

Contact Information**Work, Hungary**

Department of Selenoprotein Research
National Institute of Oncology
Building 11, Ráth György u. 7-9, 1122 Budapest, Hungary
http://onkol.hu/department_of_selenoprotein_research/?lang=en

Work, Sweden

Division of Biochemistry
Department of Medical Biochemistry and Biophysics (MBB)
Karolinska Institutet, SE-171 77 Stockholm, Sweden
Tel: +46-8-5248 69 83
E-mail: Elias.Arnér@ki.se
Web: <http://ki.se/en/mbb/research-division-of-biochemistry>

Education

Date	Degree	Institution	Description
1997	M.D.	Karolinska Inst., Sweden	M.D. (<i>Läkarexamen</i>), Karolinska Institutet
1993	Ph.D.	Karolinska Inst., Sweden	Ph.D. Thesis on nucleotide metabolism, with Ass. Prof. S. Eriksson

Appointments/Affiliations

Date	Title	Institution
2020 - present	Head of Department and Executive Advisor	Department of Selenoprotein Research, National Institute of Oncology (NIO), Budapest, Hungary
2019 - present	Board Member	Swedish Research Council (Medicine and Health)
2016 - present	Director of Doctoral Education	Departmental Director of Doctoral Education, MBB
2015 - present	Member (Chair 2019-2021)	National Committee of Molecular Biosciences, Royal Acad. Sci. (KVA)
2009 - present	Professor in Biochemistry	Dept. Medical Biochemistry and Biophysics, Karolinska Institutet
2008 - present	Head of Division	Div. of Biochemistry, Dept. Medical Biochemistry and Biophysics
2008 - 2018	Member, University Board	Teacher's representative, <i>Konsistoriet</i> , Karolinska Institutet
2016 - 2018	Director of Education	Departmental Director of Education, MBB
2011 - 2015	Chairman, SFBBM	Swedish Society for Biochemistry, Biophysics and Molecular Biology
2009 - 2014	Distinguished Professor Award	Awarded at Karolinska Institutet by an external international committee
2005 - 2011	Externally awarded position	Senior Researcher / <i>Högre Cancerforskartjänst</i> , Sw. Cancer Soc.
2005 - 2007	Dean	Board of Postgraduate Education, Karolinska Institutet
2003 - 2008	Project Leader in Biomedicine	Karolinska Institutet, competitive 5-yr position and funding (1 Mkr/yr)
2001 - 2005	Director of studies	M.D./Ph.D. Programme, Karolinska Inst., Sweden
2000 -	<i>Docent</i>	Subject: Medical Biochemistry, Karolinska Inst., Sweden
1999 - 2002	Externally awarded position	Cancer Researcher/ <i>Cancerforskare</i> , Swed. Cancer Soc.
1999 - 2000	Research Associate	MBB, Karolinska Inst., Sweden
1996 - 2001	Responsible/Organizer	Summer Research School, Karolinska Inst., Sweden
1998 - 1999	Post doc., with A. Böck	Dept. of Microbiol., Univ. of Munich, Germany
1995 - 1998	Externally awarded position	Post doc position, 2 + 2 yrs, Swed. Cancer Soc.
1994 - 1997	Post doc., with A. Holmgren	MBB, Karolinska Inst., Sweden

Current Research Groups**National Institute of Oncology, Budapest, Hungary**

Date	Current position	Name	Subject
2021-	Biologist/Scientist (NIO)	Katalin Úri PhD	ELISAs for Trx system-proteins for biomarker usage in cancer
2020-	Biologist/Scientist (NIO)	Mahe Mohanraj, PhD	Trx-fold protein functions in cancer and redox signaling
2020-	Biologist/Scientist (NIO)	Attila Andor, PhD	Recombinant protein production and characterization
2020-	Biologist/Scientist (NIO)	Marcell Cserhalmi, PhD	Redox biomarkers and Trx-fold proteins in cancer
2020-	Laboratory coordinator (NIO)	Aniko Keszocze, Ms	Coordinator and administrator

Karolinska Institutet, Stockholm, Sweden

2021-	Post doc	Pablo Marti Andres, PhD	Effects of Se, Zn and Cu on cancer cells and effects of TRP14
2021-	Post doc	Tamas Vancsik, PhD	Redox processes in B16 melanoma models in mice
2021-	Post doc	Wenchao Zhao, PhD	Modulation of antitumoral immunity through TrxR1 inhibition
2020-	Post doc	Zsofia Sziber PhD	Analyses of redox regulated transcription factors in single cells
2020-	Laboratory coordinator	Åse Mattsson, PhD	Coordinator, administrator, responsible for chemicals
2020-	PhD student	Shayida Maimati	Redox signaling through TXNIP and Nrf2
2020-	PhD student	Radosveta Gencheva	Novel thioredoxin reductase substrates and TrxR1 inhibitors
2020-	Project leader	Birgitta Sjödin, PhD	Targeting of GSTs and TrxR1 by JSK-1
2017-	PhD student (NIH/KI)	Dorian Cheff	Screens for inhibitors of glutathione peroxidase isoenzymes
2014-	Scientist	Markus Dagnell, PhD	Redox control of PTP signaling
2004-	Senior researcher/Lab Manager	Qing Cheng	Production and characterization of selenoproteins

Supervised theses

Date	Student	Thesis/Topic
2020	Belen Espinosa	Ph.D. thesis, Karolinska Inst., Sweden/Thioredoxin system and TRP14 in cancer
2019	Sander Busker	Ph.D. thesis, Karolinska Inst., Sweden/STAT3 inhibition and cellular signaling
2016	Irina Pader	Ph.D. thesis, Karolinska Inst., Sweden/TRP14 in cellular signaling
2015	William Stafford	Ph.D. thesis, Karolinska Inst., Sweden/HTS for novel TrxR inhibitors
2015	Xiaoxiao Peng	Ph.D. thesis, Karolinska Inst., Sweden/TrxR1 in metabolism and cell differentiation
2014	Marcus Cebula	Ph.D. thesis, Karolinska Inst., Sweden/Mammalian signaling through the Trx system
2011	Sofi Eriksson	Ph.D. thesis, Karolinska Inst., Sweden/Targeting of TrxR1 in cancer therapy
2010	Qing Cheng	Ph.D. thesis, Karolinska Inst., Sweden/Recombinant selenoproteins in biotechnology
2010	Pascal Dammeyer	Ph.D. thesis, Karolinska Inst., Sweden/Mammalian signaling through the Trx system
2009	Stefanie Prast-Nielsen	Ph.D. thesis, Karolinska Inst., Sweden/TrxR1 targeting by novel inhibitors
2008	Olle Rengby	Ph.D. thesis, Karolinska Inst., Sweden/Recombinant selenoprotein production
2006	Karin Anestål	Ph.D. thesis, Karolinska Inst., Sweden/TrxR1 targeting in cancer therapy

2005	Linda Johansson	Ph.D. thesis, Karolinska Inst., Sweden/Selenoprotein production and function
2005	Nico Pili	<i>Tesi di laurea</i> , Univ. of Padova, Italy, co-advisor with C. Grandi/TrxR and metals
2003	Anna-Klara Rundlöf	Ph.D. thesis, Karolinska Inst., Sweden/TrxR1 regulation in mammalian cells
2002	Elena Serini	<i>Tesi di laurea</i> , Univ. of Padova, Italy, co-advisor with V. Bianchi/Selenoproteins
2001	Jonas Nordberg	Licentiate thesis, Karolinska Inst., Sweden/TrxR in antioxidant defence

Bibliometry

As of February 14, 2022, 153 articles listed in [PubMed](#), cited 13,482 times with an h-index of 54 according to [Web Of Science](#), or cited 21,255 times with h-index of 62 according to [Google Scholar](#).

Web Of Science Researcher ID: [K-6737-2019](#) ORCID identifier: [0000-0002-4807-6114](#)

Ten selected publications

Gromer S, Johansson L, Bauer H, Arscott LD, Rauch S, Ballou DP, Williams Jr CH, Schirmer RH & **Arnér ESJ**. Active sites of thioredoxin reductases — Why selenoproteins? *PNAS*. 2003; 100: 12618-12623.

Johansson, L., Chen, C., Thorell, J.-O., Fredriksson, A., Stone-Elander, S., Gafvelin, G. and **Arnér, E.S.J.** Exploiting the 21st amino acid: purifying and labeling proteins by selenolate targeting. *Nat. Methods*. 2004;1: 61-66

Rundlöf AK, **Arnér ESJ**. Regulation of the mammalian selenoprotein thioredoxin reductase 1 in relation to cellular phenotype, growth, and signaling events. *Antioxid Redox Signal*. 2004 Feb;6(1):41-52.

Cheng Q, Stone-Elander S, **Arnér ESJ** Tagging recombinant proteins with a Sel-tag for purification, labeling with electrophilic compounds or radiolabeling with carbon-11. *Nat. Prot.* 2006; 1: 604-613

Pader I, Sengupta R, Cebula M, Xu J, Lundberg JO, Holmgren A, Johansson K, **Arnér ESJ**. Thioredoxin-related protein of 14 kDa is an efficient L-cystine reductase and S-denitrosylase. *PNAS* 2014 May 13;111(19):6964-9.

Xu J, Eriksson SE, Cebula M, Sandalova T, Hedström E, Pader I, Cheng Q, Myers CR, Antholine WE, Nagy P, Hellman U, Selivanova G, Lindqvist Y, **Arnér ESJ**. The conserved Trp114 residue of thioredoxin reductase 1 has a redox sensor-like function triggering oligomerization and crosslinking upon oxidative stress related to cell death. *Cell Death Dis*. 2015 Jan 22;6:e1616.

Eriksson S, Prigge JR, Talago EA, **Arnér ESJ**, Schmidt EE. Dietary methionine can sustain cytosolic redox homeostasis in the mouse liver. *Nat Commun*. 2015 Mar 20;6:6479.

Dóka É, Pader I, Bíró A, Johansson K, Cheng Q, Ballagó K, Prigge JR, Pastor-Flores D, Dick TP, Schmidt EE, **Arnér ESJ**, Nagy P. (2016) A novel persulfide detection method reveals protein persulfide- and polysulfide-reducing functions of thioredoxin and glutathione systems. *Sci Adv*. 2(1):e1500968.

Ingold I, Berndt C, Schmitt S, Doll S, Poschmann G, Buday K, Roveri A, Peng X, Porto Freitas F, Seibt T, Mehr L, Aichler M, Walch A, Lamp D, Jastroch M, Miyamoto S, Wurst W, Ursini F, **Arnér ESJ**, Fradejas-Villar N, Schweizer U, Zischka, H, Friedmann Angeli JP, Conrad M. Selenium Utilization by GPX4 Is Required to Prevent Hydroperoxide-Induced Ferroptosis. *Cell*. 2018; 172(3):409-422.e21

Stafford WC, Peng X, Olofsson MH, Zhang X, Luci DK, Lu L, Cheng Q, Trésaugues L, Dexheimer TS, Coussens NP, Augsten M, Ahlžén HM, Orwar O, Östman A, Stone-Elander, S, Maloney DJ, Jadhav A, Simeonov A, Linder S, **Arnér ESJ**. Irreversible inhibition of cytosolic thioredoxin reductase 1 as a mechanistic basis for anticancer therapy. *Sci. Transl. Med*. 2018; 10(428).

Commission as editor or reviewer

Date	Title	Description
2020 – present	Editorial Board Member	Redox Biology
2020 – present	Editorial Board Member	Free Radical Biology and Medicine (RBM)
2011 – 2016	Editorial Board Member	Journal of Biological Chemistry (JBC)
2008 – 2016	Executive Editor	Biochimica et Biophysica Acta (BBA): General Subjects
2009 – 2015	Editorial Board Member	Molecular Aspects of Medicine
2003 – 2008	Editorial Board Member	Biochimica et Biophysica Acta (BBA): General Subjects
1994 – present	Reviewer, manuscripts	Reviewed >750 papers, for > 35 different journals
1994 – present	Reviewer, grant applications	Reviewed grants for several national and international funding agencies

Duties as opponent or examiner

Date	Title	Description
2021	Opponent, Ph.D. Thesis	Nanyang Technical University, Singapore
2020	Opponent, Ph.D. Thesis	LabMed, Karolinska Institutet, Sweden
2019	Examiner, Ph.D. Thesis	University of Cordoba, Cordoba, Spain
2017	Opponent, Ph.D. Thesis	Sahlgrenska Academy, University of Gothenburg, Sweden
2013	Examiner, Ph.D. Thesis	National University of Singapore, Singapore
2012	Opponent, Ph.D. Thesis	Lisboa University, Lisbon, Portugal
2011	Examiner, Ph.D. Thesis	Griffith University, Australia
2007	Examiner, Ph.D. Thesis	Indian Institute of Technology Kanpur, Kanpur, India
2006	Examiner, Ph.D. Thesis	University of Cordoba, Spain
2005	Opponent, Ph.D. Thesis	Lund University, Sweden
2004	Examiner, Ph.D. Thesis	Griffith University, Australia
2002	Opponent, Ph.D. Thesis	IMM, Karolinska Institutet, Sweden
2001	Opponent, Ph.D. Thesis	Inst. of Molecular Biology, Univ. of Copenhagen, Denmark

Organizer, scientific conferences

Year	Title	Description
2017	Se2017 – 200 Years of Selenium Research	Conference with 330 delegates from 41 countries, combining <i>The 11th International Symposium on Selenium in Biology and Medicine</i> and <i>The 5th International Conference on Selenium in the Environment and Human Health</i> (www.Se2017.se)
2012, 2013, 2014	SFBBM Symposium	Annual 2-4 day meeting (≈20 invited speakers and chairs; ≈80-90 participants)
2004	Nobel Conference No 46	Four day Nobel Conf. entitled " <i>Redox Signaling and Cellular Function</i> " (150 participants, 50 invited foreign speakers and chairs)

Invited as speaker or chair at international conferences

Date	Description
2021	1 st Conference of Central-Eastern European Oncology meets Western-Northern-Southern European oncology, Budapest, Hungary (invited speaker)
2021	International Symposium of DFG Priority Program 1710, Dynamics of Thiol-based Redox Switches in Cellular Physiology (online; invited speaker)
2021	20 th Biennial Meeting of SFRR International (online; invited speaker)
2021	The 34 th Annual Meeting of the Israel Society for Oxygen and Free Radical Research (online; invited speaker)
2020	EORTC Pharmacology and Molecular Mechanisms Group (PAMM), Stockholm, Sweden (invited speaker)
2020	Baltic Redox Workshop, Greifswald, Germany (invited speaker)
2019	XXXIII Congress of the Hungarian Cancer Society, Budapest, Hungary (keynote speaker)
2019	7 th FESTEM Conference (Federation of European Societies on Trace Elements and Minerals), Potsdam, Germany (invited speaker)
2019	"Redox Chemistry and Biology of Thiols" Symposium and Course, Montevideo, Uruguay (invited speaker)
2019	6 th Int. Conference on Selenium in the Environment and Human Health (ICSEHH), Yangling/Xi'an, China (invited speaker).
2018	Thiol-Based Redox Regulation and Signaling, GRC conference, Castelldefels, Spain (invited speaker)
2018	19 th Meeting of Society for Free Radical Research International (SFRRRI 2018), Lisbon, Portugal (invited chair)
2018	43 rd FEBS Congress, Prague, Czech Republic (invited speaker)
2017	Plant and Human Sulfur Biology Conference 2017, Balatonfüred, Hungary (invited speaker)
2017	Joint OCC/SFRR-E Conference, Berlin, Germany (invited speaker)
2017	90 th Annual Conference for The Japanese Bacteriology Society (invited keynote speaker)
2016	Dr. Maud L. Menten Memorial Spring Symposium, Western Ontario, Canada (invited keynote speaker)
2016	3 rd Enshi World Selenium Expo, Enshi, Hubei, China (invited opening and plenary speaker)
2015	ESF-EMBO Conference on Thiol-Based Redox Switches In Life Sciences, Spain (invited speaker)
2015	4 th Int. Conf. on Selenium in the Environment and Human Health, Brazil (invited speaker)
2014	Meeting "Biochemical, Biophysical and Biomedical Effects of Reactive Oxygen and nitrogen Species on Biological membranes", Greifswald, Germany (invited speaker)
2014	17 th Biennial Meeting of Society for Free Radical Research International, Kyoto, Japan (invited speaker)
2013	3 rd Int. Conf. on Selenium in the Environment and Human Health, Hefei, China (plenary speaker)
2013	Selenium2013, 10 th Int. Symposium on Selenium in Biology and Health, Berlin, Germany (invited speaker)
2012	SASBMB-FASBMB 2012; the 23 rd congress of the South African Society of Biochemistry and Molecular Biology, Drakensberg, South Africa (keynote speaker)
2010	Selenium2010, 9 th Int. Symposium on Selenium in Biology and Health, Kyoto, Japan (plenary speaker, opening lecture)
2010	Oxygen Club of California, Santa Barbara, USA (chair)
2010	Thiol-Based Redox Regulation & Signaling, Gordon Research Conference, Lucca, Italy (invited speaker)
2009	First International Conference on Selenium in Environment and Health, Suzhou, China (invited keynote speaker)
2008	Oxygen Club of California, Santa Barbara, USA (invited speaker)
2006	13 th Biennial Congress of the Society for Free Radical Research, Davos (invited speaker)
2006	8 th International Symposium on Selenium in Biology and Health, Madison, Wisconsin, USA (invited speaker)
2006	Gordon Research Conference, University of New England, USA (invited speaker)
2005	Annual Meeting of the Oxygen Club of California/Int. Redox Network, Alba, Italy (invited speaker)
2003	Celebrating 30 years of selenoprotein research, NHLBI, NIH, USA (invited speaker)
2002	Oxygen Society 9 th Ann. Meeting, San Antonio, Texas, USA (invited speaker)
2001	Cellular Implications of Redox Signaling, Padova, Italy (invited speaker)

Entrepreneurial and commercial activities

Year	Position	Company
2020 – present	Member of the board	Thioredoxin Systems AB (www.txnsystems.com)
2020 – present	Member, Senior Advisory Board	Sparing Vision, France (www.sparingvision.com)
2020 – present	Member of the board and CEO	Selenozyme AB (www.selenozyme.com)
2016 – present	Member, Senior Advisory Board	Oblique Therapeutics AB (www.obliquet.com)
2008 – 2021	Chair, Scientific Advisory Board	Evidensrådet, Prima Barn- och Vuxenpsykiatri, AB
2008 – 2021	Member of the board	Prima Barn- och Vuxenpsykiatri, AB (www.prima.se)
2007 – 2020	Member of the board	IMCO Corp. Ltd, AB, Stockholm, Sweden
2020	Member of the board	Thyrolitics AB (bought by AegirBio AB in 2020)
2014	Contracted consultant	Piramal Enterprises Ltd, India
2002	Contracted consultant	OXIS International, Inc., USA

Other

- Six original selenoprotein-related patents as inventor and/or owner (2000, 2009, three in 2017, one in 2020), some of which also as PCTs and further developed into national sub-patents.
- Life Time Honorary Member of The Oxygen Club of California, USA (2010)
- The Oxygen Club of California Jarrow Formulas Health Sciences Prize, with medal and \$25.000 award (2017)

Current Research Grants in Sweden

Funding agency	Title or type of grant	Years	Total sum (SEK)
Swedish Cancer Society	Selenoproteins in cancer	2022-2024	4 500 000
Swedish Research Council	Studies of selenoprotein functions in health and disease	2022-2024	2 400 000
Knut and Alice Wallenberg Foundation	Changing the view on autoimmune disease based on positional cloning of the Ncf1 gene (Holmdahl PI, 2 co-PIs, reporting Arnér part of grant)	2020-2025	6 045 800
E.P. donation	STUDIES OF THE IMPORTANCE OF COPPER, ZINC AND SELENIUM IN CANCER	2020-2024	14 000 000