

clearScience: tools for communicating in the computational sciences

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Complex analyses from biomedical research are outpacing the means to convey them effectively. Imprisoning insights gleaned from these data to a few two-dimensional representations is wholly inadequate for transmitting the complexity of computational science to our peers and the public. While typical scientific publications are a minor elaboration on a 15th century technology, we propose that communication of data-intensive science should not just be a representation of science, but *the science itself*. It is clear that the scientific process requires a new standard of openness and reproducibility. If scientific progress depends on our being able to effectively communicate our science so that the community can build upon it, evidence shows that we need to improve.

clearScience is a pilot project funded by the Alfred P. Sloan Foundation in an attempt to build infrastructure for effective scientific communication. By leveraging available services, we demonstrate how scientists can easily transition from exploring data—executing science—and providing the scientific community all the resources to recreate analyses. By capturing the complete lifecycle of a project, reproducibility becomes a byproduct rather than a burden of publication. Being able to transparently share, reproduce, and build off of one another's work is and always has been critical to scientific progress. Now we have the tools to do so more effectively.