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Nota di contenuto	Introduction -- Importance of Translational, Configurational Entropy of Water -- Molecular Machines -- Concluding Remarks: Mechanism of Functional Expression Common in the Molecular Machines.
Sommario/riassunto	This brief discusses the mechanism of functional expression of a protein or protein complex utilizing the ATP hydrolysis cycle or proton-motive force from a unique point of view focused on the roles of water. A variety of processes are considered such as the unidirectional movement of a linear-motor protein along a filament, insertion of an unfolded protein into a chaperonin and release of the folded protein from it, transport of diverse substrates across the membrane by a transporter, and directed rotation of the central subunit within a rotatory motor protein complex. These topics are discussed in a unified manner within the same theoretical framework. The author argues that

water plays imperative roles in the functional expression of these molecular machines. A pivotal factor is the entropic force or potential originating from the translational displacement of water molecules coexisting with the molecular machines in the entire system.