014 Sep 24. PMID: 25182570.

24: **Espe** EK, Zhang L, Sjaastad I. Unwrapping eddy current compensation: improved compensation of eddy current induced baseline shifts in high-resolution phase-contrast MRI at 9.4 Tesla. *Magn Reson Med*. 2014 Oct;72(4):1096-102. doi: 10.1002/mrm.25023. Epub 2013 Nov 21. PMID: 24264935.

25: **Espe** EK, Aronsen JM, Skårdal K, Schneider JE, Zhang L, Sjaastad I. Novel insight into the detailed myocardial motion and deformation of the rodent heart using high-resolution phase contrast cardiovascular magnetic resonance. *J Cardiovasc Magn Reson*. 2013 Sep 14;15(1):82. doi: 10.1186/1532-429X-15-82. PMID: 24034168; PMCID: PMC3848852.

26: **Espe** EK, Aronsen JM, Skrbic B, Skulberg VM, Schneider JE, Sejersted OM, Zhang L, Sjaastad I. Improved MR phase-contrast velocimetry using a novel nine-point balanced motion-encoding scheme with increased robustness to eddy current effects. *Magn Reson Med*. 2013 Jan;69(1):48-61. doi: 10.1002/mrm.24226. Epub 2012 Mar 5. PMID: 22392844.

27: Land S, Niederer SA, Aronsen JM, **Espe** EK, Zhang L, Louch WE, Sjaastad I, Sejersted OM, Smith NP. An analysis of deformation-dependent electromechanical

coupling in the mouse heart. *J Physiol.* 2012 Sep 15;590(18):4553-69. doi:
10.1113/jphysiol.2012.231928. Epub 2012 May 21. PMID: 22615436; PMCID:
PMC3477757.