Duke Forge Science Culture and Accountability Plan (SCAP)

The mission of Duke Forge is to “free the data” to enable actionable insights and measurements that will guide implementation efforts across health systems. We will do this by:

• Breaking through barriers to data access while ensuring data integrity and protecting privacy
• Organizing, curating, and disseminating information to improve its usefulness to researchers and the public
• Applying the full spectrum of data science tools and expertise in answering the hard problems of health and healthcare
• Engaging in ways that allow our university and its health system to partner effectively with the people and communities they serve
• Developing alliances and partnerships

The guiding principles for research practices at the Forge include:

• Scientific integrity, honesty, openness and communication
• Respect for the confidentiality and sensitivity of the data
• Collaboration among researchers throughout both the university and health system
• Generating high-quality, reproducible data and results

The Forge is a loosely structured entity and draws people from many different schools, departments and offices at Duke and many different levels including faculty, staff and students. The leadership of the Forge is intentionally lean and there are minimal full-time personnel. Instead, projects devoted to answering research questions bring people together to conduct the work of the Forge. Each project team is composed of physicians, statisticians, student interns and managers tasked with the responsibility of moving the research forward. The primary responsibility for maintaining the SCAP within the Forge rests with Margaret Pendzich, Forge Regulatory Specialist and Project Manager, Duke Office of Clinical Research (DOCR), where she is a Research Program Leader.
Forge’s scientific culture is established on the motto of the Royal Society, Nullius in Verba, “take no one’s word for it”. Our scientific responsibility is to assume a skeptical stance and provide the data and documentation of our work so that peers can review it. This becomes even more important with “big” data science where data and methods are too complex for an individual to easily understand a scientific approach.

Promoting a culture of responsibility within the Forge rests with all people who work under its umbrella. All faculty, staff, trainees and students are expected to complete successfully the Responsible Conduct of Research (RCR) training course appropriate to their position through their owning department. Project leaders and mentors provide guidance and oversight to Forge graduate student interns who are conducting much of the analysis. Publications are written collaboratively by the project team and only persons who have made a significant contribution to the analysis and narrative are listed as authors.

Work on Forge projects is highly collaborative. The need for scientific rigor and reproducibility is paramount, communicated to all collaborators both at project initiation and frequently as analyses are conducted. Results are shared among project staff at frequent meetings where the analysis techniques are discussed and evaluated. This process of honesty, openness, and constructive scrutiny of research methods is standard practice. All persons working on Forge projects are expected to store their programming code in a version control library such as Git [https://git-scm.com/book/en/v2], and Git-oriented platforms such as GitLab (internally) or Github (publicly) so that others can review the code and use it to reproduce results. The Forge encourages the use of code “notebooks” such as Jupyter Notebooks or integrated development environments (IDEs) such as RStudio or RStudio Server to encourage well-documented code.

Due to some projects involving sensitive data, the Forge ensures that data is stored in appropriately secured systems. In many cases, Forge researchers will access and analyze data via virtualized environments maintained within the firewall and through multi-factor authentication.

If a Forge collaborator has concerns about issues surrounding the responsible conduct of research, they should contact any one of the following resources:

- Forge leadership -- Victoria Christian, Chief Operating Officer; Amy H. Herring, Co-Director; or Erich Huang, Co-Director
• Anonymous Duke Integrity Hot Line (1-800-826-8109)
• Research Integrity Office: https://medschool.duke.edu/research/ethics-integrity-compliance/researchintegrity-office
• Office for Institutional Equity: https://oie.duke.edu/