

Torbjörn Lundh

1. **MSc**,
Engineering Physics, Uppsala, 1989
2. **PhD**,
Mathematics/potential theory, *Kleinian groups and thin sets at the boundary*, Advisor: Matts Essén, Uppsala, 1996
3. **Postdocs**
 - i) 1997 Cambridge, UK
 - ii) 1997-1999, SUNY, Stony Brook, NY
 - iii) 1999-2000, Institut Mittag-Leffler, Djursholm
4. **Sabbatical**
Visiting professor at Vascular Surgery, Stanford, CA, August 2015 to June 2016.
5. **Docent** 2004
6. **Present position**
Professor in Mathematics, Chalmers University of Technology since 2010-10-18
7. **Earlier positions**
Lecturer, KTH, Stockholm, 1996.
Assistant professor, Chalmers University of Technology, 2000-2004.
Associate professor, Chalmers University of Technology, 2004-2010.
8. **Supervision**
 - Jonatan Vasilis, Tekn. Dr, Oct 2010, *Harmonic measures*
 - Sofia Tapani, Tekn Dr, November 2011, *Stochastic modelling and analysis of early mouse development.*
 - Jacob Leander, Tekn. Lic, Sept 2014, *Mixed-effects modeling using stochastic differential equations*
 - Tim Cardilin, Tekn. Lic, Oct 2016, *Data-driven modeling of combination therapy in oncology*

Current supervision:

 - Ove Granstrand
 - Anders Karlsson
 - Tim Cardilin
 - Valentina Fermanielli
 - **Mentor for a postdoc**
Dr. Jun Udagawa from Shimane University, Japan, 2007
9. **Other duties and achievements**
 - **SKAPA innovation price 2014 for the PressCise bandage**
 - **Conference arranging:**
 - **2nd Swedish conference on mathematical biology, 16-17 December, 2010**
 - **Aimday Image, 13 March, 2013**
 - **Pseudo Science – an innocent game of a dangerous parasite?, 25 April, 2013**
 - **9th European Conference on Mathematical and Theoretical Biology, 15-19 June 2014**
 - **Almedal Session: Mathematics is essential for keeping Sweden's strong position as an innovation country, 4th July, 2016**
 - **Other postitions:**
 - Vice chair for Gothenburg Center of Systems Biology

- Profile leader of Mathematical Biology in the Area of Advance Life science engineering
- Creator and organizer of mathbio.se
- Vice-chair evaluator for [Research Executive Agency](#), Brussels
- Member in the educational board at the Faculty of Science at Gothenburg University, “grundutbildningberedning” 2003-2006.
- Coordinator of the math. department’s participation in the yearly scientific festival in Gothenburg, vetenskapsfestivalen 2002-2010
- Member in the editorial group for the N! the Faculty of Science magazine at the University of Gothenburg. 2004-2009
- Director of the [Mathematics Consultants](#) at the department. 2008-2011
- Chairman of the [Swedish Committee on Education in Mathematics 2008-2011](#)
- Chairman of the [Collegium](#) at Mathematical Sciences. 2009-2011
- Chairman of the [Swedish National Committee for Mathematics under KVA, 2011-2015](#)
- Chairman of *Matts Esséns minnesfond*. 2004-2014
- Vice Chairman of [Chalmers’ Faculty Board](#) 2011-2015
- Program developer of the teacher training program at Chalmers: [Learning and Leadership](#)
- [Member of the board of Chalmers Foundation, 2011-2015](#), (The fond gave 2015 a net profit of 156 MSEK)
- Board member in Folkuniversitet (People’s University) Gothenburg
- [Vice president of European Society of Mathematical and Theoretical Biology](#)
- [Main organizer of ECMTB 2014](#)
- [Inspector of Chalmers Student Union](#)

Start up companies:

- Mamillicon HB (an innovation company for a traffic warning system with several prices from VentureCup)
- [GraftCraft](#) AB (developmental company for vascular stents and grafts)
- y-Graft AB (daugther company to GraftCraft AB with a novel by-pass)
- [PressCise](#) AB (innovation medtech company within the field of compression treatment)
- Anamathics AB (consult company aiming at analysis using general mathematical tools)

Funding within the medtech field:

- GothenburgBIO
- Innovationskontor Väst
- Almi
- BIO-X
- Smart Textiles
- VINN-verifiering
- Skapa Utvecklingsstipendium (West Swedish region winner 2014)
- Curamus foundation

Referee accepted papers since 2006

Minimal Martin boundary points of a John domain and unions of convex sets. J. Math. Soc. Japan, 58, no. 1, 247–274 (2006), with H. Aikawa and K. Hirata.

Which ball is the roundest? – a suggested stability index for tournaments. *Journal of Quantitative Analysis in Sports*, Article 1, Volume 2, Issue 3: 1-21, (2006).

Morphometric study on the characteristic external features of normal and abnormal human embryos. *Congenit Anom Kyoto*. 48(1) p. 18-28, (2008) with H. Otano, J. Udagawa, T. Hatta, R. Hashimoto, A. Matsumoto, and F. Satow.

The Emergence of Overlapping Scale-free Genetic Architecture in Digital Organisms, *Artificial Life* Vol. 14, No. 3: 265–275, (2008).

Gene divergence and pathway duplication in the metabolic network of yeast and digital organisms. *Journal of the Royal Society Interface*. 6 s. 1233-1245. Nr. 95730, (2009), with Gerlee, P.

A model of sympatric speciation through reinforcement *Kinetic and Related Models*. 3 (1) s. 143-163. Nr. 112216, (2010), with Henriksson, J. and Wennberg, B.

Productivity and diversity in a cross-feeding population of digital organisms. *Evolution*. 64 s. 2716–273, 2010, with Gerlee, P.

Cross- and triple-ratios of human body parts during development *Anatomical Records* 294:1360-1369. (2011) with Udagawa J, Hänel SE and Otani H.

Mathematical analysis of mandibular morphogenesis by micro-CT-based mouse and alizarin red S-stained-based human studies during development *Anatomical Records*, 295 (2) s. 313, (2012), with A. Rafiq, J. Udagawa, E. Jahan, J. Sekine, H. Otani.

Effects of space in the game “war of attrition”, *Phys. Rev. E* 85, 041115 (2012), with P. Gerlee.

Cross-feeding dynamics described by a series expansion of the replicator equation, *Bull. Math. Biology*, 75 (5) s. 709-724, (2013) with P. Gerlee

Stochastic differential equations as a tool to regularize the parameter estimation problem for continuous time dynamical systems given discrete time measurements, *Mathematical Biosciences and Engineering*. 251 s. 54-62, with Leander, J.; Jirstrand, M. (2014)

Wrange, A-L. ; André, C. ; Lundh, T. et al. (2014). Importance of plasticity and local adaptation for coping with changing salinity in coastal areas: a test case with barnacles in the Baltic Sea. *BMC Evolutionary Biology*. 14 s. artikel 156. [Nr. 199766]

Leander, J. ; Lundh, T. ; Jirstrand, M. (2014). Stochastic differential equations as a tool to regularize the parameter estimation problem for continuous time dynamical systems given discrete time measurements. *Mathematical Biosciences*. 251 s. 54-62. [[Nr. 195122](#)]

Referee accepted conference proceedings since 2006

Three dimensional mathematical modelling of pronuclei migration for the mouse. *Stereology and Image Analysis*. ECS10: Proceeding of the 10th European Conference of ISS., (V.Capasso et al. Ed.), The MIRIAM Project Series. 4 s. 1-6. ISBN/ISSN: 978-88-7488-310-3 Nr. 99257, with Tapani, S.; Udagawa, J. et al. (2010).

Rock-Scissor-Paper dynamics in a digital ecology, Proceedings of the Twelfth International Conference on the Synthesis and Simulation of Living Systems. s. 285-295. 2010, ISBN/ISSN: 0-262-29075-8, with P. Gerlee.

Pseudo Science – How do we prepare our students to deal with it? KUL 2013 – Chalmers Konferens om Undervisning och Lärande. with Galt, S. (2013).

Celander, M. C. ; Wiklander, K. ; Lundh, T. (2015). DEVELOPMENT OF ALTERNATIVE MATHEMATICAL TOOLS TO ASSESS SYNERGISTIC MIXTURE EFFECTS , *18th International symposium on Pollutant Responses in Marine Organisms (PRIMO18)*. [[Nr. 215891](#)]

Finnsgård, C. ; Larsson, L. ; Lundh, T. et al. (2015). High Performance Sailing in Olympic Classes - a Research Outlook and Proposed Directions, *Proceedings, 5th High Performance Yacht Design Conference, Auckland, 8-11 March 2015*. s. 141-149. ISBN/ISSN: 978-1-909024-37-3 [[Nr. 215230](#)]

Torbjoern Lundh, Sarah Sorice; Geoffrey Gurtner; Shannon Meyer; Subhro Sen; Robert Robertson; Jeanie Parsley and Venita Chandra at Stanford University School of Medicine: Wound circulation speeds up immediately after a hyperbaric oxygen treatment, ePresentation at the 17th European Venous Forum, London, July, 2016

Vessman, Björn ; Gerlee, Philip Lundh, Torbjörn, [Estimating the probability of coexistence in cross-feeding communities](#). *Journal of Theoretical Biology*, 408 (7) s. 13-21. 2016.

Josefin Damm ; Torbjörn Lundh ; Hugo Partsch ; Giovanni Mosti, [An Innovative Compression System Providing Low, Sustained Resting Pressure and High, Efficient Working Pressure Veins and Lymphatics](#) Vol. 6 (2017), 1

Chapter in a book

Everyday calculus teaching. Emanuelsson, J., Fainsilber, L., Häggström, J., Kullberg, A., Lindström, B. & Löwing, M. (Eds.), *Voices on learning and instruction in mathematics*. National Centre for Mathematics Education, University of Gothenburg. s. 101-116. Nr. 118266, (2010)

Book in Swedish

Vetenskapliga modeller – Svarta lådor, röda atomer och vita lögner. Lund: Studentlitteratur. ISBN/ISSN: 978-91-44-07420-7, (2012), with Philip Gerlee.

Book in English

[Scientific Models - Red Atoms, White Lies and Black Boxes in a Yellow Book](#), Springer, 2016, with Philip Gerlee

Patents

- New vascular prosthesis, Lundh, T.; Mattsson, E. Swedish pat. no. SE 531 374 C2 (2009)

- Removable Stent and Method of Production, EP 2654629, WO2012084007, Lundh, T.; Mattsson, E. (2012).
- Device and method for treating ruptured aneurysms, US-21043007, US8758423, Lundh, T.; Mattsson, E. (2014).
- Elastic bandage and textile material for use in such an elastic bandage, WO 2015007335, US2016166437, Lundh, T.; Mattsson, E.; Vasilis, J., 2015
- A bandage securing device, SE 538588, WO2016153421, Lundh, T.; Vasilis, J.; Damm, J.
- A compression garment for provision of an adjustable pressure, WO2016116125, Lundh, T.; Vasilis, J.; Damm, J.

Plus two, not yet public, (provisional) patent applications.

Dissemination of Science articles since 2006:

Responsible from 2007 to 2009 for the mathematical contribution to the yearly scientific week in Gothenburg called Vetenskapsfestivalen.

NTA-boxes from KVA, writing "A mathematician's view-point" 2009.

En civiliserad matematisk kväll i humanismens tecken, Science festival in Gothenburg, 6 May, 2009

Bengmark, S. ; Lundh, T. ; Cronhjort, M. et al. (2014). Skolan missar nya lärare med spetskompetens. NyTeknik, 27 augusti 2014. [Nr. 203106]

Lundh, T.; Bengmark, S. (2014). Politiker missar på nytt det centrala , Svenska Dagbladet, Opinion, Brännpunkt 4 april 2014. s. 6. [Nr. 197196]

Ja, ja men vad är då liv egentligen? Science festival in Gothenburg, 16 April 2015.

Own developed freely available computer programs

Urdar – a digital ecology platform: <http://www.math.chalmers.se/~torbjrn/Urdar/urdar.html> with Philip Gerlee

Presentations on conferences and invited seminars since 2006

Minisymposium on dynamical systems. Trondheim, Norway, Jan. 12 2006

The Gothenburg Centre for Theoretical Biology och Ekologisk Zoologi,, 17 October, 2006

Multiphysics meeting, Copenhagen, Nov.1-2, 2006

Analytic morphogenesis, Dundee, Nov. 7

Morphological computations, Venice, 26-30 mars, 2007

PDE & Mathematical Biology, KTH, Stockholm, July 9-11, 2007

Björn Gustafsson meeting, KTH, Oct. 15-17, 2007

Morphogenesis meeting, Gothenburg, 14-15 nov, 2007

Sonja Kovalevsky-dagarna, Nov. 16-17, 2007

Hokkaido University, Sapporo Jan. 24, 2007
Tokyo University, Jan. 22, 2007
Shimane University, Jan. 15, 2007
Symposium for research on learning and teaching in Thematics, Gothenburg, 10th March, 2008.
Science for a better life, ESOF, Barcelona, 17-18 July, 2008.
ALife XI, Southampton, UK, 5 augusti, 2008
Random models in science, engineering and medicine, Smögen, Aug.18-22, 2008.
Sonja Kovalevsky-dagarna, Uppsala, Nov. 7-8, 2008.
Spetsutbildningar i matematik, Norra Latin, Nov. 13, 2008.
International Symposium, Mathematical Analysis of Developmental Phenomena,
ShimaneUniversity, Matsue, Japan, Nov. 23, 2008.
Toward the elucidation of the developmental origins of diseases, Izumo, Japan, 30/10, 2009
First Swedish meeting on Theory and Mathematics in Biology and Medicine, 17/12, 2009
Matematikbiennalen, Stockholm, 28 January, 2010
Niels Bohr Institutet, Coopenhagen, Danmark, 31 March, 2010
Mathematical Models for Biological Systems, Università di Trento,10/2, 2011
Swedish-Korean biotechmeeting, The Royal Swedish Academy of Sciences, 14 April, 2011
European Conference on Mathematical and Theoretical Biology, Krakow, 29 June, 2011
European Conference on Artificial Life, Paris, 8-12 August, 2011
3rd Swedish meeting on Mathematics in Biology, Umeå, 14–16 December, 2011
Matematikbiennalen, Umeå universitet, 26 January, 2012
CeMEB-meeting, Tjärnö, 10 October, 2012
4th Swedish meeting on Mathematics in Biology, 10th December, 2012
Image Analysis SSBA 2013, Gothenburg, 14 mars, 2013
Chalmers meets track and field, 24 April 2013
Park Annual, Gothenburg, 12 September, 2013
Integrated Mathematical Oncology, Moffitt Cancer Center, Tampa, FL, 17 January, 2014
From the clinic to pde and back, ICERM, Brown University, RI, 20 January 2014
Matematikbiennalen i Umeå, 7 February 2014
Life Science Monday Seminary, 10 February, 2014
Medtech & Biomaterials, A well-defined compression bandage pressure is a far stretch of the truth today, but tomorrow. PressCise can give you a precise pressure, Gothenburg, 4 March 2014
Sport & Smarta Textilier, Chalmers, 27 mars 2014 ECMTB, Minisymposia: Game Theory in Ecology and Evolution, Cross-feeding as a game, Gothenburg, 16 June
Moderator Park Annual, 11 September, Sahlgrenska Science Park, 2015
Svenska Medicinteknikdagarna, Knitted mathematical solutions to three vascular surgery problems, Gothenburg, 15 October 2014
MedtechWest seminar, Three cardiovascular problems solved by mathematics and realized by knitting, Sahlgrenska, Gothenburg, 26 February, 2015.
The ecology of innovation, SACF Korea, Hanyang University, Seoul, Sydkorea, 21 April 2015
A removable stent, CVI annual retreat, Stanford, USA, 27 October 2015
Real Cardiovascular Problems, Resolved by Mathematics and Realized by Knitting, Biomathematic Seminar, UCLA, 10 December 2015.
Simulations and models (in that order) of evolving cross-feeding ecologies, Ecology lunch seminar, Stanford April 12th, 2016.
Four cardiovascular problems approached by mathematics, Applied Math. Seminar, Stanford, 6th May, 2016
Competition-Collaboration among Cancer Cell strains, Integrated Mathematical Oncology,

Moffitt Cancer Center, Tampa, FL, May 5, 2016

Real cardiovascular problems, resolved by mathematics and realized by knitting in Nottingham, European Conference for Mathematical and Theoretical Biology, July 14th 2016

An innovative compression system providing low, sustained resting pressure and high, efficient working pressure, University of Ferrara, Italy, Sept. 25th, 2016

Advances in the Management of Chronic Venous Disorders and Update of Guidelines, Increasing working compression pressure and maintaining low resting pressure, Larnaca, Cyprus, March 10, 2017

Charing X, London, two invited talks, April 25th and 27th 2017

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<http://www.math.chalmers.se/~torbjrn/>

https://sv.wikipedia.org/wiki/Torbj%C3%B6rn_Lundh