

Curriculum Vitae Stefan A. TSCHANZ

Biographical information

Last name: Tschanz
First names: Stefan Andreas
Date of birth: April 17, 1963
Place of birth: Röthenbach i. E., Switzerland
Nationality: Swiss
Marital status: married
Academic degree: PD (Privat Dozent, Senior Lecturer) MD (Dr. med.), Software Engineer
Present position: Senior University Lecturer
Member of the Board, Institute of Anatomy, University of Bern
Head of the IT section and Stereology unit, Institute of Anatomy, University of Bern
Co-leader of the PCD competence center (PCD-UNIBE), University of Bern

Education

1976 - 1982: Primary, secondary, and high school in Biel; certificate in mathematics and science 1982
1982 - 1989: Medical school in Bern, diploma 1989

Further professional development

1990: MD thesis, dissertation at the Children's Hospital, University of Bern
2000: Scientific project at University of Western Australia, Perth, Department of Physiology: Functional respiratory morphology in the newborn quokka wallaby
2001 -2002: Academic studies in software engineering at the Swiss Software School, Bern, diploma in 2002

Professional career overview

1991-1992: Clinical assistant, department of neurosurgery, Kantonsspital St. Gallen
1993-1998: Research assistant, Institute of Anatomy, University of Bern
Since 1998: Research associate (wissenschaftlicher Mitarbeiter), Institute of Anatomy, University of Bern
Since 2004: Head of the IT section, Institute of Anatomy, University of Bern
2011-2016: Coordinator of the interfaculty Microscopy Imaging Center (MIC), University of Bern
2011-2016: University Lecturer (Dozent II), Institute of Anatomy, University of Bern
2015: Venia docendi Anatomy and Histology (Privatdozent)
Since 2016: Senior University Lecturer (Dozent I)
Since 2017: Member of the Institute Board, Institute of Anatomy
Since 2018: Co-leader of the PCD competence center (PCD-UNIBE), University of Bern & Inselspital
09.2019-01.2020: Research Sabbatical at the Centre for Studies of Ciliary Structure and Function, Concord Hospital, University of NSW, Australia
Since 2020: Chair of the Sub commission Teaching Bachelor Medicine (SBM)
2021: Elected "Teacher of the Year" in year 1 as "Master of Disaster" in the Corona year

Private interests / hobbies

Swimming, sailing, cinema, literature

Activities at the University of Bern

Research

Primary Ciliary Dyskinesia: Structure of cilia and function of mucociliary clearance, development of analytic approaches.

Methodology of structural quantification by light- and electron microscopic approaches (Stereology)

Image analysis and processing, 3D imaging

Lung development and the influence of postnatal glucocorticoids, starvation and other impacts, including species comparison

Teaching

Musculoskeletal system: Person on duty for the curriculum, lectures and practicals for medical students

Histology: Lectures and practical courses for medical and veterinary students

Gross anatomy: dissection courses for medical students

Tutor in the problem-based learning (PBL) curriculum of the Bernese Medical Faculty

Stereology & microscopy: Lectures in the "Advanced microscopy" series of the Microscopy Imaging Center", Bern and at the University of Fribourg

Services and other support

Co-Leader of the competence center for functional and ultrastructural diagnosis of primary ciliary dyskinesia (PCD-UNIBE)

Leader and advisor of the Stereology Unit, Institute of Anatomy (interdisciplinary)

Head of the IT-section of the institute of Anatomy

Supervision experience

Supervisor of several medical Master and MD theses

Supervisor of master theses of biomedical engineers

Professional memberships

Swiss Society of Anatomy, Histology and Embryology (SGAHE)

Swiss PCD Registry (CH-PCD) Working Group

Swiss Society of Optics and Electron Microscopy (SSOM)

International Society for Stereology (ISS)

Swiss Society for Medical Informatics (SSMI)

Gesellschaft zur Förderung der Software-Technologie (GST)

FMH: Swiss Medical Association

Funding

Swiss Lung Foundation: «Computer-assisted high-speed video reflectance microscopy for the detection of primary ciliary dyskinesia (PCD)» (2021, CHF 75'000.-), Tschanz SA

Personalized Health and Related Technologies: [PHRT-365]: Cryo-EM structural analysis of cilia from PCD (primary ciliary dyskinesia) patients, (2021, CHF 198'919.-), Ishikawa T, Zuber B, Müller L, Tschanz SA

Bernese Lung League: "Characterization of the Swiss PCD population" (2019, CHF 60'000.-), Müller L & Tschanz SA

SNF / R'Equip 316030_150823 / 1 (2013, CHF 428'575.-), Serial block face SEM, Zuber B, Tschanz SA, Schittny JC, Djonov V.

KTI Project 14055.1, Dynamic high-resolution micro angiography (2012, CHF 491'575.-), Djonov V, Hlushchuk R, Tschanz SA.

SNF 31-55-895 Concepts of late alveolization and of capillary restructuring (2004, CHF 390'00.-), Burri PH, Tschanz SA.

Publications

Publication link on PubMed: <https://pubmed.ncbi.nlm.nih.gov/?term=tschanz+s&sort=date>

A total of 52 peer-reviewed publications (as of 01.01.2024)

RCR (iCite): 1.24 (+/- 0.20), Weighted RCR: 63.37, H-Index (Web of Science): 19

PUBLICATION LIST, Stefan A. Tschanz, 01.01.2024**Peer Reviewed articles [1-52]**

1. Escher, A., E. Kieninger, S. Groof, S.T. Savas, M. Schneider, S.A. Tschanz, M. Frenz, P. Latzin, C. Casaulta, and L. Muller, *In Vitro Effect of Combined Hypertonic Saline and Salbutamol on Ciliary Beating Frequency and Mucociliary Transport in Human Nasal Epithelial Cells of Healthy Volunteers and Patients with Cystic Fibrosis*. *J Aerosol Med Pulm Drug Deliv*, **2023**. 36(4): p. 171-180.
2. Schneider, M., S.A. Tschanz, A. Escher, L. Muller, and M. Frenz, *The Cilalyzer - A freely available open-source software for the analysis of mucociliary activity in respiratory cells*. *Comput Methods Programs Biomed*, **2023**. 241: p. 107744.
3. Fraenkl, S.A., Q. Simon, Y. Yucel, N. Gupta, V.V. Wittwer, B.E. Frueh, and S.A. Tschanz, *Impact of cerebral hypoperfusion-reperfusion on optic nerve integrity and visual function in the DBA/2J mouse model of glaucoma*. *BMJ Open Ophthalmol*, **2022**. 7(1).
4. Haberthur, D., E. Yao, S.F. Barre, T.P. Cremona, S.A. Tschanz, and J.C. Schittny, *Pulmonary acini exhibit complex changes during postnatal rat lung development*. *PLoS One*, **2021**. 16(11): p. e0257349.
5. Muller, L., S.T. Savas, S.A. Tschanz, A. Stokes, A. Escher, M. Nussbaumer, M. Bullo, C.E. Kuehni, S. Blanchon, A. Jung, N. Regamey, B. Haenni, M. Schneider, J. Ingold, E. Kieninger, C. Casaulta, P. Latzin, and G. On Behalf Of The Swiss Pcd Research, *A Comprehensive Approach for the Diagnosis of Primary Ciliary Dyskinesia- Experiences from the First 100 Patients of the PCD-UNIBE Diagnostic Center*. *Diagnostics (Basel)*, **2021**. 11(9).
6. Nussbaumer, M., E. Kieninger, S.A. Tschanz, S.T. Savas, C. Casaulta, M. Goutaki, S. Blanchon, A. Jung, N. Regamey, C.E. Kuehni, P. Latzin, and L. Muller, *Diagnosis of primary ciliary dyskinesia: discrepancy according to different algorithms*. *ERJ Open Res*, **2021**. 7(4).
7. Sabatasso, S., C. Fernandez-Palomo, R. Hlushchuk, J. Fazzari, S. Tschanz, P. Pellicoli, M. Krisch, J.A. Laissue, and V. Djonov, *Transient and Efficient Vascular Permeability Window for Adjuvant Drug Delivery Triggered by Microbeam Radiation*. *Cancers (Basel)*, **2021**. 13(9).
8. Schneider, M., S. Halm, A. Odriozola, H. Mogel, J. Ricka, M.H. Stoffel, B. Zuber, M. Frenz, and S.A. Tschanz, *Multi-scale alignment of respiratory cilia and its relation to mucociliary function*. *J Struct Biol*, **2021**. 213(1): p. 107680.
9. Baum, O., J. Bernd, S. Becker, A. Odriozola, B. Zuber, S.A. Tschanz, A. Zakrzewicz, S. Egginton, and J. Berkholz, *Structural Microangiopathies in Skeletal Muscle Related to Systemic Vascular Pathologies in Humans*. *Front Physiol*, **2020**. 11: p. 28.
10. Beyeler, S., S. Steiner, C. Wotzkow, S.A. Tschanz, A. Adhanom Sengal, P. Wick, B. Haenni, M.P. Alves, C. von Garnier, and F. Blank, *Multi-walled carbon nanotubes activate and shift polarization of pulmonary macrophages and dendritic cells in an in vivo model of chronic obstructive lung disease*. *Nanotoxicology*, **2020**. 14(1): p. 77-96.
11. Wang, L., P. Dorn, C. Simillion, L. Froment, S. Berezowska, S.A. Tschanz, B. Haenni, F. Blank, C. Wotzkow, R.W. Peng, T.M. Marti, P.K. Bode, U. Moehrlen, R.A. Schmid, and S.R.R. Hall, *EpCAM(+)CD73(+) mark epithelial progenitor cells in postnatal human lung and are associated with pathogenesis of pulmonary disease including lung adenocarcinoma*. *Am J Physiol Lung Cell Mol Physiol*, **2020**. 319(5): p. L794-L809.
12. Goutaki, M., M.O. Eich, F.S. Halbeisen, J. Barben, C. Casaulta, C. Clarenbach, G. Hafen, P. Latzin, N. Regamey, R. Lazor, S. Tschanz, M. Zanolari, E. Maurer, C.E. Kuehni, and P.C.D.R.W.G. Swiss, *The Swiss Primary Ciliary Dyskinesia registry: objectives, methods and first results*. *Swiss Med Wkly*, **2019**. 149.
13. Halbeisen, F.S., A. Shoemark, A. Barbato, M. Boon, S. Carr, S. Crowley, R. Hirst, B. Karadag, C. Koerner-Rettberg, M.R. Loebinger, J.S. Lucas, B. Maitre, H. Mazurek, U. Ozcelik, V. Martinu, N. Schwerk, G. Thouvenin, S.A. Tschanz, P. Yiallourous, M. Goutaki, and C.E. Kuehni, *Time trends in diagnostic testing for primary ciliary dyskinesia in Europe*. *Eur Respir J*, **2019**. 54(4).
14. Beyeler, S., S. Chortarea, B. Rothen-Rutishauser, A. Petri-Fink, P. Wick, S.A. Tschanz, C. von Garnier, and F. Blank, *Acute effects of multi-walled carbon nanotubes on primary bronchial epithelial cells from COPD patients*. *Nanotoxicology*, **2018**: p. 1-13.
15. Mouton, W.G., M.O. Wagner, B. Haenni, K.T. Mouton, M. Ochs, and S.A. Tschanz, *The influence of age on valve disease in patients with varicose veins analysed by transmission electron microscopy and stereology*. *Vasa*, **2018**: p. 1-7.
16. Baum, O., L. Jentsch, A. Odriozola, S.A. Tschanz, and I.M. Olfert, *Ultrastructure of Skeletal Muscles in Mice Lacking Muscle-Specific VEGF Expression*. *Anat Rec (Hoboken)*, **2017**. 300(12): p. 2239-2249.
17. Baum, O., C. Sollberger, A. Raaflaub, A. Odriozola, G. Spohr, S. Frese, and S.A. Tschanz, *Increased capillary tortuosity and pericapillary basement membrane thinning in skeletal muscle of mice undergoing running wheel training*. *J Exp Biol*, **2017**.
18. Hlushchuk, R., C. Zubler, S. Barre, C. Correa Shokiche, L. Schaad, R. Rothlisberger, M.L. Wnuk, C. Daniel, O. Khoma, S.A. Tschanz, M. Reyes, and V. Djonov, *Cutting-edge microangio-CT: new dimensions in vascular imaging and kidney morphometry*. *Am J Physiol Renal Physiol*, **2017**: p. ajprenal 00099 2017.

19. Schogler, A., F. Blank, M. Brugger, S. Beyeler, S.A. Tschanz, N. Regamey, C. Casaulta, T. Geiser, and M.P. Alves, *Characterization of pediatric cystic fibrosis airway epithelial cell cultures at the air-liquid interface obtained by non-invasive nasal cytology brush sampling*. *Respir Res*, **2017**. 18(1): p. 215.
20. Baum, O., E. Torchetti, C. Malik, B. Hoier, M. Walker, P.J. Walker, A. Odriozola, F. Graber, S.A. Tschanz, J. Bangsbo, H. Hoppeler, C.D. Askew, and Y. Hellsten, *Capillary ultrastructure and mitochondrial volume density in skeletal muscle in relation to reduced exercise capacity of patients with intermittent claudication*. *Am J Physiol Regul Integr Comp Physiol*, **2016**. 310(10): p. R943-51.
21. Bigler, M., D. Koutsantonis, A. Odriozola, S. Halm, S.A. Tschanz, A. Zakrzewicz, A. Weichert, and O. Baum, *Morphometry of skeletal muscle capillaries: the relationship between capillary ultrastructure and ageing in humans*. *Acta Physiol (Oxf)*, **2016**. 218(2): p. 98-111.
22. Hlushchuk, R., D. Bronnimann, C. Correa Shokiche, L. Schaad, R. Triet, A. Jazwinska, S.A. Tschanz, and V. Djonov, *Zebrafish Caudal Fin Angiogenesis Assay-Advanced Quantitative Assessment Including 3-Way Correlative Microscopy*. *PLoS One*, **2016**. 11(3): p. e0149281.
23. Baum, O., J. Gubeli, S. Frese, E. Torchetti, C. Malik, A. Odriozola, F. Graber, H. Hoppeler, and S.A. Tschanz, *Angiogenesis-related ultrastructural changes to capillaries in human skeletal muscle in response to endurance exercise*. *J Appl Physiol (1985)*, **2015**. 119(10): p. 1118-26.
24. Roth-Kleiner, M., T.M. Berger, S. Gremlich, S.A. Tschanz, S.I. Mund, M. Post, M. Stampanoni, and J.C. Schittny, *Neonatal steroids induce a down-regulation of tenascin-C and elastin and cause a deceleration of the first phase and an acceleration of the second phase of lung alveolarization*. *Histochem Cell Biol*, **2014**. 141(1): p. 75-84.
25. Tahedl, D., A. Wirkes, S.A. Tschanz, M. Ochs, and C. Muhlfeld, *How common is the lipid body-containing interstitial cell in the mammalian lung?* *Am J Physiol Lung Cell Mol Physiol*, **2014**. 307(5): p. L386-94.
26. Tschanz, S., J.P. Schneider, and L. Knudsen, *Design-based stereology: Planning, volumetry and sampling are crucial steps for a successful study*. *Annals of anatomy = Anatomischer Anzeiger : official organ of the Anatomische Gesellschaft*, **2014**. 196(1): p. 3-11.
27. Tschanz, S.A., L.A. Salm, M. Roth-Kleiner, S.F. Barre, P.H. Burri, and J.C. Schittny, *Rat lungs show a biphasic formation of new alveoli during postnatal development*. *J Appl Physiol (1985)*, **2014**. 117(1): p. 89-95.
28. Cremona, T.P., S.A. Tschanz, C. von Garnier, and C. Benarafa, *SerpinB1 deficiency is not associated with increased susceptibility to pulmonary emphysema in mice*. *Am J Physiol Lung Cell Mol Physiol*, **2013**. 305(12): p. L981-9.
29. Haberthur, D., S.F. Barre, S.A. Tschanz, E. Yao, M. Stampanoni, and J.C. Schittny, *Visualization and stereological characterization of individual rat lung acini by high-resolution X-ray tomographic microscopy*. *J Appl Physiol (1985)*, **2013**. 115(9): p. 1379-87.
30. Mouton, W.G., A.K. Habegger, B. Haenni, S. Tschanz, I. Baumgartner, and M. Ochs, *Valve disease in chronic venous disorders: a quantitative ultrastructural analysis by transmission electron microscopy and stereology*. *Swiss Med Wkly*, **2013**. 143: p. w13755.
31. Schatz, G., M. Schneiter, J. Ricka, K. Kuhni-Boghenbor, S.A. Tschanz, M.G. Doherr, M. Frenz, and M.H. Stoffel, *Ciliary beating plane and wave propagation in the bovine oviduct*. *Cells Tissues Organs*, **2013**. 198(6): p. 457-69.
32. Riche, F., M. Schneebeli, and S.A. Tschanz, *Design-based stereology to quantify structural properties of artificial and natural snow using thin sections*. *Cold Regions Science and Technology*, **2012**. 79-80: p. 67-74.
33. Lelu, K., S. Laffont, L. Delpy, P.E. Paulet, T. Perinat, S.A. Tschanz, L. Pelletier, B. Engelhardt, and J.C. Guery, *Estrogen receptor alpha signaling in T lymphocytes is required for estradiol-mediated inhibition of Th1 and Th17 cell differentiation and protection against experimental autoimmune encephalomyelitis*. *Journal of Immunology*, **2011**. 187(5): p. 2386-93.
34. Tschanz, S.A., P.H. Burri, and E.R. Weibel, *A simple tool for stereological assessment of digital images: the STEPanizer*. *Journal of Microscopy*, **2011**. 243(1): p. 47-59.
35. Baum, O., F. Suter, B. Gerber, S.A. Tschanz, R. Buerge, F. Blank, R. Hlushchuk, and V. Djonov, *VEGF-A promotes intussusceptive angiogenesis in the developing chicken chorioallantoic membrane*. *Microcirculation*, **2010**. 17(6): p. 447-57.
36. Makanya, A.N., S.A. Tschanz, B. Haenni, and P.H. Burri, *Functional respiratory morphology in the newborn quokka wallaby (Setonix brachyurus)*. *Journal of Anatomy*, **2007**. 211(1): p. 26-36.
37. Ehrbar, M., V.G. Djonov, C. Schnell, S.A. Tschanz, G. Martiny-Baron, U. Schenk, J. Wood, P.H. Burri, J.A. Hubbell, and A.H. Zisch, *Cell-demanded liberation of VEGF121 from fibrin implants induces local and controlled blood vessel growth*. *Circulation Research*, **2004**. 94(8): p. 1124-32.
38. Frey, G., E. Egli, B. Chailley-Heu, M. Lelievre-Pegorier, P.H. Burri, J. Bourbon, and S.A. Tschanz, *Effects of mild vitamin A deficiency on lung maturation in newborn rats: a morphometric and morphologic study*. *Biology of the Neonate*, **2004**. 86(4): p. 259-68.
39. Burri, P.H., B. Haenni, S.A. Tschanz, and A.N. Makanya, *Morphometry and allometry of the postnatal marsupial lung development: an ultrastructural study*. *Respir Physiol Neurobiol*, **2003**. 138(2-3): p. 309-24.

40. Schwyter, M., P.H. Burri, and S.A. Tschanz, *Geometric properties of the lung parenchyma after postnatal glucocorticoid treatment in rats*. *Biology of the Neonate*, **2003**. 83(1): p. 57-64.
41. Tschanz, S.A., A.N. Makanya, B. Haenni, and P.H. Burri, *Effects of neonatal high-dose short-term glucocorticoid treatment on the lung: a morphologic and morphometric study in the rat*. *Pediatric Research*, **2003**. 53(1): p. 72-80.
42. Meier, F.M., S.A. Tschanz, R. Ganzfried, and D. Epstein, *A comparative assessment of endothelium from pseudophakic and phakic donor corneas stored in organ culture*. *British Journal of Ophthalmology*, **2002**. 86(4): p. 400-3.
43. Tschanz, S.A. and P.H. Burri, *A new approach to detect structural differences in lung parenchyma using digital image analysis*. *Experimental Lung Research*, **2002**. 28(6): p. 457-71.
44. Tschanz, S.A., B. Haenni, and P.H. Burri, *Glucocorticoid induced impairment of lung structure assessed by digital image analysis*. *European Journal of Pediatrics*, **2002**. 161(1): p. 26-30.
45. Ellis, T., L. Gambardella, M. Horcher, S. Tschanz, J. Capol, P. Bertram, W. Jochum, Y. Barrandon, and M. Busslinger, *The transcriptional repressor CDP (Cutl1) is essential for epithelial cell differentiation of the lung and the hair follicle*. *Genes and Development*, **2001**. 15(17): p. 2307-19.
46. Djonov, V., M. Schmid, S.A. Tschanz, and P.H. Burri, *Intussusceptive angiogenesis: its role in embryonic vascular network formation*. *Circulation Research*, **2000**. 86(3): p. 286-92.
47. Duebener, L.F., Y. Takahashi, H. Wada, S.A. Tschanz, P.H. Burri, and H.J. Schafers, *Do mature pulmonary lobes grow after transplantation into an immature recipient?* *Annals of Thoracic Surgery*, **1999**. 68(4): p. 1165-70.
48. Makanya, A.N., J.N. Maina, T.M. Mayhew, S.A. Tschanz, and P.H. Burri, *A stereological comparison of villous and microvillous surfaces in small intestines of frugivorous and entomophagous bats: species, inter-individual and craniocaudal differences*. *Journal of Experimental Biology*, **1997**. 200(Pt 18): p. 2415-23.
49. Tschanz, S.A. and P.H. Burri, *Postnatal lung development and its impairment by glucocorticoids*. *Pediatric Pulmonology. Supplement*, **1997**. 16: p. 247-9.
50. Kalenga, M., S.A. Tschanz, and P.H. Burri, *Protein deficiency and the growing rat lung. I. Nutritional findings and related lung volumes*. *Pediatric Research*, **1995**. 37(6): p. 783-8.
51. Kalenga, M., S.A. Tschanz, and P.H. Burri, *Protein deficiency and the growing rat lung. II. Morphometric analysis and morphology*. *Pediatric Research*, **1995**. 37(6): p. 789-95.
52. Tschanz, S.A., B.M. Damke, and P.H. Burri, *Influence of postnatally administered glucocorticoids on rat lung growth*. *Biology of the Neonate*, **1995**. 68(4): p. 229-45.

Books / Reviews

- Tschanz, S.A. and P.H. Burri, *Morphologie der Lunge und Entwicklung des Gasaustauschapparates*, in *Pädiatrie*, G.F. Hoffmann, et al., Editors. 2019, Springer: Heidelberg. p. 1-8
- Tschanz, S.A. *[Structural aspects of pre-and post-natal lung development]*. in *Pneumologie*. 2007.
- Tschanz, S.A. and P.H. Burri, *Prä- und postnatale Entwicklung und Wachstum der Lunge*, in *Pädiatrische Pneumologie*, C. Rieger, et al., Editors. 2004, Springer: Berlin, Heidelberg. p. 3-15.