Traditional medicine postulated that we are all more or less the same biologically, and individual differences are random variability. “Precision medicine” differs by incorporating information on how genes, environment and lifestyle differ among people. Genes not only predispose to specific diseases, but also influence how we react to our diets, exercise, environment, drug treatments, etc. Recent research shows that genetic differences between individuals are far greater than we thought, and that these differences increase during our lives by experience-based (‘epigenetic’) changes in our genes. Precision medicine uses rapid, cheap technology to read an individual’s DNA (genes) and to measure the levels of nutrients, metabolites, hormones, or drugs in a person’s blood; this reflects not only genetic potential, but also individual experience. It is thus increasingly possible to target therapies precisely to appropriate patients, and to know in advance which patients might react badly to each treatment. This precision, however, also creates what economists call a “market failure”: there is more public benefit when all patients get safe and effective treatments, but less benefit to the producer from fewer sales of each product. Producers respond with high unit prices, but there are many other ways for society to maximize public benefit.