# Curriculum vitae

Alexander Kaiser, Ph. D.
Postdoctoral Research Fellow
37 E 14th Street
Tempe, AZ 85281
United States of America

**Professional Career:**

| | |
|---|---|
| 09/1995 – 08/2002 | Scientific Assistant, Humboldt-Univ. Berlin, Dept. Animal Physiology |
| 09/2002 | Ph.D. ("magna cum laude" equals A)<br>Thesis: *"Effect of ontogenetic and respiratory changes on composition and acid-base-status of liquid compartments in pupae of the tenebrionid beetle Zophobas rugipes"* |
| 01/2005 - now | Postdoctoral Research Fellow at Dr. Jon F. Harrison's Lab (Arizona State University, Tempe, Arizona) and at Dr. Michael C. Quinlan's lab (Midwestern University, Glendale, Arizona) |

**Professional Milestones:**

| | |
|---|---|
| 04/1996 | Poster-presentation at the meeting of the SEB, Lancaster: *"Spiracular occlusion and its influence on the respiratory cycle of lepidopterous pupae"* |
| 08/1997 | Oral presentation at the International Conference of Comparative Physiology and Biochemistry, Skukuza, South Africa: *"Discontinuous $CO_2$ release: can diapausing moth pupae compensate hypercapnia?"* |
| 09/1998 | Oral presentation at the VIth European Congress of Entomology, Ceské Budejovice, Czech Republic: *"The role of the hemolymph in discontinuous $CO_2$ release of diapausing moth pupae: Hypercapnia, hypocapnia and compensation"* |
| 03/2005 | Oral presentation at the Intercollegiate Seminar Series at Midwestern University: *"Insect respiration—what makes it so special?"* |
| 04/2005 | Poster-presentation at the meeting of the AAAS-SWARM, UofA, Tucson: *"Effect of development and discontinuous $CO_2$ release on acid-base status of Zophobas rugipes (Coleoptera: Tenebrionidae) pupae"* |
| 07/2005 | Took part in X-Ray Analysis project at the Advanced Photon Source at Argonne, Illinois: "Influence of body size on tracheal investment in tenebrionid beetles.", with Jon Harrison, Arizona State University |
| 01/2006 | Oral presentation at the annual meeting of the SICB in Orlando, Florida:<br>Kaiser, A.; Klok, C.J.; Socha, J.; Lee, W.K.; Fezzaa, K.; Quinlan, M.C.; Harrison, J.F.: *"Scaling of the tracheal system with body size and metabolic rates in Darkling Beetles (Tenebrionidae)"*<br>Klok, C.J.; Kaiser, A.; McKinley, B.; Rascon, B.; Henry, J.; Lee, W.K.; Socha, J.; Harrison, J.F.: *"Plastic and evolutionary responses of body size and tracheal dimensions to atmospheric oxygen concentration in fruitflies"* |
| 02/2006 | Gave lecture and lead lab course on "*Respiration and Circulation*" as part of the Entomological Course at Arizona State University |
| 02/2006 | Taught at the respirometry course at Sable Systems International, Las Vegas |
| 07/2006 | Took part in X-Ray Analysis project at the Advanced Photon Source at Argonne, Illinois: "Influence of body size on tracheal investment in insects.", with Jon Harrison, Arizona State University |

| | |
|---|---|
| 10/2006 | Poster contribution to the Comparative Physiology meeting of the American Physiological Society in Virginia Beach, Virginia: *"No giants today: tracheal oxygen supply to the leg limits beetle size"* |
| | Kaiser, A., Klok, C.J., Socha, J.J., Lee, W.K., Quinlan, M.C., Harrison, J.F. |
| 11/2006 | Gave Graduate Student Seminar "*Effects of varied atmospheric oxygen concentration on insects*", together with J.C. Klok on behalf of J. Harrison, Arizona State University |
| 12/2006 | Poster presentation at the Student Research Day at Midwestern University: "*No giants today: tracheal oxygen supply to the leg limits beetle size"* |
| 01/2007 | Poster presentation at the annual meeting of the SICB in Phoenix, Arizona: "*Acid-base balance of a beetle pupa living in bat guano*." |
| | Oral presentation at the annual meeting of the SICB in Phoenix, Arizona: "*Gas exchange patterns of beetles in the Southwest United States*." |
| 02/2007 | Gave lecture and lead lab course on "*Respiration and Circulation*" as part of the Entomological Course at Arizona State University |

**Publications:**

Harrison, J., Frazier, M.R., Henry, J.R., Kaiser, A., Klok, C.J., Rascón, B. (2006): *"Responses of terrestrial insects to hypoxia or hyperoxia"*, Respiratory Physiology and Neurobiology 154, 4-17

Kaiser, A., Klok, C.J., Socha, J.J., Lee, W.K., Quinlan, M.C., Harrison, J.F. (2007): "*Size-dependent increase in proportional investment of the tracheal system in the legs limits maximal size of insects*", Proceedings of the Natural Academy of Science, under review

Kaiser, A., Hartzendorf, S., Hetz, S.K. (2007): "Effects of ontogenetic development on respiration and $CO_2$ release patterns of beetle pupae (*Zophobas rugipes*, Tenebrionidae).", Journal of Insect Physiology, in preparation

Kaiser, A. (2007): "$CO_2$ storage properties and buffer characteristics during pupal development of *Zophobas rugipes* (Coleoptera, Tenebrionidae).", Journal of Insect Physiology, in preparation

Kaiser, A. (2007): "Changes in amino acid composition during pupal development of *Zophobas rugipes* (Coleoptera, Tenebrionidae).", Amino Acids, in preparation

Kaiser, A. (2007): "Effects of

**Public Outreach:**

> "Insect Walk" at the Estrella Mountains Regional Park (Apr. 08, 2006 and Oct. 28, 2006)

> Press Releases about "*No giants today: tracheal oxygen supply to the leg limits beetle size*."
http://www.eurekalert.org/pub_releases/2006-10/aps-gim100706.php
http://www.livescience.com/animalworld/061011_giant_insects.html

**Education:**

| | |
|---|---|
| 09/1979 – 06/1987 | German College (final examination passed above average) |
| 09/1989 – 06/1995 | Student at the University of Erlangen (Bavaria, Germany)<br>Practical courses in entomology and insect physiology,<br>"Diplom-Biologe" (graduate student of biology, mark 1.3, equals A-)<br>Thesis: *"On the function of spiracles in three species of butterfly pupae (Actias, Attacus, Ornithoptera)."* |

**Professional Experience:**

> X-Ray analysis at the Advanced Proton Source, Certificate of Core Radiological Training
> application of invasive and non-invasive experiments *in vitro* and *in vivo* to analyze respiratory gas exchange, energetic metabolism and acid-base-regulation
> quantitative $CO_2$- and $H_2O$-analysis in a flow-through-system by means of Ultra-Red-Absorptive-Spectrometry on living objects and on small samples of body-fluids
> quantitative $O_2$-analysis (platinum-electrodes, Oxycon, Ametec)
> manometrical analysis by means of a Warburg chamber
> construction of micro-electrodes (pH, cocktail-ion)
> analysis of minuscule samples by means of Radiometer Blood Micro System
> analysis of kations (AAS), amino acids (HPLC), and organic acids (CE)
> field trip planning and execution to collect insects, mainly beetles
> maintaining and rearing of beetles and other insects on a large scale
> coordination and supervision of technical assistants and students

**Other Skills and Interests:**

> speaks, writes and understands English fluently
> speaks and understands basic French and Spanish
> designs electronic setups (from planning to construction)
> profound knowledge of computer-hardware and -software
> writes PERL-programs (e.g. for automatic evaluation of data)
> plays the piano and the guitar (folk-picking)
> likes to travel