Abstract by Donagh Berry - New traits for dairy cattle breeding

Phenomics is the discipline of deriving methods to accurately describe the characteristics of an animal. Being able to routinely and accurately measure, and predict, the (future) performance of an animal (and therefore system) is useful both in day-to-day farm management but also in optimising genetic gain. Animal characteristics, often termed phenotypes, can be broadly classified into: 1) producer scored – mastitis, lameness, milking speed, temperament, 2) professionally scored/recorded – linear type classification, veterinary surgeons, artificial insemination technicians, 3) technological – mid-infrared spectroscopy of milk, reproductive tract ultrasound, video image analysis, 4) statistical – herd-level solutions from genetic evaluations after accounting for genetic and selected non-genetic effects, forward prediction models, 5) genomics – contribution to personalised management and risk assessment, 6) "next generation" –transcriptomics (i.e., expression profile for genes at a given time period), and 7) experimental – extensive phenotyping (e.g., immunological challenge) of a smaller number of animals divergent for a characteristic under investigation (e.g., genetic merit). The collation of all data sources into a useable format that can be relayed back, in an easy-to-use format, to the producer via a decision support tool, will require a concerted, multi-disciplinary and multi-national effort.