SUPPLEMENTARY MATERIAL

Animal housing

Captive bats were acclimated to the outdoor cages for 4-7 days prior to experimental measurements. The bats were exposed to natural weather and light conditions during captivity, attenuated by the cage roof and wall structure. The cage was shaded and provided with bat boxes for roosting. The experiments were done from May through September, during which the average maximum temperature for the study area is 31.2 ± 0.7 °C and the average minimum temperature is 16.7 ± 0.9 °C (Israel Meteorological Services: http://www.ims.gov.il/IMSEng/CLIMATE). Once measurements were completed, the bats were released at their sites of capture. Bats were kept in captivity for 2-3 weeks, with the exception of *P. kuhlii* that were drawn from our captive colony, and thus were kept in captive conditions for 2-3 months prior to the present study experiments.

Identification and Quantification of SC lipids

We performed reversed-phase HPLC on a PE Series 200 micro binary-gradient system comprised of two pumps, an autosampler and a column oven set to 48 °C (Perkin Elmer Analytical Instruments, Wellesley, MA). We used a a Phenomenex Luna® C18 column 150 mm × 2.0 mm (length × inner-diameter), spherical 5 µm particle size, 100 °A pore size (Phenomenex, Torrance, CA). We used a gradient solvent system with the initial solvent being methanol:water (95:5, v/v), changed gradually to 100% ethyl acetate. The syringe was washed between injections with 250 µL of ethyl acetate. Next in line, we used a Q-TRAP® hybrid quadrupole Linear Ion Trap mass spectrometer system (Applied Biosystems, Ontario, Canada) fitted with a PhotoSpray® ion source operated in positive ion mode, with toluene as the dopant, continuously delivered at 15 µL/min into the sheath gas (GS2) of the heated nebulizer. Our settings on the Q-TRAP included collision gas set to High, curtain gas to 27, nebulizer gas (GS1) to 40, GS2 to 12, and lamp gas to 1.0 L/min. High purity nitrogen was used for all gases on the Q-TRAP system. The nebulizer temperature was set to 460 °C, transfer voltage to 2100 V, decluster potential to 45 V, and the interface heater was turned on. We identified ceramide or cerebroside molecules

by their retention-time, mass-to-charge ratio and source fragments, in a positive ion mode of APPI. We then estimated the relative abundances for each molecule from the ion intensity, calculated as the area under the extracted ion chromatogram.

Figure 1. The relationship between surface area specific cutaneous evaporative water loss (ssCEWL) of *Plecotus christii*; *Pipistrellus kuhlii*, *Otonycteris hemprichii*, and *Eptesicus bottae* and thermoregulatory index (TRi) on a logarithmic scale.