

# Curriculum Vitae Stefan A. TSCHANZ

## BIOGRAPHICAL INFORMATION

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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

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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

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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

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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

**ACTIVITIES AT THE UNIVERSITY OF BERN**

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**Research**

- Methodology of structural quantification by light- and electron microscopic approaches (Stereology)
- Image analysis and processing, 3D imaging
- Primary Ciliary Dyskinesia: Structure of cilia and function of mucociliary clearance, development of analytic approaches.
- 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

**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**

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- 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)

**LANGUAGES**

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- German (native)
- French (fluent)
- English (good)
- Italian (basic)

**PUBLICATION LIST**

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**Peer Reviewed Articles [1-45]**

1. 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.
2. 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.
3. Schneiter, 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*, **2020**: p. 107680.
4. 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.
5. 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.
6. 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).
7. 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.
8. 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.
9. 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.
10. 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**.
11. 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 microangiography: new dimensions in vascular imaging and kidney morphometry*. *Am J Physiol Renal Physiol*, **2017**: p. ajprenal.00099.2017.
12. 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.
13. 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.

14. 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.
15. 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.
16. 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.
17. 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.
18. 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.
19. 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.
20. 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.
21. 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.
22. 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.
23. 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.
24. 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.
25. 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.
26. 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.
27. 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.
28. Baum, O., F. Suter, B. Gerber, S.A. Tschanz, R. Buergy, 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.
29. 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.
30. 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.

31. 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.
32. 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.
33. 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.
34. 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.
35. 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.
36. 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.
37. 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.
38. 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.
39. 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.
40. 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.
41. 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.
42. Tschanz, S.A. and P.H. Burri, *Postnatal lung development and its impairment by glucocorticoids*. *Pediatric Pulmonology. Supplement*, **1997**. 16: p. 247-9.
43. 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.
44. 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.
45. 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.

PubMed link <http://www.ncbi.nlm.nih.gov/pubmed/?term=tschanz+s>

### Books / Reviews

- *Morphologie der Lunge und Entwicklung des Gasaustauschapparates*. Tschanz SA, Burri PH., in Pädiatrie. 5. ed., Hoffmann GF et al. (ed.). Springer Verlag, Heidelberg, 2020
- *Prä- und postnatale Entwicklung und Wachstum der Lunge*. Tschanz SA, Burri PH., in Pädiatrische Pneumologie. 2. ed., Rieger C et al. (ed.), pp. 3-15. Springer Verlag, Heidelberg, 2004
- *Strukturelle Aspekte der prä- und postnatalen Lungenentwicklung*. Tschanz SA. *Pneumologie*. 2007 Jul;61(7):479-81 (Review)