Barriers to Open Science Adoption
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Data Ownership Series Part 5: The Open Science and Open Data Context

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Viral Interruption Medicines Initiative

Overview

- Central question: Why don't more researchers adopt open science practices?

- I will look at three types of barriers
  - Legal (IP and contract)
  - Technological (data standards; metadata standards; uploading data)
  - Normative (tenure & promotion, impact factor, myths)

- See generally https://elifesciences.org/articles/29319

Legal

- Legal barriers are likely the least important on their face
- In the background, they do play a role:
  - Copyright
  - Patents
  - Contract
- Copyright
  - Data is not protected via copyright
  - But the organization of data within databases is
  - Widely adopted standards undermine copyright potential of databases

Legal

- Patents
  - These do not prevent sharing of data, but can prevent the use of that data
  - General research/experimental use exceptions in Canada and Europe provide researchers with freedom to operate
  - Not clear of this in the US
- Contract
  - Contractual provisions about sharing materials (MTAs), republishing articles, limitations on access to databases
  - Norms can help prevent parties from agreeing to these restrictions

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Technological

- What to share: data, meta-data, materials, tools?
- Where to share it?
  - European Open Science Cloud
- What format to share?
- How to ensure that credit follows sharing?
- Who pays?

Normative

- Better bottom up; carrot not stick:
- Giving credit for sharing in promotion and tenure & research grants
    - Sharing data rather than citations to articles
    - Publishing in open access journals rather than high-impact journals
    - For referring open access publications
    - Lowering value of patent holdings
- Hiring of new researchers
    - Count networks rather than proprietary data

Normative

- Granting councils and philanthropies
  - Create specific granting opportunities to those who adopt open science principles and structures
  - Measure outcomes across broad range of factors (publications, data sharing, material sharing, breadth of collaboration, training opportunities for HQP, placement of HQP, community engagement, etc.). See https://gatesopenresearch.org/articles/3-1442
  - Top up funding to curate/upload data

Normative

- PROs
  - Build consensus around open science through dialogue
  - Specific funding to junior researchers to engage in open science
  - Senior research not only talk about open science, but practice it
  - Transparent, consistent message

Final Thoughts

- Not only do legal, technological and normative barriers exist, but they reinforce each other

- They can also be a solution for one another
  - E.g. establishing data and database structures lessens opportunity for copyright to prevent copying
  - Normative expectations about MTAs will reduce contractual restrictions
  - Promotion and tenure expectations can move researchers away from closed publications

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