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We introduce a general framework for biological systems that describe Modifications of type Enzyme-Substrate or Swap with Intermediates, which we call MESSI systems. Examples of MESSI systems are the sequential distributive or processive multisite phosphorylation networks, phosphorylation cascades, and the bacterial EnvZ/OmpR network. Assuming mass-action kinetics, we present a unified study of steady states and conservation laws of these systems (inspired by [Feliu and Wiuf 2013; Perez Millan, Dickenstein, Shiu and Conradi 2012; Thomson and Gunawardena 2009]). (Received July 30, 2015)