

Department of Biomedical Engineering
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 Technion - Israel Institute of Technology sznitman@bm.technion.ac.il
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<http://biofluids.technion.ac.il/>

EDUCATION

12.2003 - 12.2007 PhD (Dr. Sc.)
 Swiss Federal Institute of Technology, ETH Zurich, Switzerland
 Thesis supervisor: Prof. Thomas Rösgen

10.2002 - 09.2003 M.Sc. Mechanical Engineering (Dipl. Masch.-Ing.)
 Swiss Federal Institute of Technology, ETH Zurich, Switzerland
 Thesis supervisor: Prof. Thomas Rösgen (cumulative GPA 5.8/6.0)

09.1998 - 06.2002 B.Sc. Mechanical Engineering
 Massachusetts Institute of Technology, Cambridge MA, USA
 Thesis supervisor: Prof. Bora Mikic (cumulative GPA: 5.0/5.0)

PROFESSIONAL
 EXPERIENCE

10.2016 - present *Associate Professor (with tenure)*
 Dept. Biomedical Engineering, Technion - Israel Institute of Technology, Israel

10.2010 - 09.2016 *Assistant Professor*
 Dept. Biomedical Engineering, Technion - Israel Institute of Technology, Israel

01.2009 - 07.2010 *Lecturer / Research Associate*
 Dept. Mechanical & Aerospace Engineering, Princeton University, USA

01.2008 - 12.2008 *Postdoctoral Research Fellow*
 Dept. Mechanical Engineering, University of Pennsylvania, USA

10.2003 - 12.2007 *Research Assistant*
 Institute of Fluid Dynamics, ETH Zurich, Switzerland

10.2007 - 12.2007 *Visiting Student Research Collaborator*
 Dept. Mechanical & Aerospace Engineering, Princeton University, USA

TEACHING

Lecturer (Spring 2013 Teaching Distinction, 2013-present)
Introduction to Transport Phenomena (337403), Depart. Biomedical Engineering, Technion

Lecturer (2012-present)

Cardiovascular Flows & Blood Circulation (336541), Dept. Biomedical Engineering, Technion

Lecturer (2011-present)

Respiratory Flows & Inhalation Therapy (336539), Dept. Biomedical Engineering, Technion

Lecturer (Spring 2010)

MAE 224: Integrated Engineering Science Laboratory, Dept. Mechanical & Aerospace Engineering, Princeton University

Lecturer (Fall 2009)

MAE 234: The Flow of Life: an Introduction to Biological Fluid Mechanics, Dept. Mechanical & Aerospace Engineering, Princeton University

Instructor (Spring 2005-2007)

Biofluidmechanics, Dept. Mech. Eng. (M.Sc. Program), ETH Zurich

Laboratory instructor (Fall 2005)

Experimental Methods for Engineering Applications, Dept. Mech. Eng. (B.Sc. Program), ETH Zurich

Head teaching assistant (Fall 2004)

Fluid Dynamics II, Dept. Mech. Eng. (B.Sc. Program), ETH Zurich

ACADEMIC
SUPERVISION

MSc Students, Technion

10.2016-present Metar Heller-Algazi

10.2011-08.2014 Lena Koren

10.2011-10.2013 Ayala Greenblum

PhD Students, Technion

03.2011-07.2015 Dr. Rami Fishler

03.2012-04.2016 Dr. Philipp Hofemeier

03.2011-07.2016 Dr. Janna Tenenbaum-Katan

10.2011-present PhD student-direct track (Hagit Stauber)

10.2014-present PhD student (Yan Ostrovski)

04.2015-present PhD student (Shani Elias)

09.2015-present PhD student-direct track (Lihi Shachar)

10.2016-present PhD student (Eliram Nof)

Senior Scientists and Postdocs, Technion

10.2016-present Dr. Arbel Artzy-Schnirman
 10.2016-present Dr. Prashant Das
 10.2016-present Dr. Alessandro de Rosis
 09.2015-present Dr. Rami Fishler
 10.2011-07.2014 Dr. Molly K. Mulligan
 12.2011-10.2013 Dr. Sanjeev J. Mahto

**HONOURS &
AWARDS**

2015 Young Investigator Award, International Society of Aerosols in Medicine
 2014 Best Paper Award, *Biomicrofluidics* (American Institute of Physics)
 2012 Bergmann Memorial Research Award (US-Israel Binatl. Science Found.)
 2008 ETH Silver Medal for outstanding PhD thesis
 2008 Research Award (PhD thesis) - Swiss Society for Biomedical Engineering
 2007 Young Scientist, CNRS France (EE250 Conference)
 2006 Young Scientist Award - 12th Inter. Symposium on Flow Visualization
 2005 Young Research Award, Nestle SA - Swiss Paediatric Research
 2005 All-Fives Club, MIT Educational Council
 2004 ETH Medaille (outstanding M.Sc. thesis)
 2002 Sigma Xi - The Scientific Research Society
 2001 Tau Beta Pi - The Engineering Honour Society
 2000 Pi Tau Sigma - International Mechanical Engineering Honour Society
 2000 1st Cambridge University - MIT Undergrad. Exchange Program (declined)

**GRANTS &
FELLOWSHIPS**

2017 - 2021 German-Israel Foundation (GIF), co-PI with CL Lehr (Helmholtz Institute, Saarbruecken Germany): 180k Euros
 2017 - 2018 STAR Foundation Grant, Technion (PI): \$27k
 2016 - 2021 ERC Starting Grant, H2020 (PI): 1.94M Euros
 2016 - 2019 ERACO-SYSMED, ERA-NET (European Council) co-PI: 100k Eur. (total 1.7M EUR).
 2015 - 2016 Nevet Grant, Russel Berrie Nanotechnology Institute Technion (PIs: Profs. J. Sznitman & D. Waisman): \$40k
 2015 - 2016 Halevy Fund for Innovative Applied Engineering: \$20k
 2015 - 2016 University of Waterloo-Technion seed grant (PIs: Profs. J. Sznitman & F. Gu): \$30k
 2014 Henri Gutwirth Fund for the Promotion of Research
 2013 - 2014 Steve & Ilene Berger Portable Biomedicine Innovation Laboratory (PIs: Profs. J. Sznitman & S. Shoham): \$420k
 2013 - 2014 Environmental Health Fund (EHF) Seed Grant (PI): \$40k
 2013 - 2015 J & M Fisher Family for Cardiology Research Fund, Technion (PIs: J. Sznitman & D. Waisman): \$10k
 2012 - 2016 Israel Science Foundation (ISF) personal grant (PI): \$300k
 2012 - 2016 US-Israel Binational Science Foundation, BSF (PIs: Profs. J. Sznitman, P.E. Arratia & T. Lamitina): \$160k
 2012 - 2013 Nevet Grant, Russel Berrie Nanotechnology Institute Technion (PIs: Profs. J. Sznitman & Y. Dubowski): \$30k

2012 - 2013 Seed Project, Technion Center of Excellence in Exposure Science & Environmental Health (PIs: Profs. J. Sznitman & Y. Dubowski): \$30k
 2011 Swiss Technion Society, Portable Biomedicine Innovation Lab (PIs: Profs. J. Sznitman & S. Shoham): \$50k
 2011 Technion Seed Project, Portable Biomedicine Innovation Lab (PIs: Profs. J. Sznitman & S. Shoham): \$20k
 2011 - 2015 Career Integration Grant (CIG), FP7 European Commission (PI): 100k Euros
 2011 - 2013 Julia Tal Equipment & Research Fund, Technion
 2010 Marcella S. Geltman Memorial Academic Lectureship Fund, Technion
 2010 - 2012 Horev Fellow, Leaders in Science & Technology (Taub Foundation)
 2009 - 2011 Princeton Council of Science & Technology Postdoctoral Fellowship
 2008 Swiss National Science Foundation: Postdoctoral Fellowship (declined)
 2007 Visiting Student Research Collaborator, Princeton University Fellowship
 2007 John Bardeen Studentship, American Physical Society
 2006 Sigma Xi Scientific Research Society: Student Travel Award
 2006 American Physical Society, Division of Fluid Dynamics, Travel Award
 2005 - 2007 Swiss National Science Foundation PhD funding (Prof. T. Rösigen).
 2005 American Physical Society, Division of Fluid Dynamics: Travel Award
 2005 ETH Travel Grant, ASME Heat Transfer Conference

PROFESSIONAL SOCIETIES

American Physical Society (APS), Division of Fluid Dynamics (DFD)
 European Respiratory Society (ERS)
 European Society of Mechanics (Euromech)
 American Physiological Society (APS)
 American Society of Mechanical Engineers (ASME)
 Biomedical Engineering Society (BMES)
 European Society of Biomechanics (ESB)
 International Society for Aerosols in Medicine (ISAM)
 Swiss Society for Biomedical Engineering (SSBE)
 Swiss Society for Engineers and Architects (SIA)

ACADEMIC SERVICES

2017-2020 Management Committee, COST Action CA16125 (Horizon 2020)
 2015-2018 Coordinator, Short Term Scientific Missions, COST Action MP 1404 (Horizon 2020)
 2015-2018 Management Committee, COST Action MP 1404 (Horizon 2020)
 2016 Session Chair, 14th International Symposium on Computer Methods in Biomechanics and Biomedical Engineering (Sept. 2016, Tel Aviv Israel)
 2016 Scientific Committee, “8th International Bio-Fluid Mechanics Symposium” (Feb. 2016, Caltech)
 2015 Conference Chair, International Conference on CFD in Medicine and Biology II (ECI Conferences)
 2015 Session Chair, 21st Congress European Society of Biomechanics (ESB)
 2014 Session Chair, APS Annual Meeting of the Division of Fluid Dynamics (Focus Session: Respiratory Biofluids)

2014 Chair, Special Session “Organ-on-Chips”, 6th European Conf. Int. Fed. Medical & Biological Engineering (IFBME)
 2014 Session Chair, 7th World Congress of Biomechanics (Multiscale Mechanobiology in Respiratory System)
 2014 External reviewer, Marsden Fun - Royal Society of New Zealand
 2013 External reviewer, Netherlands Organisation for Scientific Research (NWO)
 2011 Session Chair, APS Annual Meeting of DFD (Suspension Dynamics)

JOURNAL ACTIVITIES
 2017-present Editorial Board, Biomicrofluidics
 2017 Guest Editor, Clinical Biomechanics
 2016 Guest Editor, Journal of Biomechanics
 2014-present Academic Editor, PLoS One

Referee (2007-present):

Annals of Biomedical Engineering, Annals of Translational Medicine, 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, Computers in Biology and Medicine, Microfluidics and Nanofluidics, Biomicrofluidics, Journal of the Royal Society Interface, Current Opinion in Biotechnology, International Journal of Heat and Mass Transfer, PLoS Comp. Biol., Scientific Reports, Physical Review Fluids, International Journal for Numerical Methods in Biomedical Engineering, Fluid Dynamics Research,

OTHER ACTIVITIES
 2013-present Co-Founder, GradTrain Ltd.
 2011-present Vice Chairperson (Israel), MIT Educational Council
 2005-2007 Secretary, MIT Club of Switzerland
 2004-2007 Regional Chairperson (Switzerland), MIT Educational Council
 2005-2006 Student Research Opportunity Program, ETH Zurich
 2003-2004 Educational Counselor, MIT Educational Council

(Graduate students and postdocs are marked below.)

JOURNAL ARTICLES
 1. Stauber H, Waisman D, Korin N and **Sznitman J**. *Red blood cell dynamics in microfluidic networks of pulmonary alveolar capillaries*, under review, 2016.
 2. 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, in press, 2016.

3. Hofemeier P and **Sznitman J**. *The role of anisotropic expansion for pulmonary acinar deposition*. Journal of Biomechanics, in press, 2016.
4. Stylianou FS, **Sznitman J**, and Kassinos SC. *Direct numerical simulation of particle laden flow in a human airway bifurcation model*. International Journal of Heat and Fluid Flow, in press, 2016.
5. Ostrovski Y, Hofemeier P, and **Sznitman J**. *Augmenting regional and targeted delivery in the pulmonary acinus using magnetic particles*, International Journal of Nanomedicine 11: 3385–3395, 2016.
6. **Sznitman J** and Steinman DA. *Relevance and challenges of computational fluid dynamics in the biomedical sciences*, Journal of Biomechanics 49: 2101, 2016.
7. Oakes* JM, Hofemeier* P, Vignon Clementel IE, and **Sznitman J**. *Aerosols in healthy and emphysematous in silico pulmonary acinar rat models*, Journal of Biomechanics 49:2213-2220 2016. (*co-first authors)
8. 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.
9. Fishler R, and **Sznitman J**. *A microfluidic model of biomimetically-breathing pulmonary acinar airways*, Journal of Visualized Experiments 111: e53588, 2016.
10. 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: 1–11, 2016.
11. Stauber H, Fishler R, Hofemeier P, Weisman D and **Sznitman J**. *Particle dispersion in morphologically-inspired computational models of alveolar capillary networks*, International Journal of Experimental and Computational Biomechanics 3: 300–318, 2015.
12. Fishler R, Hofemeier P, Etzion Y, Dubowski Y, and **Sznitman J**. *Particle dynamics and deposition in true-scale pulmonary acinar models*, Scientific Reports 5: 12071, 2015.
13. Hofemeier P, and **Sznitman J**. *Revisiting pulmonary acinar particle transport: convection, sedimentation, diffusion and their interplay*, Journal of Applied Physiology 118: 1375-1385, 2015.
14. Maron A, Mahto SK, Shor E, Tenenbaum-Katan J, **Sznitman J**, and Shoham S. *Microfluidic Chip for Site-Specific Neuropharmacological Treatment and Activity Probing of 3D Neuronal Optonet Cultures*, Advanced Healthcare Materials doi: 10.1002/adhm.201400643, 2015.
15. Koren L, Sznitman R, Carls C, Karajic 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

16. Tenenbaum-Katan J, Fishler R, Rothen-Rutishauser B, and **Sznitman J**. *Bio-mimetics of fetal alveolar flow phenomena using microfluidics*, *Biomicrofluidics* 9: 014120, 2015.
17. Mahto SK, Charwat V, Ertl B, Rothen-Rutishauser B, and **Sznitman J**. *Microfluidic platforms for advanced risk and cellular assessments of nanomaterials*, *Nanotoxicology* 9: 381–395, 2015.
18. 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: 74, 2014
19. Hofemeier P, and **Sznitman J**. *Role of alveolar topology on acinar flows and convective mixing*, *Journal of Biomechanical Engineering* 136: 061007, 2014.
20. 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.
21. 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. Biol.* 306: L672-L683, 2014.
22. 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: 2278–2289, 2014.
23. 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.
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. **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.
27. **Sznitman J**. *Respiratory microflows in the pulmonary acinus*, *Journal of Biomechanics* 46: 284–298, 2013.
28. Ghosh R, and **Sznitman J**. *Visualization of nematode *C. elegans* swimming in a drop*, *Journal of Visualization* 15: 277–279, 2012.
29. Mahto SK, Tenenbaum-Katan J, and **Sznitman J**. *Respiratory physiology on a chip*, *Scientifica* ID 364054 (12 pages), 2012.
30. **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.

31. 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.
32. Spycher B, Wildhaber JH, Frey U, and **Sznitman J**. *Mathematical behaviour of MEFV curves in childhood asthma and the role of curvature in quantifying flow obstruction*, ISRN Pulmonology ID 305176, 2012.
33. 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.
34. **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.
35. Juarez G, Lu K, **Sznitman J**, and Arratia PE. *Motility of small nematodes in wet granular media*, Europhysics Letters 92: 44002, 2010.
36. **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.
37. **Sznitman J**, Sutter R, Altorfer D, Stampanoni M, Rösigen 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.
38. **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.
39. **Sznitman J**, and Rösigen T. *PIV investigation of low-Reynolds boundary driven cavity flows in thin liquid shells*, Journal of Visualization 13: 49-60, 2010.
40. **Sznitman J**. *Convective gas transport in the pulmonary acinus: comparing roles of convective and diffusive lengths*, Journal of Biomechanics 42: 789-792, 2009.
41. **Sznitman J**, Heimsch T, Wildhaber JH, Tsuda A, and Rösigen 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.
42. **Sznitman J**, and Rösigen T. *Acoustic streaming visualization in elastic spherical cavities*, Journal of Visualization 11: 347-355, 2008.
43. **Sznitman J**, and Rösigen T. *Acoustic streaming flows in a cavity: an illustration of small-scale inviscid flow*, Physica D 237: 2240-2246, 2008.
44. **Sznitman J**, and Rösigen T. *Formation of negative buoyant vortex rings at an orifice opening*, International Journal of Transport Phenomena 10: 37-45, 2008.
45. **Sznitman J**, and Rösigen T. *Low-Reynolds boundary driven cavity flows in a thin liquid shell*, PAMM 7: 4100007-4100008, 2007.

46. Wildhaber JH*, **Sznitman J***, Harpes P, Straub D, Möller 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. *Equal contribution
47. **Sznitman J**, Heimsch F, Heimsch T, Rusch D, and Rösgen T. *Three-dimensional convective alveolar flow induced by rhythmic breathing motion of the pulmonary acinus*, Journal of Biomechanical Engineering 129: 658-665, 2007.
48. **Sznitman J**, and Rösgen T. *Optical density visualization and Abel reconstruction of vortex rings using background-oriented Schlieren*, Journal of Visualization 10: 5, 2007.
49. **Sznitman J**, and Rösgen T. *Whole-field density visualization and Abel reconstruction of axisymmetric vortex rings*, Journal of Flow Visualization and Image Processing 13: 343-358, 2006.
50. Brühwiler PA, Buyan M, Huber R, Bogerd CP, **Sznitman J**, Graf SF, and Rösgen T. *Heat Transfer Variations of Bicycle Helmets*, Journal of Sports Science 24: 999-1011, 2006.

BOOK CHAPTERS

1. **Sznitman J**, and Arratia PE. *Locomotion through Complex Fluids: an Experimental View*, Spagnolie S (Ed.) in: Complex Fluids in Biological Systems, Biological and Medical Physics, Biomedical Engineering, Springer Science+Business Media New York, 2015.
2. **Sznitman J**. *Respiratory flows in the pulmonary acinus*, Südwestdeutscher Verlag für Hochschulschriften AG, ISBN 978-3838106847, 2009.
3. **Sznitman J**, and Gehr P. Physical and physiological principles, Wildhaber JH and Kamin W (ed.), in: *Inhalation therapy in children and adolescents* (German), pp. 11-25, Uni-Med Science Verlag AG, 2008.
4. **Sznitman J**, Schmuki S, Sutter R, Tsuda A, and Rösgen T. *CFD investigation of respiratory flows in a space-filling pulmonary acinus model*, Brebbia CA ed., in: Modelling in Medicine and Biology VII, WIT Transactions on Biomedicine and Health, Vol. 12, pp. 147-156, 2007.

PATENTS

1. Ostrovski Y, and **Sznitman J**. *Targeted delivery of aerosols of magnetized active agents*. U.S. Patent Application 62/327,324, filed May 1, 2016.
2. Fishler R, and **Sznitman J**. *Method and device for measuring particle size*. U.S. Patent Application 62/214,922, filed September 5, 2015.
3. Fishler R, and **Sznitman J**. *A microfluidic platform and methods for using the same*. United States Patent US 14/449,199, 2015.
4. Blanco EE, Manue WH, Tarud S, Goldwitz JA, **Sznitman J**, and Ignatius MB. *Advanced Elastomeric Integral Suspension Seating System*. United States Patent No. 6,663,177, 16 Dec. 2003.

INVITED SEMINARS
& LECTURES

1. Invited Talk *Systemic Drug Delivery via the Lungs Can We Do Better*, International Drug Discovery Science & Technology, July 25-27 2017, Osaka, Japan.
2. Podium Presentation *Acini-on-Chip: Novel In Vitro Assessments of Particle Dynamics and Deposition in the Deep Lungs*, Respiratory Drug Delivery Europe 2017, April 25-28 2017, Nice, France.
3. Invited Talk *Microflows in pulmonary airways with in vitro microfluidics*, The Bathsheva de Rothchild Seminar: Physics of Microfluidics, 3-8 January 2017, Sde Boker, Israel.
4. Invited Talk *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, 22 November 2016, RMIT, Melbourne Australia.
5. Invited Talk *Unravelling the fate of inhaled aerosols in the pulmonary depths in silico and in vitro*, Workshop on Pulmonary Drug Delivery (COST Action), 18-19 October 2016, Prague Czech Republic.
6. Invited Seminar *Mysteries of respiratory flows in the acinar airway depths*, Dept. of Mechanical Engineering, University of Pennsylvania, USA, November 2015.
7. Perspective Talk *Unravelling the mysteries of respiratory flows in the acinar airway depths*, 21st Congress of the European Society of Biomechanics, 5-8 July 2015, Prague CZ.
8. Invited Talk *Targeting fine and ultrafine aerosols in the deep alveolated regions*, 20th Congress of the International Society of Aerosols in Medicine, 30 May-3 June 2015, Munich Germany.
9. Invited talk *Mysteries of respiratory flows in deep pulmonary airways*, NSF-Sponsored “Fluid Dynamics of Living Systems”, 15-16 September 2014, Arlington VA, USA.
10. Invited talk *Acinus-on-a-chip: respiratory physiology using in vitro microfluidics*, 7th World Congress of Biomechanics, July 2014, Boston MA, USA.
11. Invited talk *In vitro microfluidics for assessing respiratory microflows and aerosol transport in the pulmonary acinus*, Dept. Mechanical Engineering, Tel Aviv University, May 2014, Tel Aviv, Israel.
12. Invited talk *Acinus-on-a-chip: respiratory physiology using in vitro microfluidics*, Center for Biomedical Engineering, University of Bern, February 2014, Bern, Switzerland.
13. Invited talk *Acinus-on-a-chip: respiratory physiology using in vitro microfluidics*, Adolf Merkle Institute, University of Fribourg, February 2014, Fribourg, Switzerland.
14. Invited talk *Acinus-on-a-chip: a microfluidic platform for pulmonary acinar flows*, Annual Symposium of the Israel Society for Theoretical and Applied Mechanics (ISTAM), December 2013, Tel Aviv, Israel.

15. Invited talk *Mysteries of respiratory fluid dynamics in the lung depths*, Dept. of Physics, Technion, June 2013.
16. Invited talk *Mysteries of respiratory fluid dynamics in the lung depths*, Dept. of Biomedical Engineering, Tel Aviv University, April 2013.
17. Invited talk *Microfluidic devices for respiratory flow measurements*, Technion Alumni Association Special Seminars Series, February 26 2013, Israel.
18. Invited talk *Respiratory physiology using lab-on-chip devices*, Annual Meeting of the Israeli Society of Medical and Biological Engineering, February 19 2013, Israel.
19. Invited talk *Microfluidic designs of pulmonary acinar networks: CFD and experiment*, 7th International Biofluid Mechanics Symposium, March 25-30 2012, Israel.
20. Invited talk *Dynamics of swimming C. elegans*, Biomechanics Seminar, Dept. Mechanical Engineering, Technion-Israel Institute of Technology, December 2010, Israel.
21. Invited talk *Convective Gas Transport in the Acinus: Revisiting the Role of Effective Diffusivity*, 6th World Congress of Biomechanics, August 1-7 2010, Singapore.
22. Invited talk *Caenorhabditis elegans: a versatile platform for small-scale motility study*, Dept. Mechanical Engineering, McGill University, March 2010, Montreal, Canada.
23. Invited talk *Dynamics of small nematodes: Biomechanics, swimming, and motility phenotyping*, Dept. Mechanical Engineering, Carnegie-Mellon University, October 2009, Pittsburgh PA, USA.
24. Invited talk *Dynamics of small-scale swimming C. elegans: from biomechanics to motility phenotyping*, Dept. Biomedical Engineering, Technion-Israel Institute of Technology, July 2009, Israel.
25. Invited talk *Dynamics of small-scale swimming C. elegans: from biomechanics to phenotyping*, Dept. Mechanical & Aerospace Engineering, Princeton University, March 2009, Princeton NJ, USA.
26. Invited talk, *Dynamics of swimming nematodes: from biomechanics to phenotyping*, Institute of Bioengineering, Swiss Federal Institute of Technology (EPFL), March 2009, Lausanne, Switzerland.
27. Invited talk, *Dynamics of swimming nematodes: from biomechanics to phenotyping*, School of Engineering and Applied Science, Harvard University, February 2009, Cambridge MA, USA.
28. Invited talk, *Dynamics of swimming nematodes: from biomechanics to phenotyping*, Dept. of Mechanical Engineering and Materials Science, Duke University, February 2009, Durham NC, USA.
29. Invited talk, *Dynamics of swimming nematodes: from biomechanics to phenotyping*, Dept. of Mechanical and Industrial Engineering, University of Toronto, February 2009, Toronto, Canada.

30. Invited talk, Center for Biomedical Engineering Research, University of Bern, November 2008, Bern, Switzerland.
31. *Dynamics of low-Reynolds undulatory swimming in C. elegans*, Dept. Mechanical & Aerospace Engineering, Princeton University, September 2008, Princeton, USA.
32. Invited talk, *Non-invasive biomechanical assessment of low-Reynolds undulatory swimming*, Colloquium of Thermo- and Fluid Dynamics, ETH Zurich, June 2008, Zurich, Switzerland.
33. *Non-invasive biomechanical assessment of low-Reynolds undulatory swimming*, NSF Soft Matter MRSEC Chalk Talk, University of Pennsylvania, June 2008, Philadelphia, USA.
34. *Non-invasive biomechanical assessment of low-Reynolds undulatory swimming*, 2nd Mid-Atlantic Soft Matter Workshop, University of Pennsylvania, June 2008, Philadelphia, USA.
35. Invited talk, *Respiratory flows in the pulmonary acinus*, Monell Chemical Senses Center, October 2007, Philadelphia, USA.
36. Invited talk, *Respiratory flows in the pulmonary acinus and insights on the control of alveolar flows*. Dept. Mechanical Engineering, University of Pennsylvania, August 2007, Philadelphia, USA.
37. Invited talk, *Respiratory flows in the pulmonary acinus and insights on the control of alveolar flows*. Dept. Environmental Engineering, Swiss Federal institute of Technology (EPFL), July 2007, Lausanne, Switzerland.
38. Invited talk, *Insight into respiratory fluid dynamics in the pulmonary acinus*. Dept. Mechanics, Royal Institute of Technology (KTH), March 2007, Stockholm, Sweden.
39. Invited talk, *Small-scale respiratory flows in the pulmonary acinus*. Anatomy Seminar, University of Berne, 31 May 2006, Berne, Switzerland.
40. *Towards simulations of airflow and particle deposition in realistic acinar geometries*. 1st Meeting, Swiss Aerosol Society, 30 Nov. 2005, Murten, Switzerland.
41. *Lung Periphery: Growth, elasticity and fluid dynamics*. 5th Annual Meeting, Swiss Pediatric Respiratory Research, 10-11 Nov. 2004, Murten, Switzerland.
42. *Chaotic Mixing in the Lung*, Pulmonology Seminar, May 2004, University Children's Hospital Zurich, Switzerland.

CONFERENCE
PROCEEDINGS

1. Tenenbaum-Katan J, Fishler R, Rothen-Rutishauser B, and **Sznitman J**. *Microfluidic in vitro platforms of pulmonary alveolar physiology*. in IFMBE Proceedings 6th European Conference of the International Federation for Medical and Biological Engineering, Volume 45, 2015, pp 777-780, 2015.
2. Mahto SK, Marom A, **Sznitman J**, and Shoham S. *Hydrogel-based Microfluidic Chip for Site-specific Chemical Treatment of 3D Neuronal Opto-nets*. in 6th International IEEE EMBS Conference on Neural Engineering, 2013.

3. **Sznitman J**, Shen X, Purohit PK, Sznitman R, and Arratia PE. *Swimming behavior of the nematode Caenorhabditis elegans: bridging small-scale locomotion with biomechanics*. in CT Lim and JCH Goh (Eds.): IFMBE Proceedings 31, pp. 29-32, 2010.
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