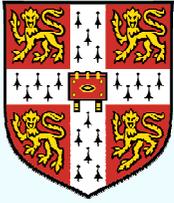


# **Identifying, Accessing and Disseminating Scientific Information**

## **A Biological Scientist's Perspective**

**Dr Sarah Coulthurst**

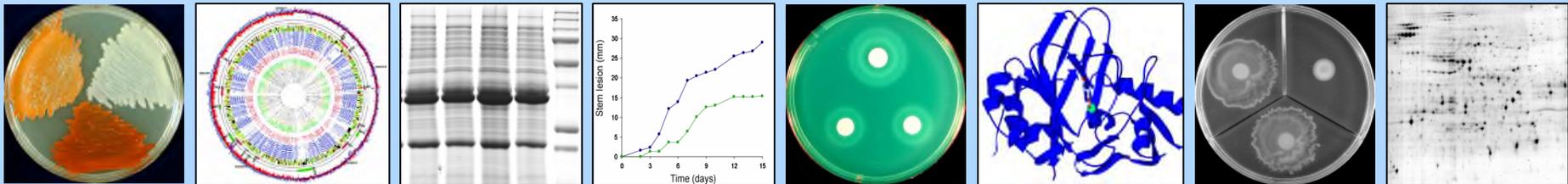
**Salmond Group  
Department of Biochemistry  
University of Cambridge**

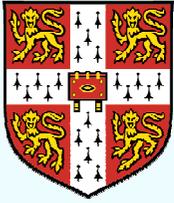


# Introduction

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- My background: biochemistry and molecular microbiology
- A 'typical researcher' and a 'typical day' are hard to describe - research is varied and individual
- Some common approaches and problems regarding gathering and dissemination of scientific information do exist
- *Peer-review, in high quality international scientific journals, is absolutely fundamental in acquiring and disseminating trustworthy and high-quality information*



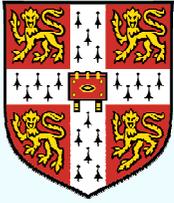


# Identifying the Information I Need to Acquire

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- **Targeted / specific information e.g.**
  - Has anyone studied this gene in my organism previously?
  - What does the protein I have just identified in proteomics do?
  - How do I perform a particular assay?
  - How do my results relate to previous findings?
  
- **Speculative information e.g.**
  - What interesting results have been recently published in my fields of interest?
  - What have my competitors been doing?



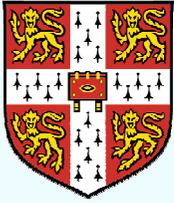


# Identifying the Information I Need to Acquire

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- **How to identify this relevant information? (How to identify papers that I want to read?)**
  - Search citation databases such as **PubMed** and **Web of Science** (or search engines such as Google Scholar)  
NB – minefields of keyword searching
  - Manually examine tables of contents of key journals in field
  - Automatic updates e.g. electronic TOC alerts, PubCrawler
  - Citations in other, related articles
  - Research Highlights / News and Views articles
  - Conferences, seminars and journal clubs

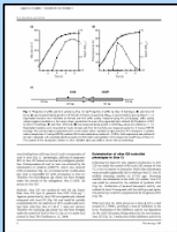


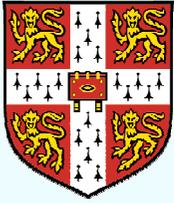


# Acquiring Relevant Information / Data

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- **Primary source of information and data is international peer-reviewed journal articles**
    - Primary scientific research papers
    - Scientific reviews
      - Obtained increasingly in electronic format (via PubMed or the journals' websites); also libraries and reprints
      - If no institutional subscription, can be more difficult
      - Books
      - NOT directly from Google, Wikipedia etc - no knowledge / guarantee of quality
- [However Google is useful to locate valid sources of info]

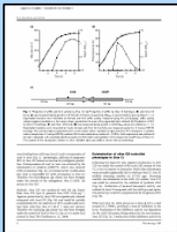


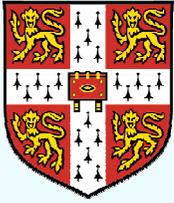


## Acquiring Relevant Information / Data

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- **Supplementary information/data associated with a particular article also increasingly common**
  - Available from journal (or authors') website
  - Valuable source of data inappropriate for inclusion in the main article e.g.
    - very large amounts of detailed raw data
    - movies
  - However, some perceived problems:
    - Increasingly, important data is not in the main paper
    - Supplementary information can be poorly formatted and clumsy to download





# Acquiring Relevant Information / Data

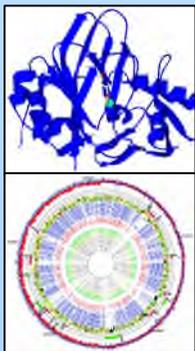
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- **Publicly-available scientific databases**

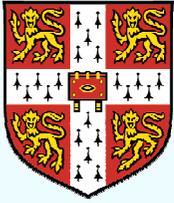
- Key source of data not appropriate for inclusion in journal articles  
e.g.

- nucleotide & protein sequence databases (Genbank, EMBL)
- genomic sequence databases (Sanger Centre)
- protein structure databases (Protein Data Bank)
- microarray databases (ArrayExpress)

- Proper interaction with journals is key to maintaining quality amidst ever-increasing volume of data



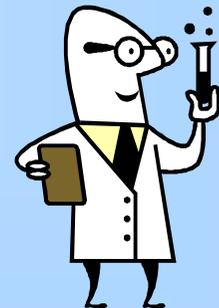
- Appropriate data depositions should be required by journals and cited in articles
- Database entries are validated by association with quality article

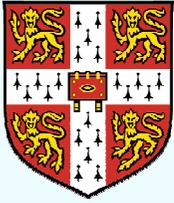


# Publishing My Scientific Information

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- **How do I choose the journal for my paper?**
  - Area of interest of the journal
  - Reputation / profile of the journal
    - Status of journal contributes to perceived success of scientist in eyes of peers and funding agencies
    - Impact factors/citation indices – an imperfect system?
  - Funding agency requirements (free access required?)
  - Page charges
  - Journal style and layout
  - Availability of journal
  - Previous experience...

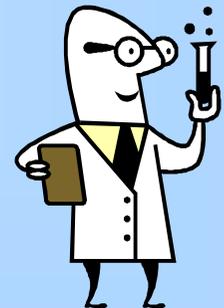


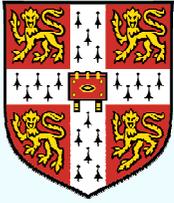


# Publishing My Scientific Information

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- **The publishing experience – positive or negative?**
  - Clarity of instructions to authors (online submission)
  - Being kept informed of progress
  - Speed and fairness of refereeing and editorial decisions
  - Accuracy of final article – minimal mistakes pre- and post-proofs
    - i.e. good communication!



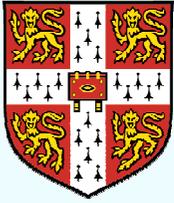


# Journals - Beyond Purely Scientific Articles

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- **‘Interesting information’ can be broader than just obtaining data and scientific information (journals and journal websites)**
  - News articles
  - Opinion articles / forum for debates
  - Jobs and funding opportunities
  - Conference and course announcements
  - Technical updates
- Raises profile of journal within the scientific community





# Conclusions

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1. The primary source of information and data is international **peer-reviewed** journal articles, both primary research papers and reviews
2. Multiple routes exist to identifying papers of interest; information acquisition varies from person-to-person and day-to-day
3. Articles are usually obtained electronically; the occurrence of accompanying supplementary information is increasing
4. Proper interaction of journals with well-maintained public databases is crucial for ensuring the high standards of both
5. Multiple factors are involved in the choice of journal to publish in; good communication with the journal is key to a positive experience
6. The scope and profile of a good journal extend beyond purely the publication of scientific papers

