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Bipolar distribution of deep-sea benthic foraminifera

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Biodiversity in deep-sea sediments is extraordinarily rich at a local scale. It is disputable, however, to what extent the high local species richness of abyssal faunas can be extrapolated to larger spatial scales. The accurate assessment of regional and global deep-sea diversity is impeded by a lack of data on dispersal ranges of species at the ocean floor, particularly at the genetic level. To test the capability for long-distance dispersal of deep-sea foraminiferal species, we examined the genetic diversity of Arctic and Antarctic populations of three common, deep-sea rotaliids, *Epistominella exigua*, *Cibicides wuellerstorfi* and *Oridorsalis umbonatus*, collected during recent R/V *Polarstern* cruises, including the ANDEEP III campaign in the Southern Ocean. Our analyses revealed no significant genetic differences between polar populations of the examined morphospecies, even in an extremely variable ITS region of the ribosomal DNA. This result provides strong evidence that a high gene flow occurs between populations of deep-sea species separated by long distances. The genetic homogeneity of Arctic and Antarctic deep-sea foraminifera suggests that deep-sea biodiversity may be more modest at regional and global scales than present estimates suggest.