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BSDB: the Biomolecule Stretching Database[1] MAREK CIEPLAK, MATEUSZ SIKORA, Institute of Physics, Polish Academy of Sciences, JOANNA I. SULKOWSKA, UCSD, BARTLOMIEJ WITKOWSKI, Institute of Physics, Polish Academy of Sciences — Despite more than a decade of experiments on single biomolecule manipulation, mechanical properties of only several scores of proteins have been measured. A characteristic scale of the force of resistance to stretching, F_{max}, has been found to range between $\sim$10 and 480 pN. The Biomolecule Stretching Data Base (BSDB) described here provides information about expected values of F_{max} for, currently, 17 134 proteins. The values and other characteristics of the unfolding proces, including the nature of identified mechanical clamps, are available at www://info.ifpan.edu.pl/BSDB/. They have been obtained through simulations within a structure-based model which correlates satisfactorily with the available experimental data on stretching. BSDB also lists experimental data and results of the existing all-atom simulations. The database offers a Protein-Data-Bank-wide guide to mechano-stability of proteins. Its description is provided by a forthcoming Nucleic Acids Research paper.

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