



Cover: Up close and personal with the smallest species of penguin, the little penguin (*Eudyptula minor*). A study by Grace J. Sutton and colleagues explored the ability of accelerometers to assess the daily energy expenditure of free-ranging little penguins compared to the well-established doubly-labelled water method. The results validate the use of accelerometry as a reliable proxy for estimating energy expenditure and showed how energy expenditure may be influenced by both individual behaviour and environmental conditions. Image credit: J. J. Geeson. Image licensed under a Creative Commons Attribution 4.0 International license.

RESEARCH ARTICLES

Visualization of X chromosome reactivation in mouse primordial germ cells *in vivo*
Haramoto, Y., Sakata, M. and Kobayashi, S.
bio058602

Autumn migratory orientation and route choice in early and late dunlins *Calidris alpina* captured at a stopover site in Alaska
Åkesson, S., Grönroos, J. and Bianco, G.
bio058655

Apoptosis is a generator of Wnt-dependent regeneration and homeostatic cell renewal in the ascidian *Ciona*
Jeffery, W. R. and Gorički, Š.
bio058526

The transcriptional landscape of the cultured murine middle ear epithelium *in vitro*
Mulay, A., Chowdhury, M. M. K., James, C. T., Bingle, L. and Bingle, C. D.
bio056564

Development of a highly pulmonary metastatic orthotopic renal cell carcinoma murine model
Park, J. S., Lee, M. E., Kim, S. H., Jang, W. S. and Ham, W. S.
bio058566

Three functional polymorphisms in *CCDC170* were associated with osteoporosis phenotype
Liu, X., Li, Y.-G., Tan, F., Liu, J., Yi, R. and Zhao, X.
bio050930

Oviductal fluid counterbalances the negative effect of high temperature on sperm in an ectotherm model
Rossi, N., Lopez Juri, G., Chiaraviglio, M. and Cardozo, G.
bio058593

Local adaptation in thermal tolerance for a tropical butterfly across ecotone and rainforest habitats
Dongmo, M. A. K., Hanna, R., Smith, T. B., Fiaboe, K. K. M., Fomena, A. and Bonebrake, T. C.
bio058619

Validating accelerometry-derived proxies of energy expenditure using the doubly labelled water method in the smallest penguin species
Sutton, G. J., Botha, J. A., Speakman, J. R. and Arnould, J. P. Y.
bio055475

FIRST PERSON

First person – Yoshikazu Haramoto
bio058759

First person – Nicola Rossi
bio058721

First person – Michel A. K. Dongmo
bio058717