

RESUME

Josué Sznitman

Citizenship: France, Israel, Switzerland

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ACADEMIC DEGREES

- 2008 Dr. Sc., Department of Mechanical & Process Engineering
(with distinction – see Prizes)
Swiss Federal Institute of Technology (ETH Zurich), Zurich, Switzerland
- 2003 MSc, Department of Mechanical & Process Engineering
(GPA 4.8/5.0 with distinction – see Prizes)
Swiss Federal Institute of Technology (ETH Zurich), Zurich, Switzerland
- 2002 BSc, Department of Mechanical Engineering (GPA 5.0/5.0)
(MIT) Massachusetts Institute of Technology, Cambridge MA, USA

ACADEMIC APPOINTMENTS

- 10.2016 – present Associate Professor (with tenure)
Dept. of Biomedical Engineering
Technion, Israel Institute of Technology
- 03.2022 – 09.2022 Visiting Professor (Sabbatical leave with appointment)
Institute of Bioengineering
Ecole Polytechnique Fédérale Lausanne (EPFL), Switzerland
- 10.2010 – 09.2016 Assistant Professor
Dept. of Biomedical Engineering
Technion, Israel Institute of Technology
- 01.2009 – 08.2010 Lecturer and Research Associate
Dept. of Mechanical & Aerospace Engineering
Princeton University, Princeton NJ, USA
- 01.2008 – 12.2008 Postdoctoral fellow
Dept. of Mechanical Engineering and Applied Mechanics
University of Pennsylvania, Philadelphia PA, USA

PROFESSIONAL EXPERIENCE (outside academia)

- 09.2020 – present Co-Founder and CSO, Neshima Medical Limited
- 10.2012 – present Co-Founder, GradTrain, LLC (<http://www.gradtrain.com>)

TEACHING EXPERIENCE***Biofluid Mechanics***- 336409

Level: undergraduate

Taught: Winter 2022/23 - present

Institution: Technion – Israel Institute of Technology

Transport Phenomena in Physiological Systems - 337403

Level: undergraduate

Taught: Spring 2013 – Fall 2021/22

Institution: Technion – Israel Institute of Technology

Comments: Teaching distinction (2013)***Respiratory Flows & Inhalation Therapy*** - 336539

Level: undergraduate/graduate

Taught: Fall 2011/12 - present

Institution: Technion – Israel Institute of Technology

Comments: New course introduced by J. Sznitman***Cardiovascular Flows & Blood Circulation*** - 336541

Level: undergraduate/graduate

Taught: Spring 2012 - present

Institution: Technion – Israel Institute of Technology

Comments: New course introduced by J. Sznitman***Integrated Engineering Science Laboratory*** – MAE 224

Level: undergraduate

Taught: Spring 2010

Institution: Princeton University

Introduction to Biological Fluid Mechanics – MAE 234

Level: undergraduate

Taught: Fall 2009/10

Institution: Princeton University

Comments: New course introduced by J. Sznitman**TECHNION ACTIVITIES**

01.2023 – present	Senate Member, Technion
10.2022 – present	Member of Research Committee, Technion
10.2022 – present	Academic Development Committee, Technion
2021 – 02.2022	Member of Research Committee, Technion
2019 – 02.2022	Senate Member, Technion
2019 – 02.2022	Academic Development Committee, Technion
2018 – 02.2022	Director, Norman Seiden Multidisciplinary Graduate Program (RBNI)
2013 – 2018	Grand Technion Energy Program (GTEP), committee member
2015 – 2017	Computing and Information Systems, committee member

DEPARTMENTAL ACTIVITIES

10.2022 – present	Preparatory Committee for Academic Faculty Promotion (Va'ada Mechina)
10.2022 – present	Undergraduate Studies, Committee Member
2019 – 02.2022	Preparatory Committee for Academic Faculty Promotion (Va'ada Mechina)

2012 – 02.2022 Undergraduate Studies, Committee Member
 2017 – 2021 Graduate Studies, Committee Member
 2017 – 2021 Vice Dean for Undergraduate Studies

PUBLIC PROFESSIONAL ACTIVITIES

Editorial positions:

2021 – present Associate Editor, *Frontiers in Bioengineering & Biotechnology*
 2021 – present Editorial Board, *European Journal of Pharmaceutical Sciences* (Elsevier)
 2020 – present Associate Editor, *Journal of Biomechanics* (Elsevier)
 2019 – present Associate Editor, *Clinical Biomechanics* (Elsevier)
 2017 – present Editorial Board, *Biomicrofluidics* (AIP)
 2014 – present Academic Editor, *PLoS One*
 2023 Guest Editor, *Bioengineering & Translational Medicine* (Wiley)
 Special Issue: *2022 ECI Nanotechnology in Medicine conference*
 2019 Guest Editor, *Frontiers in Bioengineering & Biotechnology*
 Special Issue: *Innovative in vitro models for pulmonary physiology and drug delivery in health and disease*
 2019 Guest Editor, *Bioengineering & Translational Medicine* (Wiley)
 Special Issue: *2018 ECI Nanotechnology in Medicine conference*
 2017 Guest Editor, Special Issue *Clinical Biomechanics*
 Special Issue: *Clinical relevance of respiratory mechanics and flows*
 2016 Guest Editor, *Journal of Biomechanics*
 Special Issue: *Selected International Conference in CFD in Medicine & Biology*

Organizational positions:

2022 – present Member, World Council of Biomechanics (WCB)
 2021 – present Member-at-Large, ASME Bioengineering Division Executive Committee
 2015 – 2020 Short Term Scientific Mission (STSM) Coordinator, Cost Action MP1404
 2015 – 2020 Management Committee, Cost Action MP1404 “SimInhale” (Horizon 2020)
 2002 – present Educational Council, MIT

Reviewer for grants:

ERC Advanced Grant (H2020), H2020 FET, H2020 ERA-Net Program, Binational Science Foundation (BSF, Agence Nationale de Recherche (France), Institut Pasteur (France), Swiss National Science Foundation (SNF), Israel Science Foundation (ISF), ERC Consolidator Grant (H2020), Marsden Fund – Royal Society of New Zealand, Netherlands Foundation for Fundamental Research on Matter (FOM), Czech Science Foundation, Netherlands Organization for Scientific Research, Fund for Scientific Research (Belgium)

Reviewer for journals

Annals of Biomedical Engineering, Journal of Visualization, J. of Fluid Mechanics, Theoretical and Computational Fluid Dynamics, Journal of Mechanical Engineering, Aerosol Science & Technology, Journal of Applied Physiology, ASME J. of Biomechanical Engineering, J. of Biomechanics, J. of Medical Physics, Technology and Health Care, Medical Engineering and Physics, International J. of Heat and Mass Transfer, Respiratory Care, PLoS One, PLoS Computational Biology, Computers in Biology and Medicine, Microfluidics and Nanofluidics, Biomicrofluidics, J. Royal Society Interface, Nanomaterials, Scientific Reports, International J. of Numerical Methods in Biomedical Engineering, Physical Review Fluids, Journal of Computational Physics, Clinical Biomechanics, Pediatric Pulmonology, Micromachines, J. Micromechanics and Microengineering, RSC Biomaterials Science, European Journal of Pharmaceutical Sciences,

Biomaterials, Langmuir, Analytical Chemistry, PNAS, Pharmaceuticals, Frontiers in Bioengineering & Biotechnology, Frontiers in Physiology, AJP Lung, ACS Biomaterials Science, etc.

MEMBERSHIP IN PROFESSIONAL SOCIETIES

American Physical Society (APS), Division of Fluid Dynamics (DFD)
 European Respiratory Society (ERS)
 European Society of Mechanics (Euromech)
 American Society of Mechanical Engineers (ASME)
 The Aerosol Society (UK)
 European Society of Biomechanics (ESB)
 International Society for Aerosols in Medicine (ISAM)

FELLOWSHIPS, AWARDS AND HONORS

2022 Swiss National Science Foundation (SNF), Visiting Professor
 2018 Emerging Scientist Award, Drug Delivery to the Lungs – The Aerosol Society (UK)
 2018 Tan Chin Tuan Visiting Fellow (NTU, Singapore)
 2017 Yanai Prize for Teaching Excellence (Technion)
 2016 Herschel Rich Innovation Award (Technion)
 2015 Young Investigator Award, International Society of Aerosols in Medicine (ISAM)
 2015 U. & M. Halevy Grant for Innovative Applied Engineering Research (Technion)
 2014 Best Paper Award, *Biomicrofluidics* (AIP Journal)
 2014 Recipient, Henri Gutwirth Fund for the Promotion of Research (Technion)
 2012 Bergmann Memorial Research Award (US-Israel Binational Science Foundation)
 2010 Marcella S. Geltman Memorial Academic Lectureship Fund, Technion
 2010 Horev Fellow, Leaders in Science & Technology (Taub Foundation)
 2009 Princeton Council of Science & Technology, Fellow
 2008 ETH Silver Medal for outstanding PhD thesis, ETH Zurich
 2008 Research Award (PhD thesis), Swiss Society for Biomedical Engineering
 2007 Visiting Student Research Collaborator, Princeton University
 2007 John Bardeen Studentship, American Physical Society
 2006 Young Scientist Award - 12th International Symposium on Flow Visualization
 2006 Sigma Xi Scientific Research Society, Student Travel Award
 2005 Young Research Award, Nestle SA – Swiss Pediatric Research
 2005 American Physical Society (APS), Travel Award
 2004 ETH Medaille (outstanding M.Sc. thesis), ETH Zurich
 2002 Sigma Xi - The Scientific Research Society
 2001 Tau Beta Pi - The Engineering Honor Society
 2000 Pi Tau Sigma – Inter. Mechanical Engineering Honor Society

SUPERVISION OF GRADUATE STUDENTS

Completed PhD theses: 9

Shani Elias-Kirma (2021), *Pulmonary in vitro platforms of upper airways for cytotoxicity and drug delivery assays*, Primary Supervisor: Josué Sznitman.

Eliram Nof (2021), *Exploring ventilator-induced lung injury in vitro in reconstructed airway platforms*, Primary Supervisor: Josué Sznitman.

Alon Begin (2020) *Bubbles characterizations of microwave tissue ablation in patients*, Primary Supervisor: Prof. Em. Dan Adam (biomedical engineering). Secondary advisor: Josué Sznitman.

Lih Shachar-Berman (2019, direct PhD track), *Transport and deposition of non-spherical particles in the pulmonary acinus*, Primary Supervisor: Josué Sznitman.

Yan Ostrovski (2018), *Targeted delivery of inhalation medicine using magnetic particles*, Primary Supervisor: Josué Sznitman

Hagit Stauber (2017, direct PhD track), *In vitro microfluidic models of alveolar capillary microcirculation*, Primary Supervisor: Josué Sznitman, Secondary Advisor: Dan Waisman (Faculty of Medicine).

Janna Tenenbaum-Katan (2016, direct PhD track), *Pulmonary alveolar flow physiology: from fetal to childhood airways*, Primary Supervisor: Josué Sznitman

Philipp Hofemeier (2016), *Computational simulations of transport and deposition of inhaled ultrafine aerosols in the distal regions of the lung*, Primary Supervisor: Josué Sznitman

Rami Fishler (2015), *A microfluidic platform for respiratory fluid dynamics and particle deposition in the pulmonary acinus*, Primary Supervisor: Josué Sznitman

Completed MSc theses: 7

Hikaia Zidan (2022) *Advanced lung-on-chip platforms for respiratory inhalation assays of infection and inflammation*, Primary Supervisor: Josué Sznitman, Secondary Advisor: Netanel Korin.

Leen Abu-Ahmad (2022, *Cum Laude*) *Transport and deposition of excipient enhanced aerosols in the lungs of an infant*. Primary Supervisor: Josué Sznitman

Metar Heller-Algazi (2020, *Cum Laude*), *Computational Fluid Dynamics as a framework for respiratory therapy research*, Primary Supervisor: Josué Sznitman.

Lee Friedman (2020) *Lung-on-chip platforms for pro-inflammatory airway assays*, Primary Supervisor: Josué Sznitman.

Amir Loyevsky (2020) *Time-resolved tomographic measurements of oscillatory respiratory flows in upper airways*, Primary Supervisor: Rene van Hout (mechanical engineering). Secondary advisor: Josué Sznitman.

Yelena Koren (2014), *Motility phenotyping of model organism C. elegans using Scale-Invariant Feature Transform (SIFT)*, Primary Supervisor: Josué Sznitman

Ayala Greenblum (2013, *Cum Laude*), *Statistical learning methods for segmentation problems in the model organism C. elegans*, Primary Supervisor: Josué Sznitman

PhD theses in progress: 3

Merav Belenkovich, *The behavior of deformable particle carriers in blood flow*, Primary Supervisor: Assoc. Prof. Netanel Korin (Biomedical Eng.), Secondary Advisor: Josué Sznitman. Starting Year: 2018, Expected Graduation: 2023.

Ron Bessler, *Electrostatic effects on inhaled aerosol deposition in the deep pulmonary airways*, Primary Supervisor: Josué Sznitman. Starting Year: 2020, Expected Graduation: 2024.

Noy Ivry Mark, *Semi-automatic classification of lung ultrasound clips to COVID-19 severity using deep neural networks*, Primary Supervisor: Prof. Em. Dan Adam. Secondary Advisor: Josué Sznitman. Starting Year: 2022, Expected Graduation: 2026.

SUPERVISION OF RESEARCHERS & POSTDOCS

Current members: 1

Dr. Adele Goldman, Researcher (2021-present)

Past members: 9

Dr. Rami Fishler, Postdoc (2016-2017, 2020-2022), currently researcher at Technion

Dr. Odelia Mouhadeb, Postdoc (2019-2022), currently at Israel Institute for Biological Research (IIBR)

Dr. Saurabh Bhardwaj, Postdoc (2019-2022), currently postdoc at Penn State University (USA)

Dr. Arbel Artzy-Schnirman, Senior Scientist (2016-2021), currently Head of Advanced Technology Center for Applied Medical Research, Rambam Medical Center

Dr. Yan Ostrovski, Postdoc (2018-2020), currently CEO at Neshima Medical Ltd., Israel

Dr. Prashant Das, Postdoc (2016-2018), currently Researcher at University of Alberta, Canada

Dr. Alessandro de Rosis, Postdoc (2016-2017), currently Lecturer at University of Manchester, UK

Dr. Molly Mulligan, Postdoc (2012-2014), currently Director Commercialization Strategies at Space Commerce Matters, USA

Dr. Sanjeev Kumar Mahto, Postdoc (2011-2013), currently Associate Professor at Indian Institute of Technology, Varanasi, India

RESEARCH GRANTS (external funding only)

Competitive:

- | | |
|-------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 2021 - 2025 | Type: Personal Grant
PI: Josué Sznitman
Source: Israel Science Foundation (ISF)
Amount: 1'200'000 ILS |
| 2018 - 2020 | Type: ERC Proof-of-Concept
PI: Josué Sznitman
Source: Horizon 2020, European Commission (EU)
Amount: 150'000 Euros |
| 2017 - 2020 | Type: Research Grant
co-PIs: Josué Sznitman, CM Lehr (Helmholtz Institute, Saarbruecken, Germany)
Source: German-Israel Science Foundation (GIF)
Amount: 180'000 Euros |
| 2016 - 2021 | Type: ERC Starting Grant
PI: Josué Sznitman
Source: Horizon 2020, European Commission (EU)
Amount: 1'937'000 Euros |

- 2016 – 2019 Type: ERACoSysMed
co-PIs: Jochen Hampe (Main, Dresden Germany, Coordinator), Tom Hemming Karlsen (Norway), M. Trauner (Austria), M. Zerial (Germany), J. Sznitman (Israel), P. Delmas (France).
Source: ERA-NET (H2020) & Ministry of Health (MOH), Israel
Amount: 100'000 Euros (Sznitman); 1'700'000 Euros (total)
- 2012 - 2016 Type: Personal Grant
PI: Josué Sznitman
Source: Israel Science Foundation (ISF)
Amount: 1'200'000 ILS
- 2012 - 2015 Type: Research Grant
co-PIs: Josué Sznitman, Paulo Arratia (UPenn), Todd Lamitina (UPitt).
Source: US-Israel Binational Science Foundation (BSF)
Amount: 167'000 dollars
- 2011 - 2015 Type: Marie Curie Career Integration Grant (CIG)
PI: Josué Sznitman
Source: FP7 European Commission (EU)
Amount: 100'000 Euros
- Industrial and other sources:**
- 2023 - 2024 Type: Seed Grant
PI: Arbel Artzy-Schnirman (main); co-PI: Josué Sznitman
Source: Israel Cancer Society
Amount: 75'000 ILS
- 2021 - 2024 Type: Alternative to Animal Models
PI: Josué Sznitman (main); co-PI: A. Ordentlich (Israel Inst. Biological Research)
Source: Ministry of Science and Technology (MOST, Israel)
Amount: 250'000 ILS
- 2020 - 2021 Type: Corona Call
PI: Josué Sznitman
Source: Ministry of Science and Technology (MOST, Israel)
Amount: 440'000 ILS
- 2019 - 2021 Type: Medical Devices
PI: Josué Sznitman
Source: Ministry of Science and Technology (MOST, Israel)
Amount: 600'000 ILS
- 2017 - 2019 Type: Kamin Program
PI: Josué Sznitman
Source: Israel Innovation Authority (IIA)
Amount: 240'000 Dollars
- 2013 – 2014 Type: Seed Grant
PI: Josué Sznitman

Source: Environmental Health Fund (EHF), Israel
Amount: 40'000 Dollars

PUBLICATIONS

Note: PI marked in **bold**, graduate (MSc, PhD) students are underlined and postdocs in *italic*.

Theses

1. **J. Sznitman**. *Modeling of heat removal in manual transmission automobile clutches*. Thesis Mechanical Eng. MIT, B.Sc., Inst. Archives - Noncirculating Collection 3, Barker MIT Library, 2002.
2. **J. Sznitman**. *Whole-field density measurements and Abel reconstruction of axisymmetrical vortex rings*. Thesis Mechanical Eng., Dipl.-Ing., ETH Zurich, 2003.
3. **J. Sznitman**. *Respiratory flows in the pulmonary acinus and insights on the control of alveolar flows*, PhD Thesis No. 17542, Institute of Fluid Dynamics, ETH Zurich, 2008.

Refereed papers in professional journals

1. Bruehwiler PA, Buyan M, Huber R, Bogerd CP, **Sznitman J**, Graf SF, and Roesgen T. *Heat transfer variations of bicycle helmets*, Journal of Sports Science 24: 999-1011, 2006.
2. **Sznitman J**, and Roesgen T. *Whole-field density visualization and Abel reconstruction of axisymmetric vortex rings*, Journal of Flow Visualization and Image Processing 13: 343-358, 2006.
3. **Sznitman J**, and Roesgen T. *Optical density visualization and Abel reconstruction of vortex rings using background-oriented Schlieren*, Journal of Visualization 10: 5, 2007.
4. **Sznitman J**, Heimsch F, Heimsch T, Rusch D, and Roesgen T. *Three-dimensional convective alveolar flow induced by rhythmic breathing motion of the pulmonary acinus*, Journal of Biomechanical Engineering 129: 658-665, 2007.
5. Wildhaber JH, **Sznitman J (equal contribution)**, Harpes P, Straub D, Moeller A, Basek P, and Sennhauser FH. *Correlation of spirometry and symptom scores in childhood asthma and the usefulness of curvature assessment in expiratory flow-volume curves*, Respiratory Care 52: 1744-1752, 2007.
6. **Sznitman J**, and Roesgen T. *Low-Reynolds boundary driven cavity flows in a thin liquid shell*, PAMM 7: 4100007-4100008, 2007.
7. **Sznitman J**, and Roesgen T. *Formation of negative buoyant vortex rings at an orifice opening*, International Journal of Transport Phenomena 10: 37-45, 2008.
8. **Sznitman J**, and Roesgen T. *Acoustic streaming flows in a cavity: an illustration of small-scale inviscid flow*, Physica D 237: 2240-2246, 2008.
9. **Sznitman J**, and Roesgen T. *Acoustic streaming visualization in elastic spherical cavities*, Journal of Visualization 11: 347-355, 2008.
10. **Sznitman J**, Heimsch T, Wildhaber JH, Tsuda A, and Roesgen T. *Respiratory flow phenomena and gravitational deposition in a three-dimensional space-filling model of the pulmonary acinar tree*, Journal of Biomechanical Engineering 131: 031010, 2009.
11. **Sznitman J**. *Convective gas transport in the pulmonary acinus: comparing roles of convective and diffusive lengths*, Journal of Biomechanics 42: 789-792, 2009.
12. **Sznitman J**, and Roesgen T. *PIV investigation of low-Reynolds boundary driven cavity flows in thin liquid shells*, Journal of Visualization 13: 49-60, 2010.
13. **Sznitman J**, Purohit PK, Krajacic P, Lamitina T, and Arratia PE. *Material properties of Caenorhabditis elegans swimming at low Reynolds number*, Biophysical Journal 98: 617-626, 2010.

14. **Sznitman J**, Sutter R, Altorfer D, Stampanoni M, Roesgen T, and Schittny JC. *Visualization of respiratory flows in reconstructed 3D terminal alveolar airspaces using X-ray tomographic microscopy*, Journal of Visualization 13: 337-345, 2010.
15. **Sznitman J**, Shen X, Purohit PK, and Arratia PE. *The effects of fluid viscosity on the kinematics and material properties of C. elegans swimming at low Reynolds number*, Experimental Mechanics 50: 1303-1311, 2010.
16. Juarez G, Lu K, **Sznitman J**, and Arratia PE. *Motility of small nematodes in wet granular media*, Europhysics Letters 92: 44002, 2010.
17. **Sznitman J**, Shen X, Sznitman R, and Arratia PE. *Flow behavior and force measurements of undulatory swimmers at low Reynolds number*, Physics of Fluids 22: 121901, 2010.
18. **Sznitman R**, Gupta M, Hager GD, Arratia PE, and Sznitman J. *Multi environment model estimation for motility analysis of Caenorhabditis Elegans*, PLOS One 5(7): e11631, 2010.
19. Shen X, **Sznitman J**, Krajacic P, Lamitina P, and Arratia PE. *Undulatory locomotion of C. elegans on wet surfaces*, Biophysical Journal 102: 2772-2781, 2012.
20. **Sznitman J**, Guglielmini L, Clifton D, Scobee D, Stone HA, and Smits AJ. *Experimental characterization of 3D corners flows at low Reynolds numbers*, Journal of Fluid Mechanics 707: 35-52, 2012.
21. Spycher B, Wildhaber JH, Frey U, and **Sznitman J**. *Mathematical behavior of MEFV curves in childhood asthma and the role of curvature in quantifying flow obstruction*, ISRN Pulmonology ID 305176, 2012.
22. Ghosh R, and **Sznitman J**. *Visualization of nematode C. elegans swimming in a drop*, Journal of Visualization 15: 277-279, 2012.
23. **Sznitman J**, Stone HA, Smits AJ, and Grotberg JB. *Teaching the falling ball problem with dimensional analysis*, European Journal of Physics Education 4(2): 32-42, 2013.
24. Berman R, Oded K, **Sznitman J**, and Leshansky A. *Undulatory locomotion of finite filaments*, New Journal of Physics 15: 075022, 2013.
25. Fishler R, Mulligan MK, and **Sznitman J**. *Mapping low-Reynolds-number microcavity flows using microfluidic screening devices*, Microfluidics and Nanofluidics 15: 491-500, 2013.
26. Fishler R, Mulligan MK, and **Sznitman J**. *Acinus-on-a-chip: a microfluidic platform for respiratory acinar flows*, Journal of Biomechanics 46: 2817-2823, 2013.
27. Greenblum A, Sznitman R, Fua P, Arratia PE, Oren M, Podbilewicz B, and **Sznitman J**. *Dendritic tree extraction from noisy Maximum Intensity Projection images in C. elegans*, BMC Biomedical Engineering Online 13(1): 74, 2014.
28. Hofemeier P, and **Sznitman J**. *Role of alveolar topology on acinar flows and convective mixing*, Journal of Biomechanical Engineering: 136(6): 061007, 2014.
29. Mahto SK, Tenenbaum-Katan J, Greenblum A, Rothen-Rutishauser B, and **Sznitman J**. *Microfluidic shear stress-regulated surfactant secretion in alveolar epithelial type II cells in vitro*, American Journal of Physiology Lung Cell Mol. Physiol. 306(7): L672-L683, 2014.
30. Hofemeier P, Fishler R, and **Sznitman J**. *The role of respiratory flow asynchrony on convective mixing in the pulmonary acinus*, Fluid Dynamics Research 46: 041407, 2014.
31. Greenblum A, Sznitman R, Fua P, Arratia PE, and **Sznitman J**. *Caenorhabditis elegans segmentation using texture-based models for motility phenotyping*, IEEE Transactions in Biomedical Engineering 61(6): 2278 – 2289, 2014.
32. Tenenbaum-Katan J, Fishler R, Rothen-Rutishauser, and **Sznitman J**. *Biomimetics of fetal alveolar flow phenomena using microfluidics*. Biomicrofluidics 9: 014120, 2015.
33. Koren L, Sznitman R, Carls C, Krajacic P, Arratia PE, Brown AEX, and **Sznitman J**. *Model-independent phenotyping of C. elegans locomotion using Scale-Invariant Feature Transform*, PLoS One 10: e0122326, 2015.
34. Marom A, Mahto SK, Shor E, Tenenbaum-Katan J, **Sznitman J**, and Shoham S. *Microfluidics chip for site-specific neuropharmacological treatment and activity probing of 3D neuronal 'Optonet' Cultures*. Advanced Materials Healthcare 4(10): 1478-1483, 2015.

35. Hofemeier P and **Sznitman J**. *Revisiting pulmonary acinar particle transport: convection, sedimentation, diffusion and their interplay*, Journal of Applied Physiology, 118: 1375-1385 2015.
36. Fishler R, Hofemeier P, Etzion Y, Dubowski, and **Sznitman J**. *Particle dynamics and deposition in true-scale pulmonary acinar models*, Scientific Reports 12071: 1-13, 2015.
37. Stauber H, Fishler R, Hofemeier P, Waisman D, and **Sznitman J**. *Particle Dispersion in Morphologically-Inspired Computational Models of Alveolar Capillary Networks*, International Journal of Experimental and Computational Biomechanics 3(4): 300-318, 2015.
38. Fishler R and **Sznitman J**. *A Microfluidic Model of Biomimetically-Breathing Pulmonary Acinar Airways*, Journal of Visualized Experiments 111: e53588, 2016.
39. Tenenbaum-Katan J, Hofemeier P, and **Sznitman J**. *Computational models of inhalation therapy in early childhood: therapeutic aerosols in the developing acinus*. Journal of Aerosol Medicine and Pulmonary Drug Delivery, 29: 288-298, 2016.
40. Ostrovski Y, Hofemeier P, and **Sznitman J**. *Augmenting Regional and Targeted Delivery in the Pulmonary Acinus using Magnetic Particles*. International Journal of Nanomedicine 11: 1-11, 2016.
41. Oakes JM*, Hofemeier P*, Vigon-Clementel IE, and **Sznitman J**. *Aerosols in healthy and emphysematous in silico pulmonary acinar rat models*, Journal of Biomechanics 49: 2213-2220, 2016. (*Equal contribution)
42. Hofemeier P, Shachar-Berman L, Tenenbaum-Katan J, Filoche M, and **Sznitman J**. *Unsteady diffusional screening in 3D pulmonary acinar structures: from infancy to adulthood*, Journal of Biomechanics 49: 2193-2200, 2016.
43. Stylianiou FS, **Sznitman J** and Kassinos SC. *Direct numerical simulation of particle laden flow in a human airway bifurcation*, International Journal of Heat and Mass Transfer 61: 677-710, 2016.
44. Hofemeier P and **Sznitman J**. *The role of anisotropic expansion for pulmonary acinar aerosol deposition*, Journal of Biomechanics 49: 3543-3548, 2016.
45. Fishler R, Ostrovski Y, Lu C-Y, and **Sznitman J**. *Streamline crossing: an essential mechanism for aerosol dispersion in the pulmonary acinus*, Journal of Biomechanics 50: 222-227, 2017.
46. Stauber H, Waisman D, Korin N and **Sznitman J**. *Red blood cell dynamics in microfluidic networks of pulmonary alveolar capillaries*, Biomicrofluidics 11: 014103, 2017.
47. Fishler R and **Sznitman J**. *A novel aerodynamic sizing method for pharmaceutical aerosols using image-based analysis of settling velocities*. Inhalation 11: 21-25, 2017.
48. Stauber H, Waisman D, Korin N and **Sznitman J**. *Red blood cell (RBC) suspensions in confined microflows: pressure-flow relationship*, Medical Engineering and Physics 48: 49-54, 2017.
49. Fishler R, Verhoeven F, de Kruijf W and **Sznitman J**. *Particle sizing of pharmaceutical aerosols via direct imaging of particle settling velocities*. European Journal of Pharmaceutical Sciences 113: 113-158, 2018.
50. Koullapis PG, Hofemeier P, **Sznitman J** and Kassinos SC. *An efficient computational fluid-particle dynamics method to predict deposition in a simplified approximation of the deep lung*. European Journal of Pharmaceutical Sciences 113: 132-144, 2018.
51. Shachar-Berman L, Ostrovski Y, Kassinos SC and **Sznitman J**. *Transport of ellipsoid fibers in oscillatory shear flows: implications for aerosol deposition in deep airways*. European Journal of Pharmaceutical Sciences 113: 145-151, 2018.
52. Hofemeier P, Koshiyama K, Wada S and **Sznitman J**. *One (sub-)acinus for all: Fate of inhaled aerosols in heterogeneous pulmonary acinar structures*. European Journal of Pharmaceutical Sciences 113: 53-63, 2018.
53. Das P, Nof E, Amirav I, Kassinos SC, and **Sznitman J**. *Targeting inhaled aerosol delivery to upper airways in children: insight from computational fluid dynamics*. PLoS One 13: e0207711, 2018.

54. Bauer K, Nof E and **Sznitman J**. *Revisiting high-frequency oscillatory ventilation in vitro and in silico in neonatal conductive airways*. *Clinical Biomechanics*, 66: 50-59, 2019.
55. Ostrovski Y, Dorfman S, Mezhericher M, Kassinos SC, and **Sznitman J**. *Targeted drug delivery to upper airways using a pulsed aerosol bolus and inhaled volume tracking method*. *Flow, Turbulence and Combustion*, 102: 73-87, 2019.
56. Shachar-Berman L, Ostrovski Y, Koshiyama K, Wada S, Kassinos SC and **Sznitman J**. *Targeting inhaled fibers to the pulmonary acinus: Opportunities for augmented delivery from in silico simulations*, *European Journal of Pharmaceutical Sciences* 137: 105003, 2019.
57. Artzy-Schnirman A, Zidan H, Elias-Kirma S, Ben-Porat L, Tenenbaum-Katan J, Carius P, Fishler R, Schneider-Daum N, Lehr CM and **Sznitman J**. *Capturing the onset of Bacterial Pulmonary Infection in Acini-on-Chips*, *Advanced Biosystems* 3: 1900026, 2019.
58. Poh W, Rahman ABN, Ostrovski Y, **Sznitman J**, Perthe K, and Loo J. *Active Pulmonary Targeting against Tuberculosis (TB) via Triple-Encapsulation of Q203, Bedaquiline and Superparamagnetic Iron Oxides (SPIOs) in Nanoparticle Aggregates*. *Drug Delivery* 26: 1039-1048, 2019.
59. Zuckerman H, Houry M, Shammay Y, **Sznitman J**, Lotan N, and Korin N. *Targeting functionalized nanoparticles to activated endothelial cells under high wall shear stress*. *Bioengineering & Translational Medicine* e10151, 2019.
60. Nof E, Heller-Algazi M, Coletti F, Waisman D, and **Sznitman J**. *Ventilation-induced jet suggests biotrauma in reconstructed airways of the intubated neonate*. *Journal of the Royal Society Interface* 17: 20190516, 2020.
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2. Fishler R and **Sznitman J**. *A microfluidic platform and methods for using the same*. United States Patent No. 20,150,033,872. 5 February 2015.
3. Fishler R and **Sznitman J**. *Device, system and method for measuring particle size*. PCT/IL2016/050979. 5 September 2016.
4. Ostrovski Y and **Sznitman J**. *Foam for pulmonary drug delivery*, United States Patent No. 2019274951A1. 12 September 2019.
5. Ostrovski Y and **Sznitman J**. *Targeted delivery of aerosols of magnetized active agents*. United States Patent No. 11,013,682 B2. 25 May 2021.

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Plenary, keynote or invited talks

1. *Convective Gas Transport in the Acinus: Revisiting the Role of Effective Diffusivity*, 6th World Congress of Biomechanics, August 1-7 2010, Singapore. **Invited talk**
2. *Microfluidic designs of pulmonary acinar networks: CFD and experiment*, 7th International Biofluid Mechanics Symposium, March 25-30 2012, Israel. **Invited talk**
3. *Respiratory physiology using lab-on-chip devices*, Annual Meeting of the Israeli Society of Medical and Biological Engineering, February 19 2013, Israel. **Invited talk**
4. *Acinus-on-a-chip: respiratory physiology using in vitro microfluidics*, 7th World Congress of Biomechanics in Boston, USA, July 6-11, 2014. **Invited talk**
5. *Microfluidic In vitro Platforms of pulmonary alveolar physiology*, 6th European Conference of the International Federation for Medical and Biological Engineering in Croatia, September 2014. **Invited talk**
6. *Mysteries of respiratory flows in deep pulmonary airways*, NSF-Sponsored Meeting on Fluid Dynamics in Living Systems, Arlington VA USA, September 15-16, 2014. **Invited talk**
7. *Pulmonary targeting of fine and ultrafine particles in the deep alveolated lungs*, 20th International Congress on Aerosols in Medicine and Pulmonary Drug Delivery, Munich Germany, May 30-June 3, 2015. **Invited talk**
8. *Unraveling the mysteries of respiratory airflows in the acinar airways depths*, 21st Congress of the European Society of Biomechanics, Prague, Czech Republic, July 2015. **Invited talk**
9. *Unraveling the mysteries of respiratory airflows in the acinar airways depths*. 8th International Biofluids Symposium, Pasadena CA, USA, February 2016. **Invited talk**
10. *Unraveling the fate of inhaled aerosols in the pulmonary depths in silico and in vitro*. Workshop on Pulmonary Drug Delivery (COST Action 1404 “SimInhale”). Prague, Czech Republic, October 2016. **Invited talk**
11. *Paradigms of targeted aerosol delivery in the deep lungs: lessons from in vitro and in silico studies*. Workshop on Inhaled Therapeutics for Treating Lung & Neurodegenerative Diseases. Melbourne, Australia, November 2016. **Invited talk**
12. *Microflows in pulmonary airways with in vitro microfluidics*. The Batsheva de Rothschild Seminar: Physics of Microfluidics. Sde Boker, Israel, January 2017. **Invited talk**

13. *Acini-on-Chip: Novel in vitro assessments of particle dynamics and deposition in the deep lungs.* Respiratory Drug Delivery Europe 2017. Nice, France, April 2017. **Keynote Talk**
14. *Systemic drug delivery via the lungs: Can we do better?* International Drug Discovery Science & Technology. Osaka, Japan, July 2017. **Invited Talk**
15. *Modeling of the deep lung: one acinus for all.* SimInhale COST Action MP1404 Training School. Athens, Greece, October 2017. **Invited Talk**
16. *Point targeting in the lungs using inhaled magnetic aerosols.* 3rd Annual Inhalation & Respiratory Drug Delivery Congress, London UK, May 2018, **Invited Talk**
17. *Biomimetic lung-on-chips for physiological screening assays.* Biobarriers 2018, Saarbruecken Germany, August 2018. **Invited Talk**
18. *Bioengineering strategies for targeted drug delivery in the lungs.* Drug Delivery to the Lungs 2018, Edinburgh, UK, December 2018. **Keynote Talk (see Awards)**
19. *Biomimetic in vitro airway platforms for drug delivery assays and precision medicine.* Keystone Symposia on Delivering Therapeutics across Biological Barriers, Dublin, Ireland, May 2019. **Invited Speaker**
20. *Bioengineered strategies for targeted therapeutic delivery to the lungs,* 25th Congress of the European Society of Biomechanics, Vienna, Austria, July 2019. **Invited talk**
21. *Advanced in vitro airway platforms for inhalation screening assays.* International Conference on Current Challenges & Future Opportunities for Inhalation Therapies, Athens, Greece, Sept 2019. **Invited Speaker**
22. *Targeted delivery of inhalation aerosols using magnetic particles.* 9th International Biofluid Mechanics Symposium. Tucson, Arizona USA, February 2020. **Invited Speaker**
23. *Surfactant foam therapy for severe COVID-19 patients with Acute Respiratory Distress Syndrome (ARDS).* Edinburgh, UK, December 2020. **Keynote talk**
24. *Advanced in vitro inhalation lung-on-chip platforms for preclinical research (virtual).* 3D Culture, Organoid & Organ on Chips, Boston USA, March 2021. **Keynote talk**
25. *Advanced microfluidic platforms for respiratory research: bridging in vivo and in vitro interfaces (virtual).* 12th World Meeting on Pharmaceuticals, Biopharmaceutics, and Pharmaceutical Technology, Vienna, Austria, May 2021. **Invited Speaker**
26. *Advanced microfluidic lung-on-chip platforms for preclinical in vitro inhalation assays (virtual).* International Congress on Aerosols in Medicine and Pulmonary Drug Delivery, Boise IH, USA, May 23-26, 2021. **Invited talk**
27. *Advanced in vitro airway platforms for inhalation screening assays (virtual).* Lung In Vitro Event for Innovative & Predictive Models, Nice, France, June 2021. **Keynote Speaker**
28. *Advanced in vitro inhalation lung-on-chip platforms for preclinical assays.* The Joint Israeli Controlled Release (ICRS) – Polymers for Advanced Technology (PAT) Workshop, Israel October 2021. **Invited talk**
29. *Advancing in vitro airway platforms for pulmonary inhalation assays.* ECI Nanotechnology in Medicine: Enabling Next Generation Therapies, Calabria, Italy, May 2022. **Keynote Speaker**
30. *Advanced in vitro airway platforms for inhalation screening assays.* Organoids and Organs-on-Chips Europe, Rotterdam, The Netherlands, June 2022. **Keynote Speaker**
31. *Revisiting respiratory transport phenomena with advanced preclinical in vitro pulmonary platforms.* World Congress of Biomechanics, Taipei, Taiwan, July 2022. **Plenary Speaker**
32. *Revisiting airflow and aerosol transport phenomena in the deep lungs.* 2022 Australasian fluid mechanics seminar series, September 2022, **Invited Talk**

Participation in conference organization

Conference Chair/Co-Chair

1. 2nd international conference on CFD in Medicine & Biology, August 2015, Algarve Portugal, **Conference Chair.**

2. Nanotechnology in Medicine: Bridging Translational *in vitro* and *in vivo* Interfaces, June 2018, Albufeira Portugal, **Conference Chair**

International Scientific Committee

3. 8th International Biofluids Symposium, February 2016, Pasadena CA, USA, **International Scientific Committee.**
4. 9th International Biofluids Symposium, February 2020, Tucson AZ, USA, **International Scientific Committee**