Curriculum vitae JENS NIELSEN

Department of Biology and Biological Engineering, Chalmers University of Technology,
Kemigården 4, SE-412 96 Gothenburg, Sweden
Tel: +46 (0) 31 772 3804; Fax: +46 (0) 31 772 3801; E-mail: nielsenj@chalmers.se

Personal information

Date of birth:	November 17th, 1962.
Place of birth:	Horsens, Denmark
Citizenship:	Danish
Researcherid:	Q-1347-2017
ORCID ID:	0000-0002-9955-6003

Education and degrees

1986	M.Sc. in Chemical Engineering, DTU, Denmark
1989	Ph.D. in Biochemical Engineering, Department of Biotechnology, DTU, Denmark
1995	dr.techn., DTU, Denmark

Positions

1986	**Research Assistant**, School of Engineering, University of Western Ontario, Canada
1987-1989	**PhD student**, Department of Biotechnology, DTU, Denmark
1989	**Post doc**, Institut für Technische Chemie, Universität Hannover, Germany
1990-1995	**Associate Research Professor**, Department of Biotechnology, DTU, Denmark
1995-1996	**Visiting Professor**, Department of Chemical Engineering, MIT, USA
1996-1998	**Associate Professor**, Department of Biotechnology, DTU, Denmark
1998-2008	**Professor**, BioCentrum, DTU, Denmark
2005-2011	**Adjunct Professor**, Department of Biotechnology, NTNU, Norway
2008-	**Professor**, Department of Chemical and Biological Engineering, Chalmers, Sweden
2011-2019	**Professor**, Novo Nordisk Foundation Centre for Biosustainability, DTU, Denmark
2012-2017	**Adjunct Professor**, Department of Biotechnology, Royal Institute of Technology (KTH), Sweden
2013-2019	**Chief Science Officer**, Novo Nordisk Foundation Centre for Biosustainability, DTU, Denmark
2015	**Founding Head of Department**, Department of Biology and Biological Engineering, Chalmers, Sweden (served 9 months as Head of Department and structured a department of 150 people)
2016-	**Adjunct Professor**, Beijing University of Chemical Technology (BUCT), China
2019-	**CEO**, BioInnovation Institute, Copenhagen, Denmark

Academic Appointments and Merits

1994-1999	**Founding Chairman**, Danish Biotechnological Forum, Denmark
1995-2000	**Deputy Director**, Center for Process Biotechnology, DTU, Denmark
1995-1998	**Co-ordinator**, Physiological Engineering, Nordic Industrial Fund
1998-2002	**Co-ordinator**, NordPhys, Nordic Industrial Fund
2001-2003	**Director**, Center for Process Biotechnology, DTU, Denmark
2001-2003	**Board Member**, Center for BioProcess Technology, KTH, Sweden
2002	**Evaluation Panel**, Dutch genomics initiative (50 million EUR)
2002-2007	**SAB Member**, Kluywer Center for Genomics of Industrial Fermentations, TU Delft, The Netherlands
2002-2008	**SAB Member**, Max-Planck Institute for Dynamic of Complex Technical Systems, Germany
2003	**Guest Professor**, Tianjin University, China
2004-2007	**Founding Director**, Center for Microbial Biotechnology, DTU, Denmark
2004-2007	**Member of Integrative and Systems Biology Panel**, BBSRC, UK (50 million GPD)
2004-	**Advisory Board**, Society for Biological Engineering, USA
2005	**Chairman of Evaluation Committee**, HepatoSys, Germany
2005-2008	**Co-ordinator**, Yeast Systems Biology Network, EU Framework VI
2006-2007	**Founder and Board Member**, Danish Biotechnological Society, Denmark
2008-2011	**Member of Review Panel of SystemsX.ch**, Switzerland (100 million CHF)
2008-2011	**Co-ordinator**, Systems Biology as a Driver for Industrial Biotechnology, EU Framework VII
2009-2014	**SAB Member**, Netherlands Institute for Systems Biology, The Netherlands
2010-2016	**Director Area of Advance Life Science**, Chalmers University of Technology, Sweden
2010-	**Member of World Council for Industrial Biotechnology**, World Economic Forum
2011-2012	**Member of Industrial Biotechnology and Bioenergy Strategy Advisory Panel**, BBSRC, UK
2011	**Presidential appointed evaluator of Humbolt University**, Germany
2011	**Member of DoE Evaluation Panel for Joint Bioenergy Institute**, USA

2011-	**Swedish Delegate in International Commission of Yeast (ICY)**
2011-2015	**National Reference Committee**, Science for Life Laboratory, Stockholm, Sweden
2012-2014	**Scientific Advisory Board** Universeum Science Museum, Gothenburg, Sweden
2012-	**Founding president of International Metabolic Engineering Society**, USA
2012	**4th Most cited European researcher in the field of Mycology**
2012-2013	**Evaluation panel of Academy of Finland**, Finland
2012-2014	**International Advisory Board**, Thailands National Center for Genetic Engineering and Biotechnology, Bangkok, Thailand
2014	**Scientific Advisory Board**, Energy Biosciences Institute, UC Berkeley, Berkeley, USA
2015-	**Advisory Board**, Gothia Forum, Sahlgrenska University Hospital, Gothenburg, Sweden
2016-	**Director of Life Science**, Beijing Advanced Center for Soft Matter Science and Engineering, Beijing University of Chemical Technology, China
2016-	**Advisory Committee**, Joint Bioenergy Institute, Lawrence Berkeley Laboratory, USA
2016-	**Committee chairman** for Novozymes Award for Excellence in Biochemical and Chemical Engineering, Novozymes, Denmark
2016-	**Novozymes Prize award committee**, Novo Nordisk Foundation, Denmark (chairman since 2018)
2018-	**F1000 Faculty**, F1000Prime

Awards

1989	**Direktør Gorm Petersen's Mindelegat**, Denmark
1994	**Ulrik Brinch og Hustru Marie Brinch's legat**, Denmark
1996	**STVFs Jubilæumspris**, Statens Teknisk Videnskabelige Forskningsråd, Denmark
2001	**Aksel Tovborg Jensens Legat**, Bjerrum-Brøndsted-Lang Lecture, Carlsberg Foundation, Denmark
2002	**Villum Kann Rasmussen's Årslegat**, Villum Kann Rasmussen Fonden, Denmark
2004	**Merck Award for Metabolic Engineering**, USA
2011	**Amgen Biochemical Engineering Award**, USA
2012	**Charles D. Scott Award 2012**, Symposium on Biotechnology for Fuels and Chemicals, USA
2012	**Nature Award for Mentoring**, Nature Publishing Group, UK
2013	**Norblad-Exstrand Medalj**, The Swedish Chemical Society, Sweden
2016	**Gaden Award**, American Chemical Society, USA
2016	**Novozymes Prize**, Novo Nordisk Foundation, Denmark
2017	**ENI Award**, ENI, Italy
2017	**Gold Medal**, Royal Swedish Academy of Engineering Sciences, Sweden
2017	**Eric and Sheila Samson Prime Ministers Prize for Innovation in Alternative Fuels for Transportation**, Fuels and Smart Mobility Initiative, Israel

Academies

1997	**Member of the Academy of Technical Sciences**, Denmark
2010	**National Academy of Engineering**, USA
2010	**Member of the Royal Danish Academy of Science and Letters**, Denmark
2010	**Member of the Royal Swedish Academy of Engineering Sciences**, Sweden
2011	**College of Fellows of American Institute for Medical and Biological Engineering**, USA
2012	**Member of Royal Society of Arts and Sciences in Gothenburg**, Sweden
2012	**Fellow of the American Academy of Microbiology**, USA
2014	**Member of the Royal Swedish Academy of Sciences**, Sweden
2019	**National Academy of Sciences**, USA
2019	**Royal Physiographic Society of Lund**, Sweden

Other Honors

1995	**Fulbright Fellow**, USA
2002	**Sunner Memorial Lecture**, Lund University, Sweden
2004	**Hough Memorial Lecture**, Birmingham University, UK
2010	**Appointed as Wallenberg Scholar**, Sweden
2014	**William Chalmers Lecture**, Chalmers University of Technology, Sweden
2014	**Honorary Professor**, Beijing University of Chemical Technology, Beijing, China
2015	**Zhang Dayu Lectureship**, Dalian Institute for Chemical Physics, Chinese Academy of Science, China
2015	**Honorary Professor**, Dalian Institute for Chemical Physics, Chinese Academy of Science, China
2015, 2016	**Highly Cited Researcher**, Thomson Reuter
2017	**Honorary Professor**, East China University of Science and Technology, Shanghai, China
2017	**Adjunct Professor**, Jiangnan University, Wuxi, China
2017, 2018	**Highly Cited Researcher**, Clarivate

2019 **Honorary Professor**, Jiangnan University, Wuxi, China

Memberships in Societies

1986- **The Danish Society for Engineers**, Denmark
1996- **Member of American Association for the Advancement of Science**, USA
2001- **Society for Industrial Microbiology**, USA
2004- **American Chemical Society**, USA
2004- **Society for Biological Engineering**, USA
2006- **American Society for Microbiology**, USA
2012- **International Metabolic Engineering Society**, USA

Publications, Patents, Presentations and Citations

Google Scholar: H-factor of 114; >60,000 citations and >33,000 citations since 2014
Web of Science Highly Cited Researcher in 2015-2018

558 **Original Papers in Peer Reviewed Journals**
111 **Review Papers in Peer Reviewed Journals**
30 **Commentaries in peer reviewed journals**
46 **Book Contributions**
3 **Text books**: Bioreaction Engineering Principles (1994,2003,2011) (English & Chinese), Metabolic Engineering (1998) (English, Chinese & Japanese), Metabolome Analysis (2007)
1 **Monograph**
4 **Edited books**
38 **Issued patents (8 patent families)**
33 **Patent applications (15 patent families)**
214 **Invited oral presentations at international conferences**
129 **Invited seminars at universities and companies**

Key Grants

1993-1996 **Nordic Project on Physiological Engineering**, Nordic Industrial Fund (>20 MDKK)
1995-2002 **4 Projects**, EU Framework VI (about 8 MDKK)
1996-1999 **Center for Process Biotechnology**, Danish Technical Research Council (20 MDKK)
1997-2000 **Nordic network NordPhys**, Nordic Industrial Fund (4 MDKK)
1999-2003 **DABIC**, Danish Technical Research Council (18 MDKK)
2000-2007 **6 Projects**, EU Framework V (about 15 MDKK)
2003-2007 **Heterologous production of polyketides**, Danish Technical Research Council (2.8 MDKK)
2004-2008 **Center for Microbial Biotechnology**, Danish Technical Research Council (36 MDKK)
2005-2009 **3 Projects**, EU Framework VI (about 8.5 MDKK)
2005-2008 **Genome sequencing of *A. balhamycina***, Lundbech Foundation (1.2 MDKK)
2005-2008 **Yeast Systems Biology Network**, EU Framework VI (1.3 MEUR)
2006-2008 **Yeast in No Gravity**, European Space Agency (2.7 MDKK)
2007-2009 **Systems Biology: From model organisms to application**, NORDFORSK (0.8 MNOK)
2008-2011 **Systems Biology as a Driver for Industrial Biotechnolog**, EU Framework VII (1 MEUR)
2008-2013 **UNICELLSYS**, EU Framework VII (5.4 MSEK)
2009-2011 **Regulation of lipid metabolism in eukaryotic cells**, Vetenskapsrådet (3 MSEK)
2010-2014 **Industrial Systems Biology**, European Research Council (2.5 MEUR)
2010-2013 **Systems Biology of Metabolism**, NORDFORSK (0.6 MNOK)
2011-2020 **Wallenberg Scholar**, Knut and Alice Wallenberg Foundation (15 MSEK+15 MSEK)
2011-2020 **NNF Center for Biosustainability**, Novo Nordisk Foundation (60 MDKK)
2012-2015 **Engineering of Acetyl-CoA Metabolism in Yeast**, Vetenskapsrådet (6.4 MSEK)
2012-2014 **Platform for studying metagenomes and metabolic diseases**, Torsten Söderbergs Stiftelse (5 MSEK)
2012-2017 **BioVacSafe**, Innovative Medicines Initiative, EU (10.0 MSEK)
2012-2016 **Excellence Center for Metabolic Engineering**, FORMAS (25 MSEK)
2012-2017 **MetaCardis**, EU Framework VII (7.5 MSEK)
2012-2017 **Advanced Biofuel Production by Oleagenous Yeast**, Department of Energy, USA (2 MUSD)
2013-2016 **Biobased production of diesel and jetfuel**, Vetenskapsrådet (17 MSEK)
2014-2016 **Mathematical modelling of tissue metabolism in response to malnutrition**, Bill & Melinda Gates Foundation (1 MUSD)
2014-2017 **YeastCell**, ITN Marie Curie, EU Framework VII(3 MSEK)
2014-2017 **QuantFung**, ITN Marie Curie, EU Framework VII (5 MSEK)
2015-2018 **3 Projects**, ERA-SysApp and ERA-Pathogen, EU Framework VII (9 MSEK)

2015-2019	**Biotechnological Production of High-Value Added Ingredients**, Stiftelsen for Strategisk Forskning (32 MSEK)
2016-2019	**Genome-scale transcriptional regulation in yeast**, Vetenskapsrådet (4.4 MSEK)
2016-2021	**Gut-microbiome effect on CVD**, Novo Nordisk Foundation (9 MDKK)
2016-2019	**Wallenberg Center for Protein Research**, Knut and Alice Wallenberg Foundation (20 MSEK)
2016-2020	**CHASSY**, Horizon2020 (7 MSEK)
2016-2020	**DD-DeCaF**, Horizon2020 (8.5 MSEK)
2016-2020	**PacMEN**, ITN Marie Curie, Horizon2020 (6 MSEK)
2017-2018	**Proof-of-Concept of cancer biomarkers**, Knut and Alice Wallenberg Foundation (4.5 MSEK)
2017-2020	**Biobased production of diesel and jetfuels**, Energimyndigheten (4 MSEK)
2017-2023	**Systems biology of the eukaryal protein secretion pathway**, Stiftelsen for Strategisk Forskning (34 MSEK)
2018-2019	**Proof-of-Concept of cancer biomarkers**, Knut and Alice Wallenberg Foundation (5 MSEK)
2018-2023	**CellNova**, Vinnova (9 MSEK) (co-PI together)

Editorial Activities

1999	**Chemical Engineering Science**, Guest editor of special volume
1999-	**Metabolic Engineering**, Editorial Board (1999-2002), Assoc. Editor (2003-), Editor-in-Chief (2018-)
1999-	**Applied Microbiology and Biotechnology**, Editorial Board
2000-2018	**Bioprocess and Biosystems Engineering**, Assoc. Editor (2000-2007), Editorial Board (2007-2018)
2001-	**Biotechnology and Bioengineering**, Assoc. Editor
2001-	**FEMS Yeast Research**, Editorial Board (2001-2007), Assoc. Editor (2007-), Editor-in-Chief (2011-)
2004-	**Journal of Industrial Microbiology and Biotechnology**, Editorial Board (2004-2010), Senior Editor (2010-2015), Editorial Board (2015-)
2004-	**Advances in Biochemical Engineering/Biotechnology**, Editorial Board
2008-	**Microbial Cell Factories**, Advisory Board
2009-	**Microbial Biotechnology**, Editorial Board
2010-	**Biotechnology Journal**, Editorial Board
2012-	**ACS Synthetic Biology**, Editorial Board
2013-	**Wiley-Blackwell Advanced Biotechnology Book series** (3. Edition), Editor-in-Chief
2015-	**Cell Systems**, Editorial Board
2015-2018	**Scientific Reports**, Editorial Board
2015-	**Synthetic and Systems Biotechnology**, Editorial Board
2016-2018	**PLOS Computational Biology**, Associate Editor (2016-2018)
2016-	**Current Opinion of Systems Biology**, Editorial Board
2016-	**Applied and Environmental Microbiology**, Editorial Board
2017-	**Cell Stress**, Editorial Board
2017-	**Biotechnology and Bioprocess Engineering**, Editorial Board
2019-	**Frontiers in Chemical Science and Engineering**, Editorial Board

Teaching

Jens Nielsen has organized more than 15 advanced courses on metabolic engineering and systems biology in Denmark, Sweden, Thailand, China and Chile, and he has been teaching in several different courses at all levels in the areas of biotechnology, fermentation technology, bioreaction engineering, metabolic engineering and systems biology. Currently examiner of the MSc courses KMG060 Systems Biology and KKR063 Metabolic Engineering at Chalmers.
Prof Nielsen has extensive experience with developing, organizing and running new courses and he has been actively involved in the design of new teaching programs at both the BSc and MSc level in the field of biotechnology and systems biology.

Mentoring

Main supervisor of *graduated* PhD students	79
Main supervisor of *current* PhD students	25
Examiner of *current* PhD students	7
Co-supervisor of graduated PhD students (including visiting PhD students and as Examiner)	41
Former affiliated post docs	80
Current affiliated post docs and senior researchers	33

Business Experience

1992-	**Collaboration with industry**; collaborated with more than 15 different companies in Austria, Denmark, France, Germany, The Netherlands, Sweden, Switzerland and USA. Cumulative funding from industry to my research group exceeds 30 MSEK.
1996-	**Consultant** for several internationally leading biotech and pharmaceutical companies
1997-2001	**N&N Biotechn ApS**, Denmark, Founder and CEO (acquired by Fluxome A/S)
2002-2005	**Symbion Venture Capital**, Denmark, Member of Scientific Advisory Board
2002-2012	**Fluxome A/S**, Denmark (major activities acquired by Evolva SA in 2012); Founder and involved in raising more than 25 MEUR in capital, CEO (2002-2004), CSO (2002-2008), Member of BoD (2002-2005 & 2008-2012), Chairman of SAB (2008-2012)
2002-2007	**Gothia Yeast Solutions**, Sweden, Member of SAB
2006-2011	**MycoTeQ A/S**, Denmark, Founder and Chairman of BOD (raised about 1 MEUR in capital, one novel antibiotic identified)
2008-2010	**GlycoFi, Inc.**, USA, Member of SAB
2008-2015	**Genomatica, Inc.**, USA, Member of SAB
2011-	**MetaboGen AB**, Sweden, Founder and Member of BoD
2013-2018	**Evolva SA**, Switzerland, Member of SAB
2014-	**Biopetrolia AB**, Sweden, Founder and Chairman of BoD
2014-2018	**Novogy Inc**., USA, Member of SAB
2017-	**Elypta AB**, Sweden, Founder and Chairman of BoD

Organization of Conferences Organization of Conferences

1990-	Member of organizing and scientific committee of more than 45 conferences
2000	**ESBES3**, Denmark, Chairman (~300 delegates)
2002	**Analysis of Microbial Cells at the Single Cell Level**, Denmark, Co-Chair (~100 delegates)
2002	**Metabolic Engineering IV**, Italy, Chairman (~250 delegates)
2004	**European Conference on Fungal Genetics VI**, Denmark, Co-Chair (~800 delegates)
2005	**ECB12**, Denmark, Chairman of Scientific Committee (~1200 delegates)
2008	**ICSB2008**, Sweden, Member of Organizing Committee (~1000 delegates)
2010	**FEBS2010**, Sweden, Member of Organizing Committee (~2000 delegates)
2010	**Industrial Systems Biology 2010**, Sweden, Chairman (~200 delegates)
2011	**Key Symposium on Systems Medicine**, Sweden, Chairman (~100 delegates)
2013	**Copenhagen Bioscience Conference**, Denmark, Co-Chairman (~150 delegates)
2015	**Copenhagen Bioscience Conference**, Denmark, Chairman (~150 delegates)
2017	**Metabolic Engineering Summit**, Beijing, China (~600 delegates)

Key Publications

Metabolic Engineering

1. S. Ostergaard; L. Olsson; M. Johnston; **J. Nielsen** (2000) Increasing galactose consumption by *Saccharomyces cerevisiae* through metabolic engineering of the *GAL* gene regulatory network. *Nature Biotechnol.* **18**:1283-1286
2. K.-K. Hong; W. Vongsangnak; G.N. Vemuri; **J. Nielsen** (2011) Unravelling evolutionary strategies of yeast for improving galactose utilization through integrated systems level analysis. *Proc. Nat. Acad. Sci. USA* **108**:12179-12184
3. L. Caspeta; **J. Nielsen** (2013) Economic and environmental impacts of microbial biodiesel. *Nature Biotechnol.* **31**:789-793
4. J.C. Qin; Y.J. Zhou; A. Krivoruchko; M. Huang; L. Liu; S. Khoomrung; V. Siewers; B. Jiang; **J. Nielsen** (2015) Modular pathway rewiring of *Saccharomyces cerevisiae* enables high-level production of L-ornitine. *Nature Com.* **6**:8224
5. M. Huang; Y. Bai; S.L. Sjostrom; B.M. Hallström; Z. Liu; D. Petranovic; M. Uhlen; H.N. Joensson; H. Andersson-Svahn; **J. Nielsen** (2015) Microfluidic screening and whole genome sequencing identifies mutations associated with improved protein secretion by yeast. *Proc. Nat. Acad. Sci. USA* **112**:E4689-96
6. Y. Zhou; N. A. Buijs; Z. Zhu; J. Qin; V. Siewers; **J. Nielsen** (2016) Production of fatty acid derived oleochemicals and biofuels by synthetic yeast cell factories. *Nature Com.* **7**:11709
7. Y. Zhou; N.A. Buijs; Z. Zhu; D.O. Gomez; A. Boonsombuti; V. Siewers; **J. Nielsen** (2016) Harnessing peroxisomes for production of fatty acid-derived biofuels and chemicals in yeast. *J. Am. Chem. Soc.* **138**:15368-15377
8. Z. Zhu; Y.J. Zhou; A. Krivoruchko; M. Grininger; Z.K. Zhao; **J. Nielsen** (2017) Expanding the product portfolio of fungal type I fatty acid synthases. *Nature Chem. Biol.* **13**:360-362
9. R. Ferreira; P.G. Teixeira; V. Siewers; **J. Nielsen** (2018) Redirection of lipid flux towards phospholipids in yeast increases fatty acid turnover and secretion. *Proc. Nat. Acad. Sci. USA* **115**:1262-1267
10. Z. Dai; M. Huang; Y. Chen; V. Siewers; **J. Nielsen** (2018) Global rewiring of cellular metabolism renders *Saccharomyces cerevisiae* Crabtree-negative. *Nature Com.* **9**:3059
11. T. Yu; Y. Zhou; M. Huang; Q. Liu; R. Pereira; F. David; **J. Nielsen** (2018) Reprogramming yeast metabolism from alcoholic fermentation to lipogenesis. *Cell* **174**:1-10

Systems Biology

1. J. Förster; I. Famili; P. Fu; B. Ø. Palsson; **J. Nielsen** (2003) Genome-scale reconstruction of the *Saccharomyces cerevisiae* metabolic network. *Genome Res*. 13:244-253

2. I. Borodina; P. Krabben; **J. Nielsen** (2005) Genome-scale analysis of *Streptomyces coelicolor* A3(2) metabolism. *Genome Res.*15:820-829
3. K. R. Patil, **J. Nielsen** (2005) Uncovering transcriptional regulation of metabolism by using metabolic network topology. *Proc. Nat. Acad. Sci.* 102:2685-2689¨
4. M. R. Andersen; M. L. Nielsen; **J. Nielsen** (2008) Metabolic model integration of the bibliome, genome, metabolome and reactome of *Aspergillus niger*. *Mol. Systems Biol.* 4:178
5. M. R. Andersen; W. Vongsangnak; G. Panagiotou; M. P. Salazar; L. Lehmann; **J. Nielsen** (2008) A trispecies *Aspergillus* microarray: Comparative transcriptomics of three *Aspergillus* species. *Proc. Nat. Acad. Sci.* 105:4387-4392
6. R. Agren; L. Liu; S. Shoaie; W. Vongsangnak; I. Nookaew; **J. Nielsen** (2013) The RAVEN toolbox and its use for generating a genome-scale metabolic model for *Penicillium chrysogenum*. *PLoS Comp. Biol.* 9:e1002980
7. L. Caspeta; Y. Chen; P. Ghiaci; A. Feizi; S. Buskov; B.M. Hallström; D. Petranovic; **J. Nielsen** (2014) Altered sterol composition renders yeast thermotolerant. *Science* 346:75-78
8. J.C. Nielsen; S. Grijseels; S. Prigent; B. Ji; J. Dainat; K.F. Nielsen; J.C. Frisvad; M. Workman; **J. Nielsen** (2017) Global analysis of biosynthetic gene clusters reveals vast potential of secondary metabolite production in *Penicillium* species. *Nature Microbiol.* **2**:17044
9. P.-J. Lahtvee; B.J. Sanchez; A. Smialowska; S. Kasvandik; I. Elsemman; F. Gatto; **J. Nielsen** (2017) Absolute quantification of protein and mRNA abundances demonstrate variability in gene-specific translation efficiency in yeast. *Cell Systems* **4**:495-504
10. B.J. Sanchez; C. Zhang; A- Nilsson; P.-J. Lahtvee; E. Kerkhoven; **J. Nielsen** (2017) Improving the phenotype predictions of a yeast genome-scale metabolic model by incorporating enzymatic constraints. *Mol. Systems Biol.* **13**:935

Human Metabolism

1. F. H. Karlsson; F. Fåk; I. Nookaew; V. Tremaroli; B. Fagerberg; D. Petranovic; F. Bäckhed*; **J. Nielsen*** (2012) Symptomatic atherosclerosis is associated with an altered gut metagenome. *Nature Comm.* 3:1245
2. F. Karlsson; V. Tremaroli; I. Nookaew; G. Bergström; C.J. Behre; B. Fagerberg; **J. Nielsen***; F. Bäckhed* (2013) Gut metagenome in European women with normal, impaired and diabetic glucose control. *Nature* 498:99-103
3. A. Mardinoglu; R. Agren; C. Kampf; A. Asplund; I. Nookaew; P. Jacobsen; A.J. Walley; P. Froguel; L.M. Carlsson; M. Uhlen; **J. Nielsen** (2013) Integration of clinical data with a genome-scale metabolic model of the human adipocyte. *Mol. Systems Biol.* 9:649
4. F. Gatto; I. Nookaew; **J. Nielsen** (2014) Chromosome 3p loss of heterozygosity is associated with a unique metabolic network in clear cell renal carcinoma. *Proc. Nat. Acad. Sci.* 111:E866-E875
5. A. Mardinoglu; R. Agren; K. Kampf; A. Asplund; M. Uhlen; **J. Nielsen** (2014) Genome-scale metabolic modeling of hepatocytes reveals serine deficiency in patients with non-alcoholic fatty liver disease. *Nature Comm.* 5:3083
6. R. Agren; A. Mardinoglu; C. Kampf; A. Asplund; M. Uhlen; **J. Nielsen** (2014) Identification of anticancer drugs for hepatocellular carcinoma through personalized genome-scale metabolic modeling. *Mol. Systems Biol.* 10:721
7. M. Uhlén, L. Fagerberg, B.M. Hallström, C. Lindskog, P. Oksvold, A. Mardinoglu, Å. Sivertsson, C. Kampf, E. Sjöstedt, A. Asplund, I. Olsson, K. Edlund, E. Lundberg, S. Navani, C.A.-K. Szigyarto, J. Odeberg, D. Djureinovic, J.O. Takanen, S. Hober, T. Alm, H. Berling, H. Tegel, J. Mulder, J. Rockberg, P. Nilsson, J.M. Schwenk, M. Hamsten, K. von Feilitzen, M. Forsberg, L. Persson, F. Johansson, M. Zwahlen, G. von Heijne, **J. Nielsen**; F. Ponten (2015) Tissue based map of the humane proteome. *Science* 347:1260419,1-9S
8. Shoaie; P. Ghaffari; P. Kovatcheva-Datchary; A. Mardinoglu; P. Sen; E. Pujos-Guillot; T. de Wouters; C. Juste; S. Rizkalla; J. Chilloux; L. Hoyles; J.K. Nicholson; ANR MicroObese Consortium; J. Dore; M.E. Dumas; K. Clement; F. Bäckhed; **J. Nielsen** (2015) Quantifying diet-induced metabolic changes of the human gut microbiome. *Cell Metabolism* 22:320-331
9. A. Mardinoglu; S. Shoaie; M. Bergentall; P. Ghaffari; C. Zhang; E. Larsson; F. Bäckhed; **J. Nielsen** (2015) The gut microbiome modulates host amino acid and glutathione metabolism in mice. *Mol. Systems Biol.* 11:834
10. F. Gatto; I. Nookaew; H. Nilsson; M. Maruzzo; A. Roma; M. E. Johansson; U. Steiner; S. Lundstam; N. Volpi; U. Basso; **J. Nielsen** (2016) Measurements of glycosaminoglycans in plasma and urine for diagnosis of clear cell renal cell carcinoma. *Cell Rep.* 15:1-15

Reviews

1. S. Ostergaard; L. Olsson; **J. Nielsen** (2000) Metabolic engineering of *Saccharomyces cerevisiae*. *Microb. Mol. Biol. Rev.* **64**:34-50
2. **J. Nielsen** (2001) Metabolic engineering. *Appl. Microbiol. Biotechnol.* **55**:263-283
3. K.-K. Hong; **J. Nielsen** (2012) Metabolic engineering of *Saccharomyces cerevisiae*: A key cell factory platform for future biorefineries. *Cell. Mol. Life Sci.* **16**:2671-2690
4. M. Uhlen; B.M. Hallström; C. Lindskog; A. Mardinoglu; F. Ponten; **J. Nielsen** (2016) Transcriptomics resources of human tissues and organs. *Mol. Sys. Biol.* **12**:862
5. **J. Nielsen**; J. Keasling (2016) Engineering Cellular Metabolism. *Cell* 164:1185-1197
6. **J. Nielsen** (2017) Systems Biology of Metabolism: A Driver for Developing Personalized and Precision Medicine. *Cell Met.* **25**:572-579
7. **J. Nielsen** (2017) Systems Biology of Metabolism. *Ann. Rev. Biochem.* **86**:245-275
8. K. Campbell; J. Xia; **J. Nielsen** (2017) The impact of systems biology on bioprocessing. *Trends Biotechnol.* **35**:1156-1168
9. A. Mardinoglu; J. Boren; U. Smith; M. Uhlen; **J. Nielsen** (2018) The employment of systems biology in gastroenterology and hepatology. *Nature Rev. Gastro. Hep.*, in press
10. Y. Zhou; E. Kerkhoven; **J. Nielsen** (2018) Barriers and opportunities in bio-based production of hydrocarbons. *Nature Energy* **3**:925-935

Commentaries and Perspectives

1. **J. Nielsen** (2007) Principles of optimal metabolic network operation. *Mol. Sys. Biol.* **3**:126
2. **J. Nielsen** (2011) Transcriptional control of metabolic fluxes. *Mol. Systems Biol.* **7**:478

3. **J. Nielsen** (2011) Chimeric Synthetic Pathways. *Nature Chem. Biol.* **7**:195-196
4. **J. Nielsen**; J. Keasling (2011) Synergies between synthetic biology and metabolic engineering. *Nature Biotechnol.* **29**:693-695
5. **J. Nielsen**; M. Fussenegger; J. Keasling; S.Y. Lee; J.C. Liao; K. Prather; B. Palsson (2014) Engineering synergy in biotechnology. *Nature Chem. Biol.* **10**:319-322
6. **J. Nielsen** (2014) Synthetic Biology for Engineering Acetyl Coenzyme A Metabolism in Yeast. *mBio* **5**:e02153-14
7. J. Pronk; S.Y. Lee; J. Lievense; J. Pierce; B. Palsson; M. Uhlen; **J. Nielsen** (2015) How to set up collaborations between academia and industrial biotech companies. *Nature Biotechnol.* **33**:237-240
8. **J. Nielsen** (2015) Yeast cell factories on the horizon. *Science* **349**:1050-1051
9. **J. Nielsen** (2017) Built on stable catalysts. *Nature Microbiol.* **2**:17085