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*Cover photo.* Phylogenetic analyses of ancient mitochondrial DNA show that late glacial dung in a southwest Argentina cave originated from a small ground sloth species not yet represented by skeletal material and not closely related to any of the four previously sequenced extinct and extant sloth species. In the future, genetic analyses of such well-preserved plant and animal remains may be used routinely to supplement morphological identifications and possibly provide a time-lapse view of molecular diversification in the late Quaternary. See related article by Betancourt et al. in this issue. (Cover illustration produced by Carl Buell, Sylvio Tuepke, and Knut Finstermeier, Max Planck Institute, Leipzig, Germany.)