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## Editorial

### DNA Barcoding of Mammals

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The contributions in this Special Issue summarize recent mammalian advances and future research directions in DNA barcoding, a research initiative that is helping biologists document biodiversity in a timely manner. In conjunction with taxonomy, it is poised to make identification of the earth's almost 2 million known living organisms and discovery of the estimated 30 million species yet unknown a far less daunting task. To meet the challenge of discovering and identifying so many species, resources to support this work and innovations in methodology must be stepped up before these unknown organisms, and their place in and potential benefits to the ecosystem and to humans are lost without a trace. The establishment of a global mammal DNA barcoding campaign aims to build a reference database of genetic sequences for an important vertebrate group.

At the 10th International Mammalogical Congress held in Mendoza, Argentina from 9-13 August 2009, we organized a DNA Barcoding Symposium with the purpose of bringing together mammalogists interested in participating and contributing to a global mammal barcode campaign. Three of the 4 papers in this Special Issue are from the Congress and the other paper was solicited through the general announcement on the journal website. The paper by Lim summarizes mammalian DNA barcoding in the species-rich Neotropics and identifies the taxonomic groups and geographic regions that have yet to be targeted to provide a comprehensive reference database. The paper by Alvarez and colleagues outlined the recent establishment of the Mexican Barcode of Life initiative and gave 2 examples of projects investigating the genetic diversity in different groups of heteromyid rodents. Agrizzi and colleagues summarized a project focussing on the Brazilian Atlantic Forest, which is a biodiversity hotspot for mammals as well as other animals and plants. In addition, they compared another mitochondrial gene (cytochrome b, which is currently the commonly used gene in molecular systematic studies of mammals) with the barcoding gene cytochrome c oxidase subunit 1 (COI) and found them to be equally useful

in assessing species diversity. Nadin-Davis and colleagues presented a practical application of DNA barcoding that improved species identification of bats, a group that acts as a reservoir host for rabies, and the epidemiology associated with the testing of this virus.

Several global DNA barcoding campaigns have been established to target specific taxonomic groups such as birds, fishes, and butterflies. Mammals are high profile animals in terms of evolutionary studies, environmental conservation, and public health that require a focused and concerted barcoding effort. To date less than 1/4 of recognized mammal species have been barcoded; however, the observed diversity within the COI gene suggests the existence of potentially many more species that may be new to science. Furthermore, taxonomic and geographic coverage is uneven and has been dependent primarily on circumstantial collecting rather than on a concentrated, methodical approach. With more than 35,000 mammal specimens barcoded to date, it is necessary to assess what has been done and to focus on priorities in a global mammal barcoding campaign. To address the need for up to date information, an internet portal has been established to maintain a centralized real-time synopsis of barcoded taxa, along with the generation of summary statistics. This functionality is available in the recently established Mammalia Barcode of Life website (<http://mammaliabol.org>) which will incorporate a direct feed from the Barcode of Life Data Systems (BOLD) online repository ([www.boldsystems.org](http://www.boldsystems.org)). Using this portal will allow present and future contributors a means of knowing where to concentrate their research efforts in a coordinated manner. By providing barcodes associated with museum specimens, the Mammalia Barcode of Life will support a standardized mammalian nomenclature and enable the research community to use DNA barcodes to test species identifications prior to their deposition in genetic sequence databases such as GenBank (<http://www.ncbi.nlm.nih.gov/genbank/>). Involvement of many researchers in museums, universities, zoos and wildlife agencies throughout the world will be needed in this effort to assemble the DNA barcode reference library, which will be an important tool aiding in the identification, discovery, and documentation of mammalian biodiversity.

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