

Curriculum Vitae

Andreas Mershin, Ph.D.
Founder and Chief Science Officer

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www.RealNose.ai

www.OsmoCosm.org

www.mershin.org

Education

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|-----------|---|--|
| 1997 | M.Sci, Physics
Thesis: Computer Simulation of Cosmic Microwave Background Anisotropies
Advisor: Prof. Andy Albrecht | Imperial College of Science, Technology and Medicine,
University of London,
UK |
| 2000 | M.S., Physics
Thesis: Quantum Physics Motivated Neurobiology
Advisor: Distinguished Prof. Dimitri V. Nanopoulos | Texas A&M University,
USA |
| 2003 | Ph.D. Physics
Dissertation: Tubulin in Vivo, in Vitro and in <i>Silico</i>
Advisor: Distinguished Prof. Dimitri V. Nanopoulos | Texas A&M University,
USA |
| 2003-2004 | Postdoctoral Fellow, Physics
PIs: H.A. Schuessler & D.V. Nanopoulos
Quantum biophysics instrumentation and microfluidics for cytoskeleton and fibrous protein studies | Texas A&M University,
USA |
| 2004-2008 | Senior Postdoctoral Associate, with PI privileges
Center for Biomedical Engineering
PI: Shuguang Zhang
Automation, biophotovoltaics, protein electronics, label-free molecular interaction instrumentation, machine olfaction. | Massachusetts Institute of Technology, USA |

Current Academic Appointments:

2014- present Instructor, MIT Sloan School of Management: *"Lab to Market the MIT Way"*
Executive Education Course

2024-present Advisor National Institutes of Health National Taste and Smell Center ([NIH NTSC](#))

Past Academic Positions:

2011-2023 Research Scientist with PI privileges, Director MIT Label-Free Research Group.
Center for Bits and Atoms, MIT.

2008-2010 PI and Project Manager, Lead co-PI DARPA-MITRealNose, Center for
Biomedical Engineering, MIT

2008-2011 Research Scientist with PI privileges, Center for Biomedical Engineering, MIT

2004-2008 Postdoctoral Associate with PI privileges, Center for Biomedical Engineering,
MIT

Professional Memberships:

American Physical Society (2003-), Sigma Xi Scientific Research Society (2003-), Aircraft
Owners and Pilots Association (2003-), Associate of the Royal College of Science (1997-)

Entrepreneurship, Leadership, Service:

2005-2007 Co-founder & Lead Organizer, [Hellenic Business Network Big Idea Competition](#)
(Advisor (2007-2009))

2005- Co-founder, Law and Liability Officer (Aircraft Procurement) and Staff Advisor
to [MIT Flying Club](#): [MIT Campus Aerial Photography](#), [Helicopter Rides for MIT Students](#)

2006-2015 Science advisor to MIT 100K teams:
[Tree Power Inc.](#), (bioenergy harvesting, mesh-networked climate sensing became
VultreePower) BioBit/FitGain (quantified-self, wearable biosensing -before
FitBit), LiveTrack (machine learning for internet traffic trend mining),
AntiDark(distributed, scalable solar hextiles: MIT100K Accelerate Phase
Business Idea Plan Competition winner 2015 & Mass Challenge summer startup
incubator winners 2015),
Scientific Advisor to MindBoostr (wearable EEG neurofeedback for meditators
-Cornell Business Plan Competition \$3k winner)

- 2006-2018 [Co-founder and Director of the International Molecular Frontiers Inquiry Prize](#) for youth, the world's first prize awarded for questions, [supported](#) by the [The Royal Swedish Academy of Sciences](#) and the [Nobel Foundation](#). ([molecularfrontiers.org](#) and [mfinquryprize.org](#)), Stockholm, **SWEDEN**
- 2006 [Youth Mentoring at MIT Chapter of Molecular Frontiers](#)
- 2006 MIT Youth Guest Lecture Series Organizer: [Benoit Mandelbrot and Fractals](#) MIT, Cambridge, MA, **USA**
- 2008-2011 Co-founder and science advisor, [VOLTREE Power LLC, MA, USA](#)
- 2008- Founder, RebelMinds Consulting LLC, [rebelminds.org](#) Arlington, MA, **USA**
- 2009 Co-organizer, speaker, selection committee member of the “Membrane Protein Frontiers” International Workshop, Mykonos, **Greece**
- 2014 Co-organizer, speaker, selection committee member ["Bits <-> Biology"](#) CBA @ MIT May 1-2 2014, Cambridge, MA, **USA**
- 2015-2019 Founder: Label Free Research [Guest Lecture Series](#) and CBA Journal Club Lead, MIT Center for Bits and Atoms, MIT, Cambridge, MA **USA**
- 2016-2018 Advisor, [Envision Princeton Conference](#) Princeton University, NJ, **USA**
- 2017- Advisory board member, [Zino Ventures](#), Auckland, **NEW ZEALAND**
- 2018-2020 Expert consultant, [Medical Detection Dogs](#) "Canine olfactory detection of human colorectal cancer in urine and fecal samples" **UK** Bowel and Cancer Research
- 2018-2020 Advisor MindScreen, [BioFab](#) (www.biofab.bio), Auckland, **NEW ZEALAND**
- 2019- Co-founder & board advisor [Ninurta.com](#), Cleveland, OH, **USA**
- 2021- Co-founder & president [Osmocosm Public Benefit Foundation](#), and Chair of MIT Osmocosm [Machine Olfaction Technologies Annual Conferences](#) Cambridge, MA, **USA**
- 2022-2023 Co-founder & CSO Scentient, [www.scentient.ai](#) New York City, NY, **USA**
- 2022-2025 Co-founder MycoHab Public Benefit Foundation Mauritius, Head of Science MycoHab Site, [www.mycohab.com](#) Windhoek (Brakwater), **NAMIBIA**
- 2025- Co-founder Myconic Inc. -holders of license to two of Dr. Mershin’s MIT patents on mycotecture Cleveland, OH, **USA**

- 2023- Co-founder & Chief Science Officer RealNose Inc. www.RealNose.ai, Arlington, MA, USA
- 2025- Expert, Digital Health Literacy & Policy Hub Foundation, www.digitalhealth-hub.com NYC, NY, USA

Honors:

- 2001 1st place, poster competition, Texas A&M Univ. Graduate Student Research Week: "Biological (qu)bits: theory and experiment"
- 2003 Winner, Best Business Idea (\$1k). Texas A&M Univ. Center for New Ventures and Entrepreneurship, Business Idea Competition for entry "Portable Braille"
- 2004 Scholar of the A.S. Onassis Public Benefit Foundation -awarded for academic and research excellence.
- 2008 Young Researcher Award administered by Chemistry Nobel Laureate Sir Harry Kroto and EU Science Commissioner Andreas Mitsios (2008)
- 2008 Invited Young Scientist, 58th Meeting of Physics Nobel Laureates at Lindau, Germany

PI on Ongoing and Pending Research Support:

- 2025-2026 STTR DoD Phase 1 "*MultiModal Olfaction for Threat Detection*" (\$209k/6mo -ongoing)
- 2025-2026 NATO DIANA TEVV "*Sarin Gas Detection via Machine Olfaction*" (\$295k/9mo -ongoing)
- 2026- NSF SBIR Phase 1 "*RealNose Platform*" (\$275k/12mo -submitted, pending)

Completed research support:

- 2024-2025 NATO DIANA Accelerator Phase 1 "*Handheld RealNose and Data Digestor Design*" (\$106k/6months)

- 2019-2023 PI: Standard Banking Group (SBG) “BioFab/BioHab/www.MycoHab.com: bioaterials and mycotecture for carbon-negative, self-sustaining/replicating structures”, (\$500K/1y 2M total)
- 2022-2024 PI: MISTI Senseable Matter with visiting scholar Vlasta Kubusova from U. Bratislava Slovakia (\$30k/y)
- 2023-2023 PI: MISTI Mauritius “Mycotecture from Sugarcane” with MIT student Diane Li (\$10k)
- 2023-2023 PI: MISTI Namibia “Mycotecture from Encroacher Bush” with MIT student Shealy Calahan (\$10k)
- 2018-2020 PI: Prostate Cancer Foundation “*Machine, Canine and Human olfaction for Prostate Cancer Diagnosis*” (\$120K)
- 2013-2019 PI: GlaxoSmithKline label-free biomolecular interaction assays, machine olfaction, drug discovery, synthetic biology, 3D bioprinting (\$200-\$500K/year ~\$1.4M total)
- 2013-2018 co-PI: Bay Valley Innovation Center, Shanghai, China. Synthetic biology fab labs, next generation microfluidic perfusion (~\$250K/year ~\$1.25M total)
- 2012-2013 Key personnel and “Biological Parcel Service (BPS)” project manager of DARPA Living Foundries “Programmable Biomatter” project. (~1M)
- 2011-2012 PI and Project Manager: Label-Free Molecular Interaction Recognition Platform for Machine Olfaction Applications (~\$175K industry sponsored research -Quantum Recognition Inc.)
- 2008-2010 PI: (Lead co-PI) and Project Manager: DARPA “MITRealNose” (Microfluidic-Integrated Transduction RealNose): \$9.8M for three Phases (Phase I completed before DARPA cancellation of program ~\$4M)
- 2007-2008 co-PI: MIT-ROHM Multiplexed Biosensing (\$1M)
- 2001-2003 NSF grant in support of PhD research (\$250K)
- 2001-2003 Texas Informatics Task Force in matching support of PhD dissertation research (\$236K)
- 1999-2002 Won two direct research grants from the TAMU Dean of Science (\$15K)

Teaching Students in Courses

- 1997-2002 Teaching Assistant, Physics Department, Texas A&M University. Taught all undergraduate physics courses for engineers, pre-med and physics majors (201&218 Mechanics, 202&208 Electricity & Magnetism). Received consistently excellent student reviews. Conducted lectures, recitations, laboratories, reviews, exams, grading, tutorials.
- 2004-2010 *Molecular Structure of Biological Materials*
MIT 20.342/442 Guest lecturer for sessions on bio-nano-materials, bioelectronics
- 2005-2007 "*Learning to Fly in the Boston Area*"
MIT Flying Club bi-annual seminar for private pilot candidates
- 2012- MIT Sloan Executive Education
Developed and teach the "*Lab-to-Market the MIT way*" executive education course
- 2012 MIT Course 8
Experimental Study Group ("Hard" Undergraduate Physics)
- 2014- MIT Industrial Liaison Program
"Lab-to-Market Transitions within Industrial Innovation Cultures"
- 2015- MIT IAP annual class and practical olfactory training:
"Making Sense of Scent"
-usually late January, usually in E14-633, lately over zoom
- 2018 MIT IAP class & design challenge with architect Chris Maurer (RedHouse)
"Creating Extreme Biomaterials, Designing a Sustainable Future for Architecture
Jan. 25th 2018
- 2020 MIT IAP "*Honing Curiosity*" Lead Instructor Dr. Andreas Mershin (MIT),
co-instructors Prof. Chris Rose (RISD) , Stella Leichty (RISD) , Hanna Choi (RISD) and Dr. Linden Gledhill (VP of GSK) Feb. 2nd 2020
- 2020 MIT Sloan Executive Education Ecosystem Highlight: BioHab
<https://online.flowpaper.com/79ad0778/SPDRSharpeningYourPractice/#page=6>
- 2021 MIT IAP "*The Innovation Superhighway- Will Lawyers and Lawmakers Catch Up and What Happens When They Don't*" Jan. 8th 2021
<http://student.mit.edu/searchiap/iap-9289afed754ffd470175f23cf53b01d3.html>
- 2021 MIT IAP "*Artificial Intelligence in the Innovation Superhighway: What Happens When Old Laws Meet New Tech*"

Friday Jan. 29th 2021

https://mit.zoom.us/rec/share/CWShfCNNqYRIrr67WJECjKwbUxulOIJao98ekpLn5b57uKAbTqtK9--Od0rha2A.eHkZkU2vsBZz_gIf?startTime=1611931404000

- 2021 MIT EC.744/9794 Technologies for Mental Health and Wellness Class Guest Lecture: “*Machine Olfaction, Wearables, and Self-Calibrating Protocols for Inclusive Mental Health Applications*” Nov 11th 2021
- 2022 MIT IAP “[Bio- and Crypto- Innovation Part 1](#)” Jan 27th 2022
- 2022 MIT IAP “[Bio- and Crypto- Innovation Part 2](#)” Jan 27th 2022
- 2022 MIT IAP “[The Mycotecture \(R\)evolution and how mushrooms are becoming the new plastics, cement, wood and meat](#)” Jan 28th 2022
- 2022 “*BioDesign Class - Mycotecture*” Rhode Island School of Design, Providence, RI, USA Oct. 3 2022

Mentoring UROPs, graduate students, postdocs and entrepreneurs

<i>Name</i>	<i>Supervision Type</i>	<i>Year(s)</i>	<i>Subsequent position if known</i>
Jing Han	MIT EE UROP	2007	Researcher at Intel
Christopher J. Love	MIT Chem Eng UROP	2009	MITEI PhD/Fellow in 2014
Michael Kotson	MIT BS Physics	2012	PhD candidate in Astrophysics U Hawaii
Alex Siegrist	MIT visiting scholar	2006	MS ETH 2007
Dr Brian Cook	MIT BE PhD	2009	MIT CBE Postdoc 2010
Dr Karolina Corin	MIT BE PhD	2011	MIT CBE and CBA Postdoc 2012
Marco Salazar	MIT UROP	2012	
Dirk Steurwald	MS visiting scholar MIT	2013	PhD Zurich 2013
Thomas Duval	MS visiting scholar MIT	2013	
Ali Farag	MIT UROP	2013	
Michal Skuhersky	MIT CBA technician	2013	MIT MAS PhD candidate 2015
Andrish Reddy	MIT visiting PhD, Biomedical Engineering U of Cape Town	2014	

Dr Dionysis Christodouleas	Harvard Postdoc	2014-2017	AssocProf UMass Lowell
Dr Nick Savides	MIT Postdoc	2015-2017	
Rui Qing	MIT Postdoc	2016-2018	
Mani Jammalamadaka	MIT MS	2017	
Alex Leffel	MIT MechEnd	2017	
Quiyi Han	MIT Postdoc	2017-2018	
Thrasyvoulos Karydis	MIT MS, PhD	2017-2020	CTO Deep Cure
Shannon Johnson	MIT CBA Technician	2017-2018 2025-	MAS MS 2019, PhD MIT SynNeuroBio 2022 -now Head of Lab at RealNose.ai
Dr Filippos Toulomoussis	PhD Stevens Institute of Technology, MIT CBA Postdoc	2017-2019	Head of ALS Demokritos in Greece
Dr Patricia Stathatou	PhD Chem. Eng. National Technical University Athens (NTUA), Postdoc Civil Engineering NTUA	2017-2021	Ass. Prof. Georgia Tech U
Vladimir Leopard	BA Geology U Mass Boston 2017	2017-2018	MIT AeroAstro Lab Manager, MIT TLO, QAward NZ admin
Nicholas Bense	Astrobiology NASA Ames	2018	
Quinton Vickers	Mycotecture specialist, redhouse architecture	2019	
Wadi Nemeah	CEO Ninurta	2019-current	CEO Ninurta
Serge Faguet	CEO OpenNano	2019-2020	
Joyce Chang	MS RISD thesis committee	2020	
Jess Chiang	MS thesis committee	2020-2023	PhD in Mycotechnology ('24) thesis committee U.Auckland, NZ
Raghav Rmadya	MS thesis committee	2021	Brown/RISD Design Engineering
Karolina Sulich	MS U Warsaw Instructor MIT HTGAA 2021	2021-2024	Fulbright Scholar (olfaction and mycotecture), Osmocosm co-founder
Nikhil Lal	MIT research engineer	2020-2023	Osmocosm co-founder

M Dougherty	NYU	2021-2023 2025-	Osmocosm co-Director and Editor “Perceptual Engineering” 2 nd Edition
Arvind Bhallamudi	On Masters Thesis Committee at RISD MS’23	2022-2024	Mycotecture entrepreneur
Vlasta Kubusova	visiting architecture scholar from U. Bratislava and UPenn	2022-2023	Global MISTI Seed Fund recipient, co-author, mycotecture scientist
Diane Li	MIT Course 2 graduate MISTI Mauritius	2022-2023	Started and ran Mycotecture lab in Mauritius, incoming PhD student to MIT
Shealy Callahan	MIT Course 2 freshman MISTI Namibia	2022-2023	MISTI Namibia advising on mycotecture IoT sensing and AI/ML for carbon credits
Rose Bielak	MIT Course 18 Senior / graduate MISTI Namibia	2023	
Kristine Huakongo	University of Namibia	2021-current	Masters student earned her mycofood production MS thesis (2023) in part at the MycoHab Namibia facility
Hilma Nashandi	University of Namibia	2023-current	Masters student earning her myco-production MS thesis in part at the MycoHab Namibia
Daven Mbarandongo	University of Namibia	2023-2025	Masters thesis on mycelium bioremediation study on heavy metal (Pb) presence in fruiting bodies
Adan Rotteveel	University of Amsterdam	2023-current	BS thesis, head of AI for RealNose.ai 2024-2025
Zoi Kountouri	University of Amsterdam	2023-current	Machine Olfaction Intern at RealNose.ai – transitioned to Operations Manager at RealNose
Zoya Okulova	North Eastern University	2025-2026	Bioengineering Intern (paid) at Realnose.ai
Matthew Kung	Boston University	2025-current	Machine Olfaction Intern (BU Mech Eng class of 2028)

Invited Local and Regional Lectures

- 03/15/2003 *"Experimental quantum brain?"* Quantum Mind 2003 Conference, Univ. of Arizona Tucson, AZ, USA. Plenary Lecture.
- 06/17/2003 *"Quantum biophysics: testing a controversial hypothesis."* Research By Undergraduates (RUG) program, Texas A&M Univ. College Station, TX USA
- 03/13/2006 *"Photosystem-I Biosolar Energy Harvesting"* The Protein Society 19th Symposium, Boston, USA Plenary Lecture.
- 10/12/2006 *"Bottom-up Nano-biotechnology"* Center for Bits and Atoms, Media Lab, Massachusetts Institute of Technology, Cambridge, MA, USA
- 08/10/2007 *"Bio-Sensitized Solar Cells on ZnO nanowires"* Intel™ Power-Plus Forum: INTEL HQ, Portland, Oregon, USA. Invited Panel.
- 08/13/2007 *"Early Wildfire Alert Network"*. USDA Forest Service, National Interagency Fire Center, Boise, Idaho, USA. Invited Technology Presentation.
- 11/19/2007 *"From lab to patent to market: a guide for startups"*. Consulate General of Greece. Boston, MA USA (11/19/2007)
- 11/20/2007 *"Membrane protein photovoltaics"* Biological Engineering Department MIT, Cambridge, MA, USA
- 11/06/2008 *"Flexible BioPhotoVoltaics Manufacturing"* Leaders for Manufacturing MIT Sloan School of Business. Cambridge, MA USA. Invited Panel.
- 01/26/2009 ["Quantum Brain?"](#) Boston Skeptics in the Pub, Cambridge, MA USA
- 11/17/2010 *"Bioenergy harvesting and protein-based sensing"*. IDTechEx Energy Harvesting and Wireless Sensors Conference, Cambridge USA
- 08/15/2011 *"Nature's Templates"* University of Pennsylvania, Department of Physics, Philadelphia, USA
- 05/01/2014 *"Biomolecular Recognition"*. [CBA Bits<-> Bio Conference](#). MIT, Cambridge, MA USA https://www.youtube.com/watch?v=raS_PWgk_iI
- 04/14/2016 *"From Olfaction to Pharma"*, Monsanto Science Fellows Symposium Chesterfield, MO USA. Plenary Lecture.
- 04/13/2016 *"Drowning in 'Omes"*, Monsanto Science Fellows Symposium, Chesterfield MO USA. Invited Keynote.
- 12/02/2016 ["Unlocking the Nanoscale"](#). Princeton Envision Conference, Princeton, NJ, USA www.youtube.com/watch?v=c0s6sQacqaE Invited Nanotechnology Keynote.

- 03/30/2017 [*"Role of Curiosity in Research and Technology"*](#) Consciousness Hacking: Meditation, Neuroscience and Technology Symposium. Harvard Divinity School, Cambridge, MA USA [youtube.com/watch?v=giphmnBvxRE](https://www.youtube.com/watch?v=giphmnBvxRE)
- 04/29/2017 *"Membrane Proteins: The Trillion Dollar Space Between Wet and Dry"*. Naval Underwater Warfare Center, Newport, RI USA
- 01/18/2018 *"Multisensory Perceptual Engineering –EEG and AR/VR Wearables"* Media Lab Fluid Interfaces Research Group, MIT, Cambridge MA, USA
- 02/27/2018 *Hosted: "Human, Machine and Canine Olfactory Training for Prostate Cancer Diagnostics"* Prostate Cancer Foundation, Medical Detection Dogs, Label Free Research Group MIT, Cambridge, MA, USA
- 10/28/2018 *"Canine and Machine Olfaction for Human Prostate Cancer Diagnostics"* 25th annual Prostate Cancer Foundation Retreat, Special Lecture, San Diego, CA, USA.
- 09/21-09/22/2019 *"Memory, Emotion and Data"* Rhode Island School of Design, Providence, RI, USA
- 10/30/2019 *"BioDesign Class - Evolutionary Design"* Rhode Island School of Design, Providence, RI, USA
- 10/05/2022 *"Label Free Science the MIT Way"* Massachusetts Institute of Technology Institute Prof. Bob Langer Group Seminar, Cambridge, MA 02139, USA
- 12/7/2022 *"Mycotecture Revolution for Greece"* The Consulate of the Hellenic Republic, Boston, MA, USA
- 10/05/2022 *"Label Free Science the MIT Way"* Massachusetts Institute of Technology Institute Prof. Bob Langer Group Seminar, Cambridge, MA 02139, USA
- 10/06/2022 *"The Myco-Everything (R)evolution"* Cambridge Science Festival, Massachusetts Institute of Technology Institute Welcome Center, Cambridge, MA 02139, USA
- 10/17/2025 *The Rise of Machine Olfaction* [Interdisciplinary Biology, Cybernetics & Complex Systems Research Hackathon](#) by *ekkolapto*, keynote lecture at MIT Media Lab Cambridge, MA USA

Invited Global Lectures

- 07/30/2005 *"Protein-based nanowire photovoltaics"* Delta Electronics, Taipei, **TAIWAN**
Invited Technology Presentation.
- 07/17/2007 *"Stabilized Membrane Proteins for Energy and Sensing Applications"*
NOKIA™, Helsinki, **FINLAND**
- 08/02/2007 *"Biosensing Devices"* ROHM™ Kyoto, **JAPAN**
- 08/07/2006 *Bio Nano Materials for Energy Applications: Joint 8th International
Symposium on Hydrothermal Reactions & 7th International Conference on
Solvo-Thermal Reactions*, Sendai, **JAPAN**. Keynote Lecture.
- 06/16/2008 *"Bio-Engineered Photosystem-I Sensitized Solar Cells on Nanostructured
TiO₂, and ZnO Photoanodes"* 1st Int. Conf. on Nanoparticles, Nanomaterials
Nanodevices and Nanosystems, Chalkidiki, GREECE (06/17/2008) and
Biological Memory Depends on the Cytoskeleton but is it Quantum?
Chalkidiki, **GREECE**. Plenary Lecture.
- 06/25/2008 *"Self-assembled, bio-engineered photovoltaics and other applications of
bio-nano-tech"* Alexander Fleming Institute: Vari, **GREECE**
- 03/27/2009 *"Bio-Nano-Mechanics: Using Nature's Templates"* Technological University
of Monterrey, 7th International Congress on Mechatronics Engineering,
Monterrey, **MEXICO**. Keynote Lecture
- 08/20/2009 *"In-Field Fabrication of Bio-Photovoltaics"* Pune FAB5: Fifth International
Fab Lab Forum and Symposium on Digital Fabrication, **INDIA** (via satellite
link) Invited Panel.
- 11/30/2010 *"Bio-Nano-Materials"* National Center for Nuclear Research EKEFE
Demokritos, Athens **GREECE**
- 05/22-
05/24/2015 *"Distributed Solar Hextiles", "Modular Microfluidics", "Personalized
Machine Learning for EEG Wearables"* MIT-China Wuxi Conference Jiangsu
Province, **CHINA**. Exhibits and Invited Lecture.
- 10/08/2015 *"Drug Discovery Through The Nose"* GlaxoSmithKline Science Week,
Stevenage, UK
- 12/28/2015 *"Beyond Structure-Function: the Science and Bio-nano-technology of
Membrane Proteins"*. Bioorganic Chemistry Seminar, Russian Academy of
Sciences. Lomonosov University, Moscow, **RUSSIA**,
- 11/02/2016 *"Olfaction: A Scientific Goldmine"* Olfaction Research Group, Weizmann
Institute of Science, Department of Neurobiology, **ISRAEL**

- 11/07/2016 *"Future of Wearable Biosensors (wearable personalized machine learning and EEG)* [Mayorty of Wuxi](#), **CHINA**
- 11/09/2016 *"BioNanoTechnology of membrane proteins: from scents to cures"* [Epoch Foundation](#), TSMC & MediaTek Taipei, **TAIWAN**, (11/9/2016)
- 06/23/2017 *"Self Calibrating Protocols (SCP) for Wearables and Personalized Machine Learning"* [The 10th ACM International Conference on Pervasive Technologies Related to Assistive Environments, Rhodes](#), **GREECE**
- 06/28/2017 *"Protein Electronics Science and Bionanotechnology"*. Communication in Biology Systems and Applications in Bionanotechnology, University of Patras, **GREECE**
- 07/18/2017 *The Dave Kelly Keynote Lecture: "Molecular Phrenology"* UK Semiochemistry Network, Gonville and Caius College, University of Cambridge, Cambridge, **UK**.
- 07/21/2017 *"Beyond the Dog's Nose"* [Medical Detection Dogs](#), Milton Keynes, **UK**
- 11/22/2017 *Invited Masters Talk: "Make and Deploy for Impact: Motifs of the MIT Way"* MindLab & TechFutureLab, Auckland, **NEW ZEALAND**
- 11/23/2017 *"Build it to Understand It: MIT's Global Impact"* Callaghan Innovation & *"When Structure Isn't Function: the Global Pharma Crisis"* Victoria University Wellington, **NEW ZEALAND**
- 11/24/2017 *"Deploy for Impact, Adapt for Income"* Keynote for StartupFest, Zino Ventures, Auckland, **NEW ZEALAND**.
- 11/27/2017 *"Perception Engineering via Personalized Machine Learning EEG Neurofeedback"*, Waikato University School of Engineering, Hamilton, **NEW ZEALAND**
- 11/29/2017 *"VR and Wearables for Perceptual Engineering: Pain, Olfaction and Mental Health"* University of Auckland Dept of Psychological Medicine, Auckland **NEW ZEALAND**
- 06/05/2018 *"I Thought I Understood Vision Until I Looked at Olfaction"* Department of Experimental Psychology, University of Oxford, Oxford, **UK**
- 06/08/2018 *"Genomic and structural evidence for a neuro-immune system analogue in deep sea sponges"* Natural History Museum Invertebrates Division, Department of Life Sciences, London, **UK**
- 07/26/2018 *"BioFab/BioHab: bioterials and mycotecture"* TechFutureLab, Auckland, **NEW ZEALAND**

- 07/26/2018 *“Nobel for kids-QAward: Curiosity as a Honeable Skill”* Rangitoto College, Auckland, **NEW ZEALAND**
- 07/27/2018 *“Nanonose: Design the Experience, Not the Features -Cross-Disciplinary Research Applications”* hosted by Canterbury Angels, Christchurch, **NEW ZEALAND**
- 07/28/2018 *“How to grow BioFabLabs Using Mycotecture & Bioterials”* FabLab & Institute of Canterbury, Ara City Campus, Department of Science and Primary Industries, Christchurch, **NEW ZEALAND**
- 01/22/2019 *“Intro to Label-Free Research and Mycotecture for Africa”* University of Witwatersrand, Wits West Campus, Johannesburg, **SOUTH AFRICA**
- 11/25/2019 *“Mycotecture: from NASA, via MIT, to Africa, and beyond”* Stakeholders Meeting (Windhoek Municipality, Windhoek Mayor, Namibia Biomass Industry Group, Chairman of Namibian Federal Reserve, Ministry of Agriculture and Office of First Lady of Namibia, CEO Standard Bank Namibia Winkdhoek, **NAMIBIA**
- 07/28-
-08/02/2019 *“BioHab, MycoHab and Mycotecture for Everyone”* Fab15 International Conference Cairo, **EGYPT**
- 08/26/2019 *“BioHab, Machine Olfaction and the (Academic) Pleasure of Creating Things”* National Technical University (NTUA), Athens, **GREECE**
- 12/20/2019 *“On the Evolutionary Traits of Ideas”* Medical Detection Dogs Milton Keynes, Campus, **UK**
- 08/11/2021 *“Paradoxing”* Venice Bienalle 2021 Arts Letters and Numbers (**ITALY**/zoom)
- 08/12/2021 *“Scaling”* Venice Bienalle 2021 Arts Letters and Numbers (b/zoom)
- 08/13/2021 *“Futuring”* Venice Bienalle 2021 Arts Letters and Numbers (**ITALY**/zoom)
- 09/29/2021 *“Machine Olfaction for Everyone”* Lifelong Learning Collaborative (Providence, RI, **USA**/zoom)
- 10/14/2001 *“Machine Olfaction in Space”* SpacehubDesign, (London, **UK**/zoom)
- 10/28-
10/30/2021 Inaugural [Osmocosm](#) Machine Olfaction Technologies Conference (Arlington & Cambridge, MA, **USA**/zoom)
- 10/20-10/22/2
022 Second [Osmocosm](#) Machine Olfaction Technologies Conference (MIT Campus, Media Lab Bartos Theater Cambridge, MA, **USA**/zoom)
- 04/21/2023

- “(R)Evolutionary Innovation for Sustainability” ([Enterprise Ireland Innovation Business Leaders Conference Ireland Summit](#)) (Dublin, **IRELAND**)
- 04/24/2023 “Don’t kick the innovation baby!” ([Medical Detection Dogs](#)) (Milton Keynes, **UK**)
- 10/20-10/21/2023 “The State of Machine Olfaction in 2023” Third Annual [Osmocosm](#) Machine Olfaction Technologies Conference @MIT (The Bartos Theater, Cambridge, MA, **USA+**)
- 12/06/2023 “Greece: Keep the Brains, Export the Minds -Innovation Capitalism for Global Impact the MIT Way ” Greek Consulate presentation for Helene Students (Boston, MA, **USA+**)
- 01/10/2024 *Academia to Entrepreneurship (Lab to Market and Beyond)* Faculty of Electrical Engineering, University of Bratislava, **SLOVAKIA**
- 01/11/2024 *Label Free Research: Making Sense of Scent* British Society of Perfumers (via zoom to London, **UK**)
- 11/14/2024 *Specializing in Not -Lab to Market the MIT way* [Keynote for the 40th Anniversary of the International Baccalaureate](#) in Greece hosted by the Moraitis School in Megaron Mousikis Athens, **GREECE** Nov 14 2025
- 04/22/2024 *Perceptual Engineering: How Olfaction and Other Senses Create Reality* by Christopher Rose and Andreas Mershin
1st Edition Book Launch Glasgow, **SCOTLAND** April 22 2024
- 05/28/2025 *From Hippocrates to RealNose the MIT Way -Diagnosing Cancer by Scent in the Age of AI* [BiomedAI Conference 2025](#) (co-hosts [IARC](#), [WHO](#), [Archimedes](#)), Lyon, **FRANCE** May 26-28 2025

Contributed Talks/Seminars

- 11/28/2000 “Biophysics of the cytoskeleton” Houston Advanced Research Center (HARC), **USA**
- 05/01/2001 “Directed overexpression of vertebrate tubulin in *Drosophila* mushroom bodies causes neuroplasticity decrement in olfactory associative memory” Texas A&M Univ. Center for Advanced Invertebrate Molecular Neurobiology, **USA**

- 05/15/2003 *"Biomolecules as substrates for classical and quantum computation"* Joint NSF/DARPA PI meeting, Ft. Lauderdale, FL **USA**
- 02/20/2004 *"Bio(qu)bits: theory, simulation and experiment"* Centre for Structural Biology, Imperial College of Science, Technology and Medicine, Univ. of London, UK
- 12/09/2004 *"Biological Engineering of Peptide-Stabilized Membrane Protein Chips"* Massachusetts Institute of Technology, Cambridge, MA **USA**
- 02/25/2005 *"Peptide-assisted bio-nanodevices"* Center for Astrophysics, Harvard University, Cambridge, MA, **USA**
- 03/10/2005 *"Photosynthetic electric power"* RIKEN, Yokohama, **JAPAN**
- 03/12/2005 *"Biomimicry in nanotechnology"* Marine Biology Institute, Heita-Kamaishi, **JAPAN**
- 10/16/2007 *"Bio-Nanotechnology: integrating membrane proteins with electronic circuits"* Seminar: National Technical University of Athens, **GREECE**
- 06/13/2008 *"Battery-less remote sensing and mesh-networked forest wildfire protection -E.W.A.N."* Hellenic Technology Cluster Initiative (Ministry of Development)" GDT/Corallia, Athens, **GREECE**

Invited Posters/Abstracts

- 05/15/2003 *"Electromagnetic and informational processes in biomolecular polymers"* Joint NSF/DARPA PI meeting, Ft. Lauderdale, FL, **USA**
- 01/15/2008 *"Bio-based RealNose"* DARPA RealNose Industry Day. Arlington, VA, **USA**
- 02/25/2011 *"BioManufacturing Impossible Materials"* DARPA MTO Workshop, Dana Point, CA, **USA**
- 11/01-11/03/2016 *"United States of E-coli"* poster and multi-cultural directed evolution strategy presentation with Shannon L. Johnson for Label Free entry to [Evolthon Genome Engineering Challenge](#) at Genome Evolution Conference, Weizmann Institute of Science, Shannon L. Johnson, Timothy Stiles, Rachel Soo-Hoo Smith, **Andreas Mershin** Rehovot, **ISRAEL**
- 10/05/2017 *"Shifted-Wavelength Photosynthesis for Biomass Production"* Invited Abstract for Nature-Inspired Biomimicry Summit Exploration for Aerospace NASA/Ohio Aerospace Institute Cleveland, OH **USA**
- 11/04/2017 *"Temporal Stereoscope"* Invited Poster and Prototype Demonstration Michael Skuhersky & **Andreas Mershin** TEDx Beacon St. MA, **USA**

- 02/02/2018 “Synnels, Microfluidics and 3D Bioprinting” **Andreas Mershin** Build-a-cell Workshop #2 Stanford University, Palo Alto, CA, **USA**
- 03/29/2018 *Invited Abstract and Poster: “A Scientific Payload for Investigation of RNA Folding, Synthetic Protocell Protein Expression, and Pharmaceutical Nano-Precipitation”* Bense N, Gilstrap A, Buchman Z, Galles M, Robinson R, Borden M, Certain E, Lambert R, Gordillo O, Nakonechnya O, Tourlomousis F, Lai D, Adamala K, Engelhart A, **Mershin A.** NASA American Institute of Aeronautics and Astronautics Hampton Roads Section Student Research Spring Forum Hampton, VA, **USA** **-Payload launched successfully June 21 2018**
- 10/07/2019 *GC-MS and Canine/Machine Olfaction for Early Prostate Cancer Diagnostics* **Andreas Mershin et al.** PCF 26th Annual Meeting, Dana Point, California, **USA**
- 06/27/2022 *SENSBIOM: Senseable BioComposites for Healthier Habitats* Vlasta Kubusova, Kate Adamala, Laia Mogas Soldevila, Gabrielle Ho, Camila Irabien, Katia Zolotovskyy & **Andreas Mershin**, Bratislava, **SLOVAKIA**

Selected Presentations and Recognition in Mass Media:

Beyond scientific citations, thousands of media impressions in national and international print, TV, radio, [Internet](#): CNN, Fox, BBC, New York Times, Financial Times, Forbes, Wall Street Journal (some are kept updated by [Media Lab PR](#))

A thorough article in [Wired](#) resulted from my hosting the reporter for a two day MIT Label Free Research Group @CBA lab visit:

<https://www.wired.com/story/quest-to-make-robot-smell-cancer-dog/>

Won best [science journalism distinction](#) in “[The Best American Science and Nature Writing](#)” edited by [Michio Kaku](#):

<https://www.hmhbooks.com/shop/books/the-best-american-science-and-nature-writing-2020/9780358074298>

[ITV](#), [The Times](#), [Good News Network](#), [Medical Detection Dogs](#), [NATO DIANA](#), [MassChallenge](#), [Nature](#), [WIRED](#), [New Scientist](#), [The Guardian](#), [LeapsMag](#) [The Telegraph](#) [-Cancer Detecting Dogs](#), [Forbes](#), [Xconomy](#), [Popular Mechanics](#), [Town and Country](#), [Fast Company](#), [Gizmodo](#), [Eetimes](#), [ZDNet](#), [CleanTechLA](#), [Environment Report](#), [InventorSpot](#), [TechTalk](#), [MITNews](#), [Nature Network Boston](#), [Physorg](#), [ETCounsel](#), [Technology Review](#), [Boston Globe](#), [Wired](#), [Engineering for Change: “The Biosolar Race is On”](#), [PhysOrg: BioPV alternative to traditional solar cells](#), [BBC Radio 4: Inside Health](#), [MIT News](#), [MIT Spotlight](#), [MIT Spectrum](#) & [MIT Tech Review](#) multiple times.

TV Specials: “Visions of the Future” (with Michio Kaku) BBC4 (2007), “Quantum Mysteries” (2003), “Unexplained” (with William Shatner) Hulu (2021), “QED with Dr. B” (PBS Ohio WOSU Public Media) (2022), [PBS Nova WGBH \(2022\)](#), [PBS Nova WOSU \(2023\)](#)

Teaching/Education Innovations

2001-2003 Developed all content and deployed the first ever web-based teaching tools at Texas A&M University: "Automated Mathematics Evaluation System" (AMES) and "Computerized Homework Assignment Grading System" (CHAGS). Both became standard curriculum for engineering and physics students (~30,000 users per year) (<http://faculty.physics.tamu.edu/toback/218/quiz/>). This led also to a peer-reviewed publication in The Physics Teacher 2005 (listed in “Peer Reviewed Publications below)

Public Education, TEDx talks, and Service to the Community

- 11/24/2012 *"Bio Nano Technology-New Frontiers in Molecular Engineering"*
[TEDx-Athens](#), GREECE
- 10/18/2017 *"Advances in NanoBioTech"* Industrial Liaison Program, MIT, MA, USA
- 11/04/2017 *"Curiosity Is A Superpower"* [TEDx Beacon St](#) MA, USA
<https://www.youtube.com/watch?v=7bootfdk7ZO>
<https://www.youtube.com/watch?v=8LRjbYmCJwM>
- 11/30/2017 *"Smelling skin cancer with your smartphone"* NZTV, NEW ZEALAND
- 12/14/2017 *"Label-Free"* P61VMag: Pioneers of Interdisciplinary Innovation Issue 05
www.proj61.com/vmag Invited Video Talk, USA
- 02/18/2018 *Invited Profile: "Solutions to x: researching across disciplines"* Industrial Liaison Program,
MIT, Cambridge, MA, USA (02/18/2018)
Text: <http://ilp.mit.edu/newsstory.jsp?id=24093>
Accompanying Videos:
[Why a “Label Free” Research Group](#)
(<http://ilp.mit.edu/videodetail.jsp?id=2344>)
[Detecting Early Signs of Cancer](#)
(<http://ilp.mit.edu/videodetail.jsp?id=2345>)
[Deviating from Traditional Pharma](#)
(<http://ilp.mit.edu/videodetail.jsp?id=2346>)
[Exploration and Curiosity as Technical Skills](#)
(<http://ilp.mit.edu/videodetail.jsp?id=2347>)
[Balancing Academia and Industry](#)
(<http://ilp.mit.edu/videodetail.jsp?id=2348>)
[The Evolving Field of Health and Pain Management](#)
(<http://ilp.mit.edu/videodetail.jsp?id=2349>)

- 03/27/2018 *Invited Outreach Lecture: “Microscopy and Curiosity”* Haynes Early
Education Center Roxbury, MA, **USA**
- 06/06/2018 *Invited demonstration: “[Medical Detection Dogs -a Jewel in the Crown of British Science](#)”* nanonose prototype presentation to HM Queen Elizabeth II,
Royal Mews, Buckingham Palace, London, **UK**

Peer-Reviewed Publications

A. Mershin, D.V. Nanopoulos & E.M.C. Skoulakis. Quantum Brain? *Proc. Acad. Athens*, 74 A (1999)

N.E. Mavromatos, **A. Mershin** & D.V. Nanopoulos. [QED-Cavity model of microtubules implies dissipationless energy transfer and biological quantum teleportation](https://doi.org/10.1142/S0217979202011512) *Int. J. Modern Physics B*, 16, No. 24 3623-3642 <https://doi.org/10.1142/S0217979202011512> (2002)

H.A. Schuessler, **A. Mershin**, A.A. Kolomenski & D.V. Nanopoulos. [Surface plasmon resonance study of the actin-myosin sarcomere complex and tubulin dimer](#), *J. Modern Optics*, 50 No. 15-17, 2381-2391 (2003)

A. Mershin, E. Pavlopoulos, O. Fitch, B.C. Braden, D.V. Nanopoulos & E.M.C. Skoulakis. [Learning and memory deficits upon TAU accumulation in Drosophila mushroom body neurons](#). *Learning & Memory*, May-June; 11(2):277-287 (2004)

A. Mershin, A.A. Kolomenski, H.A. Schuessler & D.V. Nanopoulos. [Tubulin dipole moment, dielectric constant and quantum properties: computer simulations, experimental results and suggestions](#). *Biosystems*, 77:73-85 (2004)

V. Lioubimov, A.A. Kolomenski, **A. Mershin**, D.V. Nanopoulos, & H.A. Schuessler. [The effect of varying electric potential on surface plasmon resonance sensing](#) *Applied Optics* June 10, 43, No 17 (2004)

D. Toback, **A. Mershin** & I. Novikova [Integrating web-based teaching tools into large university physics courses](#) *The Physics Teacher*, 43, 594-597 (2005)

H. Sanabria, J.H. Miller, **A. Mershin**, R.F. Luduena, A.A. Kolomenski, H.A. Schuessler & D.V. Nanopoulos. [Dielectric spectroscopy of \$\alpha\beta\$ -tubulin heterodimer](#) *Biophysical Journal* 90:4644-4650 (2006)

Love, C., Zhang, S., **Mershin, A.** [Source of Sustained Voltage Difference between the Xylem of a Potted Ficus benjamina Tree and Its Soil](#). *PLoS ONE* 3(8): e2963 (2008)

Franco, M.I., Turin, L., **Mershin, A.**, Skoulakis E.M.C., [Molecular vibration sensing component in Drosophila melanogaster olfaction](#). *PNAS* March 1, vol. 108 no. 9 3797-3802 (2011)
Highlighted on date of online pub (02/14/2011) by both *Nature*: [Flies Sniff Out Heavy Hydrogen](#) and *Science*: [Do Vibrating Molecules Give Us Our Sense of Smell?](#)

Franco, M.I., Turin, L., **Mershin, A.**, Skoulakis E.M.C., Reply to Hettinger: [Olfaction is a physical and a chemical sense in Drosophila](#) *PNAS* August 2, Vol. 108 no. 31 (2011)

Mershin, A., Matsumoto, K., Kaiser, L., Yu, D., Vaughn, M., Bruce, D., Graetzel, M., & Zhang, S. [Self-assembled photosystem-I biophotovoltaics on nanostructured TiO₂ and ZnO](#). *Nature Scientific Reports*, 2, doi:10.1038/srep00234 www.nature.com/articles/srep00234 (Feb 2 2012)

T. Karydis, F. Aguiar, S. L. Foster, & **A. Mershin**. [Performance characterization of self-calibrating protocols for wearable EEG applications](#). *PETRAe Conf. Proc.*, ISBN: 978-1-4503-3452-5 doi>[10.1145/2769493.2769533](#) Proceedings of the 8th ACM International Conference on PErvasive Technologies Related to Assistive Environments Article No. 38 (2015)

T. Karydis, F. Aguiar, S. L. Foster, & **A. Mershin**. [Self-Calibrating Protocols as diagnostic aids for personal medicine, neurological conditions and pain assessment](#). *PETRAe Conf. Proc.*, ISBN: 978-1-4503-4337-4 doi>[10.1145/2910674.29358522016](#) **Proceedings of the 9th ACM International Conference on PErvasive Technologies Related to Assistive Environments Article No. 61 (2016)**

Thrasyvoulos Karydis, Samuel Langer, Simmie L. Foster, & **Andreas Mershin**. [Identification of post-meditation perceptual states using wearable EEG and Self-Calibrating Protocols](#). In *PETRA '18: The 11th Pervasive Technologies Related to Assistive Environments Conference*, June 26–29, 2018, Corfu, Greece. ACM, New York, NY, USA, <https://doi.org/10.1145/3197768.3201544> (2018)

Tourlomousis, F., Jia, C., Karydis, T. **Mershin, A.** Wang, H. Kalhyon, D. M., Chang, R. [Machine learning metrology of cell confinement in melt electrowritten three-dimensional biomaterial substrates](#). *Nature Microsyst Nanoeng* 5, 15 March 25 2019 <https://doi.org/10.1038/s41378-019-0055-4F>. Covered by [The Economist](#) May 16 2019

Sivan Kaminski, Dvir Schirman, {...} Kate Adamala, Simmie Foster, Shannon Johnson, **Andreas Mershin**, Orna Dahan & Yitzhak Pilpel. [Evolthon: a community endeavor to evolve lab evolution](#) *PLoS Biology* March 29 2019. <https://doi.org/10.1371/journal.pbio.3000182>

McCaul, Gerard, Bondar, Denys, & **Mershin, Andreas**. [Diffusion fails to make a stink](#). *Physics of Fluids* (Featured Paper) 33 031801 <https://doi.org/10.1063/5.0044064> (03/12/2021)

Guest Claire, Harris Rob, Sfanos Karen S, Shrestha E, Partin Alan W, Trock Bruce, Mangold Leslie, Bader Rebecca, Kozak Adam, McLean Scott, Simons Jonathan, Soule Howard, Johnson Thomas, Wen-Yee Lee, Qin Gao, Sophie Aziz, Stathatou Patrissia, Thaler Stephen L, Foster Simmie L & **Mershin Andreas**. [Feasibility of integrating canine olfaction with chemical and microbial profiling of urine to detect lethal prostate cancer](#). *PLoS ONE* 16(2): e0245530 <https://doi.org/10.1371/journal.pone.0245530>
[MIT coverage: https://news.mit.edu/2021/disease-detection-device-dogs-0217 \(02/17/2021\)](#)
[Scientific American](#) (03/04/2021)

James F Pelletier , Lijie Sun Kim S Wise Nacyra Assad-Garcia Bogumil J Karas Thomas J Deerinck Mark H Ellisman **Andreas Mershin** Neil Gershenfeld Ray-Yuan Chuang John I Glass Elizabeth A Strychalski. [Genetic requirements for cell division in a genomically minimal cell](#). *Cell* 184(9):2430-2440.e16. PMID: 33784496 DOI: [10.1016/j.cell.2021.03.008](#) (04/29/2021)

Patrissia M. Stathatou, Christos E. Athanasiou, Marios Tsezos, John W. Goss, L. Camron Blackburn, Filippos Tourlomousis, **Andreas Mershin**, Brian W. Sheldon, Nitin P. Padture, Eric

M. Darling, Huajian Gao & Neil Gershenfeld. [Lead removal at trace concentrations from water by inactive yeast cells](#) *COMMUNICATIONS EARTH & ENVIRONMENT* Vol. 3, Article number: 132 (2022) DOI <https://doi.org/10.1038/s43247-022-00463-0> Covered by [MIT News](#) and [Forbes](#) (Published 06/13/2022)

G. Ho, V. Kubušová, C. Irabien, V. Li, A. Weinstein, Sh. Chawla, D. Yeung, **A. Mershin**, K. Zolotovskiy, L. Mogas-Soldevila. [Multiscale Design of Cell-Free Biologically Active Architectural Structures](#) *FRONTIERS IN BIOENGINEERING AND BIOTECHNOLOGY*, 28 March 2023 Sec. Biomaterials Volume 11 - 2023 | <https://doi.org/10.3389/fbioe.2023.1125156>

Adan Rotteveel, Wen-Yee Lee, Zoi Kountouri, Nikolas Stefanou, Howard Kivell, Clifford Gluck, Shuguang Zhang and **Andreas Mershin** [Towards robust medical machine olfaction: debiasing GC-MS data enhances prostate cancer diagnosis from urine volatiles](#) *PUBLIC LIBRARY OF SCIENCE ONE* PLoS One 20(5): e0314742 <https://doi.org/10.1371/journal.pone.0314742> May 30, 2025

Nick E. Mavromatos, **Andreas Mershin**, & Dimitri V. Nanopoulos [On the Potential of Microtubules for Scalable Quantum Computation](#) *Eur. Phys. J. Plus* (2025) **140**: 1116 <https://doi.org/10.1140/epjp/s13360-025-07022-4> November 19 2025

Non-peer reviewed publications:

Mershin, A., Stefanou, N., Rotteveel, A., Kung, M., Kung, G., Dan, A., Kivell, H., Okulova, Z., Kountouri, Z. and Liang, P.P. (2025). *Machine Olfaction and Embedded AI Are Shaping the New Global Sensing Industry*. arXiv.org. Available at: <https://arxiv.org/abs/2510.19660>

Book:

“[Perceptual Engineering: How Olfaction and Other Senses Create Reality](#)” by Chris Rose and Andreas Mershin (First Edition Published March 2025 Glasgow, Scotland, 2nd Edition By [RebelMinds Publishing](#) available on amazon: [ISBN: 979-8-9985113-0-1](#))

Book Chapters

Mershin A., & Nanopoulos D.V., [Memory depends on the cytoskeleton but is it quantum?](#) [Chapter 7](#) of [QUANTUM ASPECTS OF LIFE](#) ed. Davies, P. Imperial College Press ISBN: 978-1-84816-253-2 (2008)

Renugopalkrishnan, V., Kannan, A.M., Srinivasan S., Thavasi, V., Ramakrishna, S., Li, P., **Mershin, A.**, Filipek, S., Kumar, A., Dutta, J., Jaya, A., Munukutta, L., Velumani, S. and Audette, G.F. *Nanomaterials for Energy Conversion Applications* pp 1-24 in

NANOMATERIALS FOR ENERGY STORAGE APPLICATIONS; ed. Nalwa H.S., ISBN: 1-58883- 120-5 (2008)

A. Mershin, H. Sanabria, J.H. Miller, D. Nawarathna, E.M.C. Skoulakis, N.E. Mavromatos, A.A. Kolomenski, H.A. Schuessler, R.F. Luduena & D.V. Nanopoulos *Towards experimental tests of quantum effects in cytoskeletal proteins* **THE EMERGING PHYSICS OF CONSCIOUSNESS** Springer-Verlag Berlin, Heidelberg, New York, ISBN-13-9783540238904 Chapter 4: 95-170 (2006) https://link.springer.com/chapter/10.1007/3-540-36723-3_4#citeas

Invited Publications:

D. Toback, **A. Mershin** & I. Novikova *New Pedagogy for Using Internet-Based Teaching Tools in Physics Courses*, e-print <http://xxx.lanl.gov/abs/physics/0408034> (2004)

A. Mershin, B. Cook, L. Kaiser & S. Zhang. *A classic assembly of nanobiomaterials*. *Nature Biotechnology*, 23 No. 11: 9-10 (2005)

Mershin A., *We Need a Nobel prize for Kids*. Op. Ed. New Scientist (April 29 2008) http://www.newscientist.com/article/dn13798-comment-we-need-a-nobel-prize-for-kids.html?D&CMP=ILC-hmts&nsref=spectr10_pic

Colin Lindeque, Carolyn Cameron-Kirksmith, Yang Gao, Christopher Maurer & **Andreas Mershin** *Analysis of Potential Payment Schemes for Ecosystem Services in the Namibian Biomass Sector* COMMISSIONED BY: Bush Control and Biomass Utilisation (BCBU) Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH P.O. Box 8016, Bachbrecht, Windhoek, Namibia (PDF available upon request) (May 2022)

Bonardi, Mia, **Mershin, Andreas** and Ioannidis, Dimitrios, *Inclusive Bio- and Crypto-Innovation: How Law and Technology Co-Evolve*. SSRN: <https://ssrn.com/abstract=4217013> <http://dx.doi.org/10.2139/ssrn.4217013> (Published by Osmocosm Foundation January 28, 2022)

Patents

Mershin A, Cook BL, Zhang S. *inventors*, [Bio-sensitized solar cells \(BSSC\)](#). US 8796544. Publication date August 05 2014, Priority date Dec 14 2005

Mershin A, Zhang S, Prakash M, Kong D, Maguire Y., *inventors* [Bio-sensing nanodevice](#). US 20090156427. June 18 2009

Mershin Andreas, Wassie Asmamaw, Maguire Yael, Kong Dave, Zhang Shuguang, Moran Patrick, Corin Karolina *inventors*, [Methods and Apparatus for Artificial Olfaction](#). US 13/966,169. August 13 2013

Mershin A, Cook B.L., Kaiser L, Bikker J.F., Miura Y. *inventors* ["Multiplexed olfactory receptor-based microsurface plasmon polariton detector"](#) US 8748111. June 10 2014

Mershin A. Leffell A. ["Methods and Apparatus for Microfluidic Perfusion"](#). US 62164072. US9610578 B2 US 15/158,644 April 4, 2017 Filed: May 19, 2016 Priority date May 20 2015

Mershin, Andreas, Pelletier, James, Gershenfeld, Neil, Glass, John, Strychalski, Elizabeth. ["Methods and Apparatus for Transplantation of Nucleic Acid Molecules"](#) United States **Utility** Patent Application [20150037890](#) Application Number 14/449106 Publication Date: Feb 05 2015

Mershin, Andreas, Karydis, Thrasylvoulos ["Methods, Systems, and Apparatus For Self-Calibrating EEG Neurofeedback"](#) United States Patent Application [20160235324](#) **Utility** Application Number: 15/043909 Publication Date: 08/18/2016, Filing Date: 02/15/2016

Mershin, Andreas "Methods and Apparatus for Temporal Stereoscopy" US **Provisional** Application No. 62/581,508 Filed November 3, 2017 (abandoned)

Mershin, Andreas & Adamala, Katarzyna ["Methods and Apparatus for Synthetic Cell \(Synell\) Creation, Evolution, and Digital Transmission"](#) MIT Ref. No. 19194X Ser. No. 62/429,787 US **Utility** Application Number 15/831,379 Filed Dec. 5 2017

Mershin, Andreas & Johnson, Shannon: ["Methods for Directed Exaptation"](#) Pub . No . : US 2019 / 0119667 A1 Pub . Date : Apr . 25 , 2019 (abandoned)

Lai, David (GSK) & Turlomousis, Filippou, Gershenfeld, Neil & **Mershin, Andreas** ["Methods and Apparatus for Variable Emulsification"](#) US **Pub. US 2019 / 0184351 A1 Pub. Date : Jun . 20 , 2019**
-joint assignees GSK-MIT,

Andreas Mershin, Vincent Noireaux, James F Pelletier, Neil A Gershenfeld ["Methods and Apparatus for Cell-Free Microfluidic-Assisted Biosynthesis"](#) **US 2019 / 0225949 A1 Pub. Date : Jul . 25 , 2019**

["Methods for Mycotecture"](#) by **Andreas Mershin**, Patrissia Stathatou, Chris Maurer, Carolyn Kirksmith disclosed Nov 12 2020 MIT TLO Case #22929 EFS ID 41652482, App#63137608

-joint assignees SBG-MIT

<https://patentimages.storage.googleapis.com/c6/5b/cf/8b7fedb266c0e2/US20220217923A1.pdf>

Filed: Jan .14 2021

“Materials and Methods for Biosorption of Micropollutants from Aqueous Solutions”

MIT Ref. No. 23309X Ser. No. 17/941,016

by Stathatou, Patrissia, Tourlomousis, Filippou, Athanasiou, Christos, **Mershin, Andreas**, Gershenfeld, Neil. Docket No. 056754/1200

Filed conversion to utility: 9/8/2022 U.S. Prov. Pat. App. 63/241,968

“Methods and apparatus for electro-meridian diagnostics” I. Neme, T. Quinn, D. Neme, W Neme & A. Mershin US 11517215 B2

<https://patentimages.storage.googleapis.com/30/86/58/ba79a22922f1c6/US11517215B2.pdf>

Filed: Dec. 6 2022

“Methods and apparatus for adaptive, integrated mycotecture for rapid deployment and scaleup”

Andreas Mershin, Carolyn Kirksmith, Yang Gao, Chris Maurer MIT Case No. 24500X, provisional USPTO Case number 63/479,452

Joint assignees: SBG-MIT; licensed by Myconic Inc. (USA) 2025

Filed: Jan. 11 2023

“MACHINE OLFACTION AND MULTI-MODE SENSOR FUSION ARCHITECTURES FOR NON-INVASIVE SENSING”, Adan Rotteveel, Nikolas Stefanou, Zoi Kountouri, **Andreas Mershin** PCT Patent Application No. PCT/US2025/030994

Filed: June 13 2024 (assignee: RealNose Inc.)

“SYSTEMS AND METHODS FOR DE-BIASED CLUSTERING OF DATA TO ENHANCE PROSTATE CANCER DIAGNOSIS FROM URINE VOLATILES IN MACHINE OLFACTION” Adan Rotteveel, Nikolas Stefanou, Zoi Kountouri, **Andreas Mershin** USPTO Application # 63/718,275

Filed: November 08 2024 (assignee: RealNose Inc.)

“DIRECTED EVOLUTION OF AI AGENTS FOR DISEASE DETECTION” Adan Rotteveel, Nikolas Stefanou, Zoi Kountouri, **Andreas Mershin** USPTO Application # 63/726,978

Filed: December 02 2024 (assignee: RealNose Inc.)

“DIRECTED EVOLUTION OF BACTERIA FOR DISEASE DETECTION FROM URINE” Adan Rotteveel, Nikolas Stefanou, Zoi Kountouri, **Andreas Mershin** USPTO Application # 63/726,991

Filed: December 02 2024 (assignee: RealNose Inc.)

“FIELD EFFECT TRANSISTOR (FET) SENSORS FOR MACHINE OLFACTION DEVICES”, Adan Rotteveel, Nikolas Stefanou, Zoi Kountouri, **Andreas Mershin**, Scott Lefton USPTO Application # 63/822,644

Filed: June 12 2025 (assignee: RealNose Inc.)

“DISCOVERING AND ENGINEERING BIOSYNTHETIC ODORANT PATHWAYS FROM GPCR OLFACTORY RECEPTOR SEQUENCES AND VICE VERSA VIA MOTIF-BASED DECODING OF MOLECULAR SEMIOTICS”, Adan Rotteveel, **Andreas Mershin** USPTO Application # 63/825,286

Filed: June 17 2025 (assignee: RealNose Inc.)

As of last check (October 2025) there were 13 Patents of over twenty filed still active with the MIT Tech Licensing Office, seven active patents assigned to and wholly owned by RealNose Inc. and two independently owned.

Languages

Fluent in English, Greek, Russian

C++, FORTRAN, BASIC, HTML, AVS, TINKER, MatLab, UNIX, MacOS, Excel, SigmaPlot, python

Other Interests

Parenting responsible and responsive future world citizens. airplane pilot, glider pilot, SCUBA dive master, VF750 '88 SuperMagna enthusiast.



*Making Sense Of Scent Annual MIT IAP Class on the biophysics, chemistry, technology
and perceptual engineering of (machine) olfaction.*

"Original" AIrt Cover Art by Andreas Mershin and Midjourney March 2023