The goal of much of computational biology is to numerically describe data from a system, but also to find ways of fixing it and to understand a system’s objectives, algorithms, and mechanisms. Here we will argue that, regardless the objective, machine learning should be a central contribution to progress in every flavor of biomedical science. Machine learning can typically better describe the data. In doing so it can also provide a benchmark for any other way of describing the data. Using examples from neuroscience we discuss how better performance matters for decoding models and how having a benchmark affects encoding models. Similar issues matter in medicine. As biomedical science evolves, machine learning is morphing into a critical tool across the full spectrum of scientific questions.