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Using Zebrafish to Do Good: Scientific Data Management

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Modules for Managing Research Data

Module 2: Types, Formats & Stages of Data
- The challenges in conducting a multiyear research project with living specimens
- Instrument data that needs to be exported to a common or open format for analysis, storage, etc.
- Data in digital and paper formats
- Paper lab notebook inconsistencies and lack of standardization

Module 3: Contextual Details
- No use of a data dictionary
- No file naming conventions
- Lack of synchronization between data sources
- No standards for data documentation

Module 4: Data Storage, Backup and Security
- Use of personal computers
- No plan for storage of data files
- No security and backup plan for digital and hardcopy data (lab notebooks)

Module 5: Legal and Ethical Issues
- IACUC-related documentation and compliance
- Need to clarify funding purposes (NIH vs. private)

Module 6: Data Sharing and Re-Use
- Research team uses web-based (cloud) applications to share images and data

Module 7: Plan for Archiving and Preservation of Data
- Need for preservation-friendly image and document file formats and media
- Use of model organism repository

Conclusion
E-Science expands the scope of science library practices and promotes, among medical science students, the preservation of scientific data in relevant repositories and archives. Using this case study as an E-Science tool, students will understand data management principles and challenges in the context of familiar research settings, the benefits of preserving scientific data, and how these practices will lead to a more homogeneous research future.