



## Curriculum vitae

Date of birth	02.01.1981 in Osnabrück, Germany
Nationality	German
Family	in a partnership, 2 children (*2009, *2014)

## Higher education and certificates

08/2006 – 09/2009	PhD studies in Biology, University of Münster, Germany <b>Dr rer nat</b> (magna cum laude)
09/2005 – 09/2008	Studies of Applied Environmental Sciences (Distance education), University of Koblenz-Landau <b>Diplom Applied Environmental Sciences</b> (grade „good“)
09/2000 – 09/2004	Studies of Biology, University of Heidelberg <b>Diplom Biology</b> (grade 1.4)

## High school certificates

07/2000	Abitur, Gymnasium Bersenbrück, Niedersachsen
06/1998	High School Diploma, Cleveland High School, Portland, OR, USA

## **Professional experience**

11/2012 – 02/2016	Research Scientist, Eawag, Dübendorf, Switzerland
05/2014 – 08/2014	maternity leave (Janis Kroll, *03.05.2014)
10/2010 – 10/2012	PostDoc, Eawag, Dübendorf, Switzerland
03/2010 – 08/2010	Scientific project assistant, CeNTech GmbH, Münster, Germany Co-Organisation of the congress-fair NanoBioEurope 2010
10/2009 – 02/2010	maternity leave (Bjarne Kroll, *30.10.2009)
07/2006 – 09/2009	PhD student, University of Münster, Germany
01/2005 – 06/2006	Research assistant, ISV, CNRS Ile-de-France Sud, Gif-sur-Yvette, France
11/2003 – 07/2004	Student research assistant, University of Heidelberg, Germany
11/2000 – 07/2003	Student assistant, hte AG, Heidelberg, Germany

## **Research projects**

11/2012 – 02/2016	Fate and effects of engineered nanoparticles in stream biofilms
02/2013 – 02/2016	Characterization of diversity and structure of stream biofilms
10/2010 – 10/2012	Interaction of microbial extracellular polymeric substances with engineered nanoparticles
11/2007 – 08/2008	Adverse effects of ambient particulate matter to model cell lines
08/2006 – 08/2009	Characterization of engineered nanoparticles and effects to model cell lines
01/2005 – 06/2006	Cell cycle regulation in <i>Arabidopsis thaliana</i>
11/2003 – 04/2004	Salt-induction of gene expression in <i>Arabidopsis thaliana</i> and <i>Beta vulgaris</i>

## **Fellowships and grants**

2014 - 2016	SNSF "120 %" Grant (SFr 20.000)
2014	Eawag Large Equipment Funds Recipient (SFr 200.000)
2012 - 2016	SNSF Ambizione Grant (SFr 450.000)
2013 - 2015	Eawag Discretionary Funds Recipient (SFr 200.000)
2005 - 2006	ADOPT Fellow (EU Marie Curie Early Stage Researcher Training)

### **Advisory activities**

since 12/2014 Member of the independent ethics committee of Hauck & Aufhäuser AG  
<http://www.hauck-aufhaeuser.ch/page/SRIInvestKomiteeMitglieder>

### **Editorial board memberships and reviewing activities**

Member of the Editorial Board of Bulletin of Environmental Contamination and Toxicology since 2013

Reviewer for Advanced Materials, Chemosphere, Environmental Toxicology, Energy & Environmental Sciences, Environmental Monitoring and Assessment, Environment International, Environmental Toxicology and Chemistry, Environmental Pollution, Environmental Science and Pollution, Environmental Science: Nano, International Journal of Environmental Research and Public Health, Journal of Biotechnology, PloS One, Science of the Total Environment

### **Co-organised conferences and conference sessions**

Chair: Periphyton ecology and ecotoxicology: how much complexity and reproducibility are required to connect both perspectives? (ET12); SETAC Europe meeting 2015, Barcelona, Spain

Chair: Periphyton as bioindicator and community model – critical review, work in progress, future perspectives (ET6); SETAC Europe meeting 2014, Basel, Switzerland

Co-chair: Nanoecotoxicology - Fate, Exposure, Effects and Risk Assessment (ET16); SETAC Europe meeting 2013, Glasgow, UK

Member of the organising committee of the conference "NanoBio-Europe 2010", Münster, Germany

### **Invited talks**

February 2015, *Slippery when wet. Community dynamics in benthic biofilms in response to micropollutants and nanomaterials*. Institute for Evolution and Biodiversity, University of Münster, D

June 2014, *Interaction of silver and cerium(IV)oxide based nanoparticles with periphyton*, NanoBio-Europe 2014, Münster, D

November 2013, *Periphyton als Bioindikator und Modell für Gemeinschaften*, Hydrobiologisches Seminar, Technische Universität Dresden, D

December 2013, *Periphyton as bioindicator and community model*, Environmental Engineering Seminar Series, EPF Lausanne, CH

September 2012, *Nanomaterials in the environment: fate and effects*, BioValley Science Day/Basel Toyama Symposium, Basel, CH

May 2009, *In vitro toxicity screening of engineered nanoparticles*, Sino-German Frontiers of Science (SINOFGOS) Humboldt Foundation, Potsdam, D

June 2008, Invited seminar "*Ethics in Nanotechnology*" at the "Nanosciences in Ile de France Summer school"; Paris, Le Tremblay sur Mauldre, F

May 2005, *The role of CDC20 isoforms in A. thaliana cell cycle regulation and development*; 30th FEBS Congress & 9th IUBMB Conference; Budapest, H

### ***Dissertation Committees***

Jana Schneider, Biomanipulation for eutrophication control in running waters: top-down effects on benthic key stone grazers (2015) Technical University of Dresden

### ***Co-supervised theses***

MSc thesis "Interaction of EPS functional groups with model silver nanoparticles" (Olga Sambalova, supervised by Prof Dr Peter Hamm, Department of Chemistry, University of Zurich, co-supervised with Dr Andreas Borgschulte, Empa), 2015

MSc thesis „Long-term effects of Pb (II) and recovery in synchronized Chlamydomonas reinhardtii in the course of the cell division cycle“ (Michael Burkart, supervised by Prof Dr Laura Sigg, Institute for Biogeochemistry and Pollutant Dynamics, ETHZ and Eawag), 2011 – 2012

Medical doctoral thesis, „Activity of trypsin isoforms“ (tentative title, Melanie Wobker, supervised by Prof Dr Dr hc mult Wolfram Domschke, Department of Medicine B, University of Münster), 2006 – 2009

### ***Teaching activities***

ETH-Domain (since 2010)

Ecotoxicology, EPFL (ENV-306, lecture) with Prof Dr Kristin Schirmer

Molecular Ecotoxicology, ETHZ (701-1330-00 P, practical course) with Prof Dr Kristin Schirmer and Prof Dr Rik Eggen

Biogeochemistry, ETHZ (LV 701-0419-01 S, seminar) with Prof Dr Gerhard Furrer

Biogeochemistry and Pollutant Dynamics Term Paper: Writing (701-1303-00L, seminar) with Prof Dr Kristopher McNeill

#### Further education courses at Eawag (since 2010)

04/2015 *Ökotoxische Effekte von synthetischen Nanopartikeln* (V40/15)

11/2012 *Nanomaterialien in der aquatischen Umwelt* (V35/12)

#### University of Münster (2006-2009)

*Einführung in die Methodik der Gewebekultur* (laboratory course) with Prof Dr Angelika Barnekow

NanoSciences Ile-de-France Summer School, Seminar on Ethics in Nanotechnology. 06/2008

#### ISV, CNRS Ile-de-France Sud (2005-2006)

05/2005 The model plant *Medicago truncatula* (seminars, laboratory course) with Prof Dr Eva Kondorosi

#### **Honorary activities (selection)**

since 2012 Co-supervision of *Facharbeiten* and Swiss *Jugend Forscht* projects

since 05/2011 member of the Eawag equal opportunities committee

- speaker (05/2011-04/2014)
- co-Organisation of the career-development program for women in sciences Fix the leaky pipeline (<http://www.fix-the-leaky-pipeline.ch/>);
- Initiative for and organisation of the participation of Eawag in Mentoring Deutschschweiz ([www.academic-mentoring.ch/](http://www.academic-mentoring.ch/))

since 2011 member of the board of the Empa-Eawag day-care Kinderpavillon e.V.

- since 05/2012 vice president
- shared responsibility for the budget (SFr 1 Billion)
- mediation in difficult situations between team members and parents

since 09/1998 member of the youth exchange association Partnership International e.V.

2002 – 2004 Naturschutzbund Deutschland e.V. Heidelberg

Organisation of children's group activities

## **Further education**

### *VHS courses*

2003 Basics in rhetorical communication (vhs Heidelberg)

### *Didactica courses (University of Zurich & ETH Zurich)*

2015 *Wirkungsvoll präsentieren im Hochschulunterricht* (WPN-15-1-1)

2013 *Interaktivität in Grossvorlesungen steigern mit Classroom Response Systems* (IGC-12-2-1)

2012 The Teaching Portfolio: form and function (TPE-12-2-1)

2011 Teaching in English in a non-English speaking environment

2011 Supervising students - dealing with roles and relationships (SVSN-11-1-1)

2010 *Grundlagen der Lernpsychologie für die Lehre* (GLL-11-1-1)

## **Software skills**

Windows, OS X

Microsoft Word, Open Office (excellent)

GraphPad Prism (very good), SPSS (basics)

Microsoft Publisher, InDesign (good)

Microsoft PowerPoint (very good)

Microsoft Excel (excellent)

Adobe Photoshop, imageJ (good)

language R (basics)

## **Languages**

German mother tongue

English, French fluent

Latin, Spanish basic knowledge

My profile is also available on these **websites**:

<http://www.eawag.ch/ueberuns/portraet/organisation/mitarbeitende/profile/alexandra-kroll/>

<https://www.linkedin.com/pub/alexandra-kroll/60/b46/92b>

[www.researchgate.net/profile/Alexandra\\_Kroll](http://www.researchgate.net/profile/Alexandra_Kroll)

## **Publications**

### *Peer reviewed publications*

**Kroll, A.**, Matzke, M., Rybicki, M., Obert-Rausser, P., Burkart, C., Jurkschat, K., Verweij, R., Sgier, L., Jungmann, D., Backhaus, T., Svendsen, C. (2015) Mixed messages: Exposure dynamics and effects of silver nitrate and silver nanoparticles to in benthic microbial communities in artificial indoor streams. *Environ Sci Pol R*, doi:10.1007/s11356-015-4887-7.

Braun, A., Boudoire, F., Bora, D. K., Faccio, G., Hu, Y., **Kroll, A.**, Mun, B. S. and Wilson, S. T. (2015), Biological Components and Bioelectronic Interfaces of Water Splitting Photoelectrodes for Solar Hydrogen Production. *Chem. Eur. J.*, 21: 4188–4199.

**Kroll A**, Behra R, Kaegi R, Sigg L (2014) Extracellular Polymeric Substances (EPS) of Freshwater Biofilms Stabilize and Modify CeO<sub>2</sub> and Ag Nanoparticles. *PLoS ONE* 9(10): e110709

Stewart, T., Traber, J., **Kroll, A.**, Behra, R. and Sigg, L. (2013). Characterization of extracellular polymeric substances (EPS) from periphyton using liquid chromatography-organic carbon detection–organic nitrogen detection (LC-OCD-OND). *Environ Sci Pol R*, 20 (5), pp. 3214-3223.

**Kroll, A.**, Gietl, J. K., Wiesmüller, G. A., Günsel, A., Wohlleben, W., Schnekenburger, J. and Klemm, O. (2013). In vitro toxicology of ambient particulate matter: Correlation of cellular effects with particle size and components. *Environ Toxicol*, 28 (2), pp. 76-86.

**Kroll, A.**, Pillukat, M., Hahn, D. and Schnekenburger, J. (2012). Interference of engineered nanoparticles with in vitro toxicity assays. *Arch Toxicol* 86(7): 1123-1136.

Kevei, Z., Baloban, M., Da Ines, O., Tiricz, H., **Kroll, A.**, Regulski, K., Mergaert, P. and Kondorosi, E. (2011). Conserved CDC20 Cell Cycle Functions Are Carried out by Two of the Five Isoforms in *Arabidopsis thaliana*. *PLoS One* 6(6): e20618.

**Kroll A.**, Dierker C., Rommel C., Hahn D., Wohlleben W., Schulze-Isfort C., Göbbert C., Voetz M., Hardinghaus F., Schnekenburger J. (2011). Cytotoxicity screening of 23 engineered nanomaterials using a test matrix of ten cell lines and three different assays. *Part Fibre Toxicol*. 8: 9.

Landsiedel, R., Ma-Hock, L., **Kroll, A.**, Hahn, D., Schnekenburger, J., Wiench, K. and Wohlleben, W. (2010), Testing Metal-Oxide Nanomaterials for Human Safety. *Adv Mat*, 22: 2601–2627.

**Kroll, A.**, Pillukat, M. H., Hahn, D. and Schnekenburger, J. (2009). Current in vitro methods in nanoparticle risk assessment: Limitations and challenges. *Eur J Pharm Biopharm* 72: 370-377.

Schulze, C.\* , **Kroll, A.\***, Lehr, C. M., Schäfer, U. F., Becker, K., Schnekenburger, J., Schulze Isfort, C., Landsiedel, R. and Wohleben, W. (2008). Not ready to use - overcoming pitfalls when dispersing nanoparticles in physiological media. *Nanotoxicology* 2: 51 - 61. (\*equal contribution)

*Manuscripts in review and in preparation (as of September 2015)*

Sgier L., Freimann R., Zupanic A, **Kroll A.** Tracking biofilm community structure with flow cytometry and viSNE: phenotypic shifts, decaying cells and microplastics. In review by Nature Biotechnology.

Taylor C., Matzke M., Kroll A., Read D., Svendsen C., Crossley A. Toxic interactions of silver species with freshwater green algae and cyanobacteria and their effects on mechanistic endpoints and the production of extracellular polymeric substances. In review by Environmental Sciences: Nano.

Wagner T., **Kroll A.**, Wiemann M., Lipinski H.-G., Intra- and extracellular nanoparticle dynamics in model vertebrate and algae cells. In preparation.

Sgier L., Matzke M., Newbold L., Oliver A. E., Behra R., **Kroll A.**, Temporal community structure dynamics in untreated stream biofilms. In preparation.

**Kroll A.**, Lynch I., Matzke M. Selective interaction of stream biofilm EPS components with model silver nanoparticles. In preparation.

Burzan N., **Kroll A.**, Braun A. Artificial photosynthesis - investigation of the bioinorganic interface of algal biofilm electrodes. In preparation.

*Book chapters*

**Kroll, A.**, Kühnel, D., Schirmer, K. (2013) Testing Nanomaterial Toxicity in Unicellular Eukaryotic Algae and Fish Cell Lines. In: Oxidative Stress and Nanotechnology: Methods and Protocols. Eds: Armstrong, D., Bharali, D. J. Humana Press, New York.

**Kroll, A.** and Schnekenburger, J. (2008). Establishment of in vitro test systems for the assessment of the toxicological impact of nanoparticles. in Size Matters - Ethical, Legal and Social Aspects of Nanobiotechnology and Nano-Medicine. Ach, J. S. and Weidemann, C., Münsteraner Bioethik-Studien 8. LIT. Münster, Berlin

*Other contributions*

**Kroll, A.** (2012). "Nanobiology—convergence of disciplines inspires great applications." Cellular and Molecular Life Sciences 69(3): 335-336.

**Kroll, A.**, Hahn, D., Schnekenburger, J. (2009) Nanotoxicology: In vitro test systems for the toxicology of nanomaterials (Nanotoxikologie: in vitro-Testverfahren zur Toxikologie von Nanomaterialien). Biospektrum, 16: 48-50.

NanoCare Project Partners (2009) NanoCare: Health related Aspects of Nanomaterials, Final Scientific Report, ISBN 978-3-89746-108-6