Blood Glucose Levels and Cognition in free Ranging African Striped Mice

Paid Research Assistant Position (1 year)

or Two Unpaid Master Project Positions (each 6 months)

What we are looking for: An extremely motivated and independent biology student who joins the striped mouse project for approximately one year from December 2014/Jan 2015 until the end of 2015 as a research assistant.

Research assistants get free accommodation at the station, and R3500/month to cover their daily costs. Travel costs will be refunded by a maximum of 100 Euro /month based on the time spent at the research station. This would also be an opportunity for 2 external master students, who would only get part of their travel costs refunded (100 Euro/month), but would have to cover the daily costs of living themselves plus the costs of accommodation of R1550/month. Master students have to stay 6 months at the station, one for the first half and the other one the second half of 2015 (not simultaneously).

The job: Help in data collection for the project Eco-Physiology of Cognition, where we study how environmentally induced physiological change affects cognition. Help in all general duties at the research station and in general data collection for the long-term project http://stripedmouse.com
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Project summary

As a consequence of global change, extreme environmental events threaten biodiversity, bringing about the 6th extinction, with the increase of drought periods being one major challenge. Droughts induce physiological mechanisms of fasting which might impair cognitive performances of animals, such as reaction time and spatial memory, both being important when having to respond to predators. Fasting is often associated with a decrease in blood glucose levels and studies on humans indicate an influence of blood glucose levels on cognitive performance. The student will study African striped mice (*Rhabdomys pumilio*) in the field in South Africa at the Succulent Karoo Research Station. These mice live in a semi-desert and have to survive the annual dry season in summer, when their blood glucose levels are significantly lower than during the moist season in winter and spring. The student will perform tests in both seasons and will test the hypothesis that free living striped mice which received glucose water for drinking at their nest during the dry season perform better than striped mice with lower blood glucose levels. These experiments will be conducted with free living striped mice during the dry season.

Dry season projects (Jan-May)

Field experiments on reaction time: The student will measure reaction time during afternoon observations using our developed [UTF-8?]â□□moving shadow [UTF-8?]testâ□□. A minimum of 20 mice from several groups will be tested twice, once under normal conditions, and another time after they received glucose solution to drink to increase their blood glucose levels. Water / sucrose solution will be presented one hour before onset of experiments.

Field experiments on spatial orientation: A barrier will be presented in the field, giving the individual mouse two escape routes, a long one and a shorter one. Mice will be lured to a starting point with water as reward, they will be startled, and it will be noted whether they take the short or long escape route. A minimum of 20 mice from several groups will be tested with water as reward, another 20 mice with sugar solution as reward.

Moist season projects (Jan-May): These data will be compared with data collected by the postdoc Dr. A. Maille during the dry season, who will train the student in these procedures. Data will be collected using the moving shadow test in the field, and the orientation response test and Barnes maze in the research room at the field station.

Permanent projects

Pilot studies with a captive colony: using a captive colony of striped mice at the research station and using modern touchscreen chambers (http://www.phenosys.com/index.php/en/products/touchscreen-chamber), the student will test whether two cognitive tests for reaction time and spatial memory can be used with this equipment: the 2-choice visual discrimination test and the 5-choice serial reaction time test.

Long-term data base: The student will helps with the general field work in the morning and during the afternoon, contributing to trapping, marking, observing and radio-tracking of striped mice. The student will assist the research station manager in his work, learn research management skills, and take over his duties when he is on leave.

Work and life at the research station: The student also has to help with the general duties at the research station, such and maintenance and cleaning of the research station. Information about life at the research station: http://stripedmouse.com/documents/GeneralInformationResearchStationSept2013.pdf .

Time period and place

End of 2014 for 1 year when this position is filled as paid research assistant, or 6 months beginning of 2015 and 6 months middle of 2015 if filled by two non-paid external master students.

Compensations and cost

For each month present at the research station, 100 Euro will be refunded for travel costs. Research assistants get R3500 / month for costs of living and free accommodation. Master students would have to cover these costs (approx. R5000/month) themselves. The student needs to cover medical aid and visa fees herself.

Details of where the project will be carried out

Succulent Karoo Research Station (SKRS) in Goegap Nature Reserve, near Springbok in the Northern Cape of South Africa: http://stripedmouse.com/site1_2_2.htm . An international team of students, including a research station manager, postdocs and field assistants are present at the station.

Trial period

An evaluation will take place after 2.5 and after 5.5 months to evaluate whether the student is coping well and enjoying the stay at the field station.

Desired skills from student

Ability to work hard and independently. Good knowledge of English spoken and written. Knowledge in any of these fields would be of advantage: cognitive research, animal behaviour, physiology, experimental design and statistical analysis.

Skills student will learn

Several techniques of field work (trapping, marking and radio-tracking of small mammals), collection of behavioural and cognitive data, measurement of blood glucose levels, research management skills (project and time management), improvement of English skills.

How to apply

Send a motivation letter (1-2 pages stating why you are the perfect candidate) and your CV to:

Dr. C. Schradin, director Succulent Karoo Research Station, succulent.karoo.research.station@kabelbw.de .