

Short presentation

Claus Desler obtained his PhD in 2009 with a focus on bioenergetics and nucleotide metabolism. He continued his career as Post Doc at Center for Healthy Aging at University of Copenhagen, becoming an Assistant Professor in 2012 and an Associate Professor in 2018. During this time, Claus conducted aging research under a grant from the Nordea Fonden. Since 2024 Claus Desler is leading his group at Department of Biomedical Sciences at University of Copenhagen with support from EU Horizon 2020. Furthermore, Claus is leading an EU research network consisting of 10 European partners focusing on COVID-19's long-term effects on kidney, heart, and lung health.

Applied aging research:

Aging is not a disease; however, it stands as the most significant risk factor for prevalent diseases in developed countries. Understanding the mechanisms of aging enhances the comprehensions of these diseases, aiding in identifying reliable biomarkers and therapeutic targets. We use approaches at the cellular level to identify and quantify senescence markers, to measure key metabolic factors, and to assess mitochondrial function and nucleotide metabolism to get a deep and thorough understanding of molecular aging.

Employment

Associate Professor

Endocrinology and Metabolism

København N., Denmark

1 Sep 2009 → nu

Guest Researcher

Department of Biomedical Sciences

Københavns N, Denmark

7 Aug 2023 → nu

Research outputs

***Rev1* deficiency induces a metabolic shift in MEFs that can be manipulated by the NAD⁺ precursor nicotinamide riboside**

Anugula, Sharath, Li, Zhiqian, Li, Yuan, Hendriksen, A., Christensen, P. B., Wang, L., Monk, J. M., de Wind, N., Bohr, Vilhelm, Desler, Claus, Naviaux, R. K. & Rasmussen, Lene Juel, 2023, In: *Heliyon*. 9, 6, e17392.

Involvement of Mitochondrial Dysfunction in *FOXG1* Syndrome

Bjerregaard, Victoria Alexandra, Levy, A. M., Batz, M. S., Salehi, R., Hildonen, M., Hammer, T. B., Møller, R. S., Desler, Claus & Tümer, Asuman Zeynep, 2023, In: *Genes*. 14, 2, 246.

Mitochondrial-linked de novo pyrimidine synthesis as a regulator of T cell responses

Peeters, M. J. W., Desler, Claus & Thor Straten, P., 2023, In: *Immunometabolism (United States)*. 5, 1, 5 p., E00019.

Nucleotide metabolism in the regulation of tumor microenvironment and immune cell function

Madsen, Helena Borland, Peeters, M. J., Straten, P. T. & Desler, Claus, 2023, In: *Current Opinion in Biotechnology*. 84, 5 p., 103008.

Partial inhibition of mitochondrial-linked pyrimidine synthesis increases tumorigenic potential and lysosome accumulation

Desler, Claus, Durhuus, J. A., Hansen, T. L. L., Anugula, Sharath, Zelander, N. T., Bøggild, S. & Rasmussen, Lene Juel, 2022, In: *Mitochondrion*. 64, p. 73-81 9 p.

Atorvastatin impairs liver mitochondrial function in obese Göttingen Minipigs but heart and skeletal muscle are not affected

Christiansen, L. B., Dohlmann, T. L., Ludvigsen, T. P., Parfieniuk, E., Ciborowski, M., Szczerbinski, L., Kretowski, A., Desler, Claus, Tian, L., Orlando, P., Martinussen, Torben, Olsen, Lisbeth Høier & Larsen, Steen, 2021, In: *Scientific Reports*. 11, 15 p., 2167.

Bloom syndrome DNA helicase deficiency is associated with oxidative stress and mitochondrial network changes

Subramanian, V., Rodemoyer, B., Shastri, V., Rasmussen, Lene Juel, Desler, Claus & Schmidt, K. H., 2021, In: *Scientific Reports*. 11, 2157.

Mitochondrial-Linked *De Novo* Pyrimidine Biosynthesis Dictates Human T-Cell Proliferation but Not Expression of Effector Molecules

Peeters, M. J. W., Aehnlich, P., Pizzella, A., Mølgaard, K., Seremet, T., Met, Özcan, Rasmussen, Lene Juel, thor Straten, P. & Desler, Claus, 2021, In: *Frontiers in Immunology*. 12, 718863.

Real-time monitoring of mitochondrial respiration in cytokine-differentiated human primary T cells

Mølgaard, K., Rahbech, A., Met, Özcan, Svane, Inge Marie, Straten, P., Desler, Claus & Peeters, M. J. W., 2021, In: *Journal of Visualized Experiments*. 176, e62984.

Cytoplasmic Citrate Flux Modulates the Immune Stimulatory NKG2D Ligand MICA in Cancer Cells

Møller, S. H., Møllgaard, M., Madsen, M., Bermejo, A. V., Jepsen, Stine Dam, Hansen, M. H., Høgh, R. I., Aldana, Blanca, Desler, Claus, Rasmussen, Lene Juel, Sustarsic, E. G., Gerhart-Hines, Zach, Daskalaki, E., Wheelock, C. E., Hiron, T. K., Lin, D., O'Callaghan, C. A., Wandall, Hans H., Andresen, Lars & Skov, Søren, 2020, In: *Frontiers in Immunology*. 11, 22 p., 1968.

Mitochondrial Function in Gilles de la Tourette Syndrome Patients With and Without Intragenic *IMMP2L* Deletions

Bjerregaard, Victoria Alexandra, Schönewolf-Greulich, B., Rasmussen, Lene Juel, Desler, Claus & Tümer, Asuman Zeynep, 2020, In: *Frontiers in Neurology*. 11, 9 p., 163.

Simvastatin improves mitochondrial respiration in peripheral blood cells

Durhuus, J. A., Hansson, Svenja, Morville, T., Kuhlman, A. B., Dohlmann, T. L., Larsen, Steen, Helge, Jørn Wulff, Angleys, M., Muniesa-Vargas, A., Bundgaard, J. R., Hickson, Ian David, Dela, Flemming, Desler, Claus & Rasmussen, Lene Juel, 2020, In: *Scientific Reports*. 10, 1, 17012.

Spatial Transcriptomics Reveals Genes Associated with Dysregulated Mitochondrial Functions and Stress Signaling in Alzheimer Disease

Navarro, J. F., Croteau, D. L., Jurek, A., Andrusivova, Z., Yang, B., Wang, Y., Ogedegbe, B., Riaz, T., Støen, M., Desler, Claus, Rasmussen, Lene Juel, Tønjum, T., Galas, M. C., Lundeberg, J. & Bohr, Vilhelm, 2020, In: *iScience*. 23, 10, 42 p., 101556.

From powerhouse to perpetrator—mitochondria in health and disease

Fakouri, N. B., Hansen, T. L., Desler, Claus, Anugula, Sharath & Rasmussen, Lene Juel, 2019, In: *Biology*. 8, 2, 15 p., 35.

MERTK Acts as a costimulatory receptor on human cd8 t cells

Peeters, M. J. W., Dulkeviciute, D., Draghi, A., Ritter, C., Rahbech, A., Skadborg, S. K., Seremet, T., Simoes, A. M. C., Martinenaite, E., Halldorsdottir, H. R., Andersen, Mads Hald, Olofsson, G. H., Svane, Inge Marie, Rasmussen, Lene Juel, Met, Özcan, Becker, J. C., dqp123, dqp123, Desler, Claus & Straten, P. T., 2019, In: *Cancer Immunology Research*. 7, 9, p. 1472-1484 13 p.

Mitochondrial oxidative phosphorylation capacity of cryopreserved cells

Lauridsen, P. E., Rasmussen, Lene Juel & Desler, Claus, 2019, In: *Mitochondrion*. 47, p. 47-53 7 p.

Initial brain aging: heterogeneity of mitochondrial size is associated with decline in complex I-linked respiration in cortex and hippocampus

Thomsen, Kirsten Joan, Yokota, T., Hasan-Olive, M. M., Sherazi, N., Fakouri, N. B., Desler, Claus, Regnell, C. E., Larsen, S., Rasmussen, Lene Juel, Dela, Flemming, Bergersen, L. H. & Lauritzen, Martin, 2018, In: *Neurobiology of Aging*. 61, p. 215-224 10 p.

The inhibitors of soluble adenylylase 2-OHE, KH7, and bithionol compromise mitochondrial ATP production by distinct mechanisms

Jakobsen, Emil, Lange, S. C., Andersen, Jens Velde, Desler, Claus, Kihl, H. F., Hohnholt, M., Stridh, M. H., Rasmussen, Lene Juel, Waagepetersen, Helle S. & Bak, Lasse Kristoffer, 2018, In: *Biochemical Pharmacology*. 155, p. 92-101 10 p.

The role of mitochondrial dysfunction in the progression of Alzheimer's disease

Desler, Claus, Lillenes, M. S., Tønjum, T. & Rasmussen, Lene Juel, 2018, In: Current Medicinal Chemistry. 25, 40, p. 5578 - 5587

Bacterial infection increases risk of carcinogenesis by targeting mitochondria

Strickertsson, J. A. B., Desler, Claus & Rasmussen, Lene Juel, Dec 2017, In: Seminars in Cancer Biology. 47, p. 95-100 6 p.

Bioenergetic Changes during Differentiation of Human Embryonic Stem Cells along the Hepatic Lineage

Hopkinson, B. M., Desler, Claus, Kalisz, M., Vestentoft, P. S., Rasmussen, Lene Juel & Bisgaard, Hanne Cathrine, 2017, In: Oxidative Medicine and Cellular Longevity. 2017, 11 p., 5080128.

Rev1 contributes to proper mitochondrial function via the PARP-NAD(+)-SIRT1-PGC1 alpha axis

Fakouri, N. B., Durhuus, J. A., Regnell, C. E., Angleys, M., Desler, Claus, Hasan-Olive, M., Martin-Pardillos, A., Tsaalbi-Shtylik, A., Thomsen, Kirsten Joan, Lauritzen, Martin, Bohr, Vilhelm, de Wind, N., Bergersen, L. H. & Rasmussen, Lene Juel, 2017, In: Scientific Reports. 7, 14 p., 12480.

A Novel Rrm3 Function in Restricting DNA Replication via an Orc5-Binding Domain Is Genetically Separable from Rrm3 Function as an ATPase/Helicase in Facilitating Fork Progression

Syed, S., Desler, Claus, Rasmussen, Lene Juel & Schmidt, K. H., Dec 2016, In: P L o S Genetics. 12, 12, 28 p., e1006451.

Oxidative Stress-Induced Dysfunction of Muller Cells During Starvation

Toft-Kehler, A. K., Gurubaran, I. S., Desler, Claus, Rasmussen, Lene Juel, Jensen, Dorte Skytt & Kolko, Miriam, May 2016, In: Investigative Ophthalmology & Visual Science. 57, 6, p. 2721-2728

Increased deoxythymidine triphosphate levels is a feature of relative cognitive decline

Desler, Claus, Frederiksen, J. H., Olsen, M. N. A., Maynard, S., Keijzers, G., Fagerlund, Birgitte, Mortensen, Erik Lykke, Osler, Merete, Lauritzen, Martin, Bohr, Vilhelm & Rasmussen, Lene Juel, Nov 2015, In: Mitochondrion. 25, p. 34-7 4 p.

Defective mitochondrial respiration, altered dNTP pools and reduced AP endonuclease 1 activity in peripheral blood mononuclear cells of Alzheimer's disease patients

Maynard, S., Hejl, Anne-Mette, Dinh, T. T. S., Keijzers, G., Hansen, Åse Marie, Desler, Claus, Moreno-Villanueva, M., Bürkle, A., Rasmussen, Lene Juel, Waldemar, Gunhild & Bohr, Vilhelm, Oct 2015, In: Aging. 7, 10, p. 793-815 23 p.

Increased Rrm2 gene dosage reduces fragile site breakage and prolongs survival of ATR mutant mice

Lopez-Contreras, Andres, Specks, J., Barlow, J. H., Ambrogio, C., Desler, Claus, Vikingsson, S., Rodrigo-Perez, S., Green, H., Rasmussen, Lene Juel, Murga, M., Nussenzweig, A. & Fernandez-Capetillo, O., 1 Apr 2015, In: Genes & Development. 29, 7, p. 690-5 6 p.

Mitochondria in health and disease: 3rd annual conference of society for mitochondrial research and medicine - 19-20 december 2013 - bengaluru, India

Durhuus, J. A., Desler, Claus & Rasmussen, Lene Juel, Jan 2015, In: Mitochondrion. 20, p. 7-12 6 p.

Impact of bacterial infections on aging and cancer: Impairment of DNA repair and mitochondrial function of host cells

Strickertsson, J. A. B., Desler, Claus & Rasmussen, Lene Juel, Aug 2014, In: Experimental Gerontology. 56, p. 164-174 11 p.

Mitochondria in biology and medicine--2012

Desler, Claus & Rasmussen, Lene Juel, May 2014, In: Mitochondrion. 16, p. 2-6 5 p.

Overexpression of DNA ligase III in mitochondria protects cells against oxidative stress and improves mitochondrial DNA base excision repair

Akbari, M., Keijzers, G., Maynard, S., Scheibye-Knudsen, M., Desler, Claus, Hickson, Ian David & Bohr, Vilhelm, Apr 2014, In: DNA Repair. 16, p. 44-53 10 p.

Introducing the hypothome: a way to integrate predicted proteins in interactomes

Desler, Claus, Zambach, S., Suravajhala, P. & Rasmussen, Lene Juel, 2014, In: International Journal of Bioinformatics Research and Applications. 10, 6, p. 647-52 6 p.

Relationships between human vitality and mitochondrial respiratory parameters, reactive oxygen species production and dNTP levels in peripheral blood mononuclear cells

Maynard, S., Keijzers, G., Gram, M., Desler, Claus, Bendix, L., Budtz-Joergensen, Esben, Molbo, Drude, Croteau, D. L., Osler, Merete, Stevnsner, T. V., Rasmussen, Lene Juel, Dela, Flemming, Avlund, K. & Bohr, Vilhelm, 30 Nov 2013, In: Aging. p. 850-864 15 p.

Enterococcus faecalis infection causes inflammation, intracellular oxphos-independent ROS production, and DNA damage in human gastric cancer cells

Strickertsson, J. A. B., Desler, Claus, Martin-Bertelsen, T., Machado, A. M. D., Wadstrøm, T., Winther, Ole, Rasmussen, Lene Juel & Friis-Hansen, Lennart Jan, 2013, In: PLOS ONE. 8, 4, p. 1-13 13 p., e63147.

Oxidative damage to DNA by diesel exhaust particle exposure in co-cultures of human lung epithelial cells and macrophages

Jantzen, K., Roursgaard, Martin, Desler, Claus, Loft, Steffen, Rasmussen, Lene Juel & Møller, Peter, Nov 2012, In: Mutagenesis. 27, 6, p. 693-701 9 p.

Mitochondria in biology and medicine

Desler, Claus & Rasmussen, Lene Juel, Jul 2012, In: Mitochondrion. 12, 4, p. 472-6 5 p.

Genome-wide screens for expressed hypothetical proteins

Desler, Claus, Durhuus, J. A. & Rasmussen, Lene Juel, 2012, In: Methods in molecular biology (Clifton, N.J.). 815, p. 25-38 14 p.

Is There a Link between Mitochondrial Reserve Respiratory Capacity and Aging?

Hansen, T. L., Rasmussen, Lene Juel, Desler, Claus, Frederiksen, J. B., Espersen, M. L. M. & Singh, K. K., 2012, In: Journal of Aging Research. 2012, p. 192503 9 p.

The importance of mitochondrial DNA in aging and cancer

Desler, Claus, Espersen, M. L. M., Singh, K. K. & Rasmussen, Lene Juel, 30 Mar 2011, In: Journal of Aging Research. 2011, p. 407536

Analysis of the antimicrobial susceptibility of the ionizing radiation-resistant bacterium Deinococcus radiodurans: implications for bioremediation of radioactive waste

Bouchami, O., Sghaier, H., Desler, Claus, Lazim, H., Saidi, M., Rasmussen, Lene Juel & Ben Hassan, A., 2011, In: Annals of Microbiology.

The effect of mitochondrial dysfunction on cytosolic nucleotide metabolism

Desler, Claus, Lykke, A. & Rasmussen, Lene Juel, 1 Jan 2010, In: Journal of Nucleic Acids. 2010

In Silico screening for functional candidates amongst hypothetical proteins

Desler, Claus, Suravajhala, P., Sanderhoff, M., Rasmussen, M. & Rasmussen, Lene Juel, 2009, In: BMC Bioinformatics. 10, p. 289

Repair of DNA damage induced by anthanthrene, a polycyclic aromatic hydrocarbon (PAH) without bay or fjord regions

Desler, Claus, Johannessen, C. & Rasmussen, Lene Juel, 2009, In: Chemico-Biological Interactions. 177, 3, p. 212-7 5 p.