DATA ACQUISITION AND ETHICAL USE

KEY CONCEPTS

Data plays a role at many of the different stages of science, and one way to discuss and understand the comprehensive research responsibilities of data acquisition and management is to think about the different requirements incurred at different stages. For example, Shamoo & Resnik (2015) divide scientific practice into the following stages, in order to present and assess those data acquisition and management responsibilities which are particular to each stage: problem selection; literature search; hypothesis formation; research design; collecting, recording, and storing data; data analysis; data interpretation; publishing data; sharing data and materials (Chapter 3, pages 61–74).

As quotidian as it might seem, basic failures of scientific record-keeping often play a role in generating, sustaining, or occluding the satisfactory resolution of research misconduct cases.

TEXTBOOKS & REPORTS

- *Responsible Conduct of Research* (Shamoo & Resnik 2015, 3rd ed)

ASSOCIATED ARTICLES

- Sterling's (2011) "Genetic Research among the Havasupai" *AMA J Ethics* 13(2): 113–117.
- Leonelli's (2016) "Locating ethics in data science" *Phil Trans R Soc A* 374: 20160122.
- Leonelli's (2019) "Data — from objects to assets" *Nature* 574: 317–320.

CASES IN THE NEWS

- Tribe Blasts Exploitation of Blood Samples—see Rex Dalton (2002) writing for *Nature*

DISCUSSION QUESTIONS

1. How do potential issues of data acquisition and (mis)management arise most commonly or significantly for scientific work in your laboratory or research setting?
2. Do you and other members of your research team have professional procedures in place for managing your data? In other words, do you have a **Data Management Plan (DMP)**?
3. How could your institution's data management policy be improved? Consider what additions, removals, or alterations could be made to the policy.
4. How distributed and global is data in your scientific domain? What challenges does the special character of this data—distributed, global, or otherwise—pose for your practice?
5. How did data get so darn big? How has data, and its size and amount, changed in your field over the last decade or so?

POLICY & REPORTING

Acquisition and management of samples and data sets can be tricky. Just because consent has been granted in one place, moment, or context does not necessarily mean that said consent will extend beyond that initial setting in the manner which some investigators might wish it to. One of the most notorious cases of recent scientific misconduct in the US involved researchers at Arizona State University (ASU) along with members of the Havasupai Tribe. Ethical controversy surrounding how scientific specimens and data travel, with whom, and how far the processes of consent might extend is, of course, not restricted to this case. Know the rules of consent—especially its *boundaries*—and have a DMP.

FINE PRINT

In 1992–3, the National Academy of Sciences (NAS) published a pair of reports on *Responsible Science* (Vol. 1–2), and those reports ushered in an era of ethical oversight centered around the concept of the Responsible Conduct of Research (RCR) at federally-funded American research institutions across the nation. By 2009, the National Institutes of Health (NIH) had mandated that "all trainees, fellows, participants, and scholars receiving support through any NIH training, career development award (individual or institutional), research education grant, and dissertation research grant must receive instruction in responsible conduct of research" (NOT-OD-10-019). The National Science Foundation (NSF) recommends—though does not require—something similar. Both agencies suggest that satisfactory RCR instruction tends to cover: research misconduct; conflict of interest; human subjects research; animal subjects research; collaboration and interdisciplinarity; data acquisition and management; authorship, peer review, and publication; mentoring and being mentored; and the relationship between science and society. This handout introduces the topic of **data acquisition and management**.

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