Reviews in Computational Biology

1. Introduction

Christophe Dessimoz and James Smith

January 2012

Today

Course introduction

Review writing

About Christophe

- Diploma in Biology
- PhD in Computer Science
- **Now: Visiting Scientist at EBI**
- **Relevant experience:**

  ~25 research articles
  ~50 peer-reviews for 14 journals
  ~15 funding proposals
  Guest editor of *Briefings in Bioinformatics*

- ETH Zurich, Northwestern, Tsinghua University, Chulalongkorn (Bangkok)

About James

- Biological Sciences & Pathway Biochemistry
- PhD in Comp. Pharmacology (Drug Design)
- **Now: Scientist in Comp. Biochemistry**
- **Previous experience:**
  Research Fellow in Comp. Systems Biology
  ~20 research articles
  ~20 peer-reviews for 8 journals
  12 funding proposals (myself & students)
  Experience as a technical editor

- BSc(Hons) Biological Sciences (Leicester)
- halfway into a DPhil Biochemistry (Oxford) was lured to Pharmacology in Cambridge on an industrial scholarship, so jumped :-)
- collaborations with universities/institutes in the USA, UK, Germany (inc EMBL), France and some pharmaceutical companies.

What is doctoral training?

- Mechanism for interdisciplinary research eg. at the interface between life and physical/computational sciences

http://en.wikipedia.org/wiki/Doctoral_Training_Centre

5

What is a Academic Training & Transferable Skills Course?

Doctoral training has been around in different forms other European countries

In the UK, doctoral training is a strategic mechanism for interdisciplinary research at the interface between the life and physical sciences or between disciplines

DTC modules are conventionally for 1st/2nd years of a 3 or 4-year programme that augment the background of interdisciplinary projects and help researchers interact in new domains. They act as bridges between disciplines.

UK Research Councils, charity and foundation-funded PhD studentships now expect some form of doctoral training...

For more UK information see http://en.wikipedia.org/wiki/Doctoral_Training_Centre
See especially;
Chemical Biology DTC (Imperial),
Neuroinformatics and Computational Neuroscience DTC (Edinburgh)
Sys Biol, Life Sciences Interface, Medical Sciences DTCs (Oxford)
Sys Biol, Molecular Organisation and Assembly in Cells DTCs (Warwick)
Cambridge Centre for Analysis (Centre for Mathematical Sciences, Cambridge)

What is doctoral training?

- Mechanism for interdisciplinary research eg. at the interface between life and physical/computational sciences
- CCBI doesn't have a DTC, so we are piloting this unique course module

The CCBI doesn't have an associated DTC so we are piloting this course module... with a view to developing more in following years.

Other advanced modules in DTCs are designed for later in the process eg. writing up a PhD thesis, grant writing, how to regularly brush-up your professional and scientific knowledge, how to manage a collaboration, teaching and learning in HE, career opportunities after a PhD, or specific professional research and development opportunities inside, allied and outside academia...

Cambridge does offer some of these. See The DPPD, Careers service, Graduate School of Life Sciences Newsletter

Course in a Nutshell

Assimilate
Write
Evaluate } Reviews

If you aim at research, perhaps the most useful course.

Why assimilate?

- Discover and learn new topics
- Identify relevant research questions
- Build upon existing work

“On the shoulders of giants”

You may save a lot of time!

Why write?

- Introduce proposals, research plans, theses, papers...
- Improve your writing skills
- Think/understand through writing

Writing takes about 1/2 of our time!
Excellent writing skills are necessary for Science. You will be judged from your publication list and the “quality” of your written material.

eg articles with impact (in a known journal or just well-written/structured, easy to follow) are generally well cited in the field

Why peer-review?

- Be a good citizen
- Stay at forefront of research
- Sharpen your critical thinking skills
- Impress the editor

Here the editor -> us!

Learning Outcomes

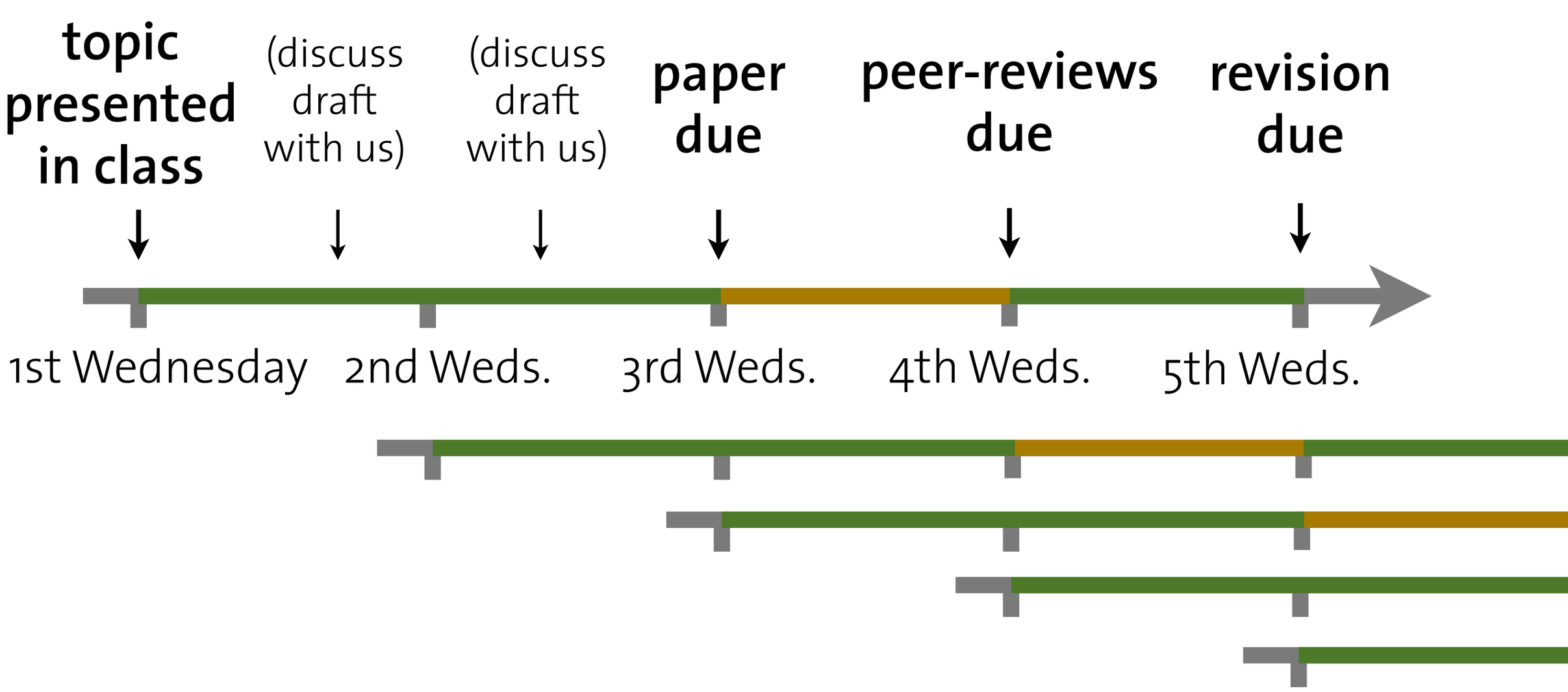
- Recognize current computational biology topics
- Identify relevant papers from citations and DBs
- Organise and summarise relevant work in a clear, coherent, succinct review
- Provide critical and constructive peer-reviews
- Improve your work from peer-reviews

Organisation

- **Group sessions on Wednesdays (2-4pm)**
  - 1h review on a special topic, usually by an invited speaker
  - 45min on writing, feedback, meta
  - *Presence mandatory!*
- **1-on-1 consultation on Mondays (9-11am)**
  - Get preliminary feedback on your draft
  - Ask questions, give suggestions, etc..

Assignments

Write 1 review and 2 peer-reviews



Please respect the deadlines! Notice interdependencies.

Topics with >1 student

- Some topics will have to be treated by >1 student
- Either work independently (one person, one review)
- Or together on a common review, but with demarcation of the respective contributions

Recommendation

Manuscript

- Quality matters more than quantity (but ca. 2000 words typical length)
- Prepare your review in LaTeX or .DOC format (templates available).
- Initially submit as PDF only.
- Revised version with all sources, images, PDF and a cover letter answering all critiques raised by referees.

- who has already used LATEX? We now accept .DOC (MS Office equivalents)
- ask for some help

Certificate of Attendance

- Presence on every Wednesday
- Write one review
- Write two peer-reviews

participation is essential. Hope the motivation is beyond the certificate.

Topics

Prof. Steve Oliver	*Systems Biology*
Dr. Lorenz Wernisch	*Biostatistics*
Dr. Francesco Iorio	*Systems Biology*
Dr. Joseph March	*Structural Biology*
Dr. Judith Zaugg	*Transcriptomics*
Dr. John Welch	*Epidemiology*
Dr. James Smith	*Drug Discovery*
Dr. Christophe Dessimoz	*Evolutionary Biology*

Tentative Schedule Lent 2012

Dates	Main Topic 2pm (CCBI Seminar Room)	Other Topic 3pm
Jan 11th	Introduction	Review Writing (1/2) [CD]
Jan 18th	Seminar 1 - **Assessing the quality of sequence alignments**, Dr Christophe Dessimoz (CCBI, EMBL-EBI)	Review Writing (2/2) [CD]
Jan 25th	Seminar 2 - **TBA**, a guest review by Prof. Steve Oliver	Peer Reviewing [JS]
Feb 1st	Seminar 3 - **Inferring drug mode of response from functional screenings**, a guest review by Dr. Francesco Iorio (Saez-Rodriguez Group, EMBL-EBI)	Editing [CD]
Feb 8th	Seminar 4 - **Probabilistic frameworks for the functional interpretation of genes**, a guest review by Dr Lorenz Wernisch (MRC Biostatistics)	Structuring & Outlining [JS]
Feb 15th	Seminar 5 - **The structural and evolutionary dynamics of proteins**, a guest review by Dr Joseph Marsh (Teichmann Group, MRC-LMB)	Table & Figures [JS]
Feb 22st	Seminar 6 - **Limitations of network descriptions of metabolic protein-protein interactions when considering biophysical constraints**, Dr James Smith (CCBI, Department of Biochemistry)	Effective Titles [JS]
Feb 29th	Seminar 7 - **Non-coding RNAs: How to find and make sense of them**, a guest review by Dr Judith Zaugg (Luscombe Group, EBI-EMBL)	Punctuation & Citations [CD]
Mar 7th	Seminar 8 - **Determining patterns of parasite host-shifting**, a guest review by Dr John Welch (Department of Genetics)	Cover letters [CD]
Mar 14th	Conclusion	

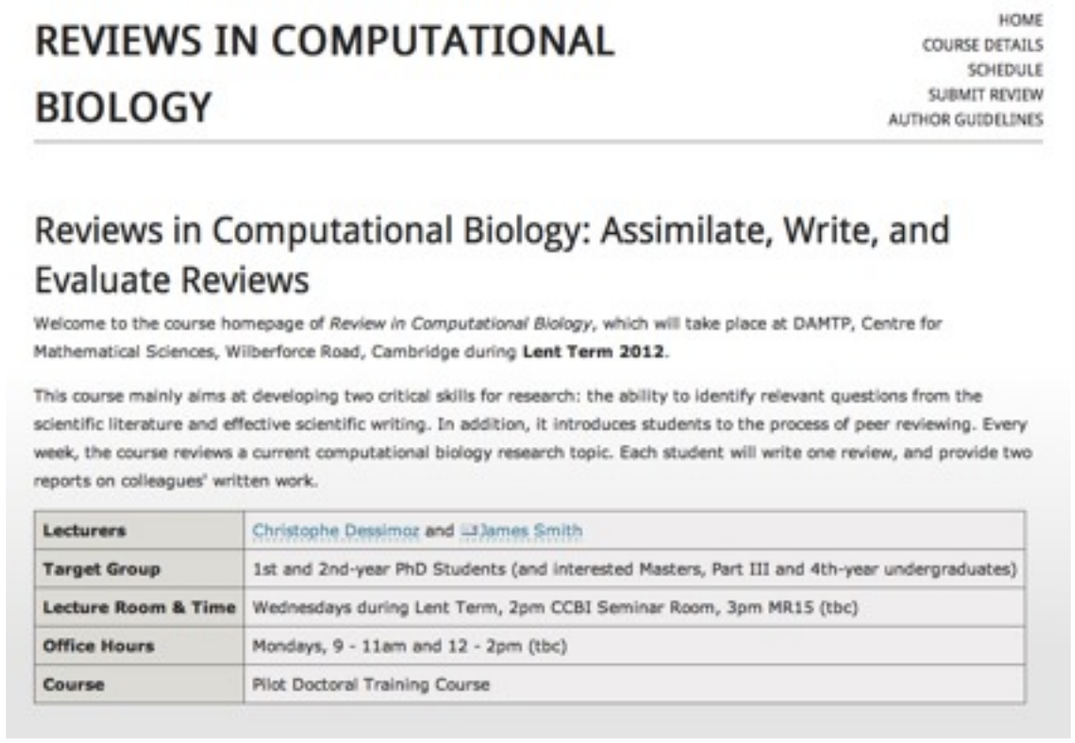
Planning of Assignments

Please choose at least 2 preferred slots (green) and 3 alternative slots (yellow)

Link to poll on course homepage

Course Homepage

http://tinyurl.com/revcompbiol


REVIEWS IN COMPUTATIONAL BIOLOGY

HOME
COURSE DETAILS
SCHEDULE
SUBMIT REVIEW
AUTHOR GUIDELINES

Reviews in Computational Biology: Assimilate, Write, and Evaluate Reviews

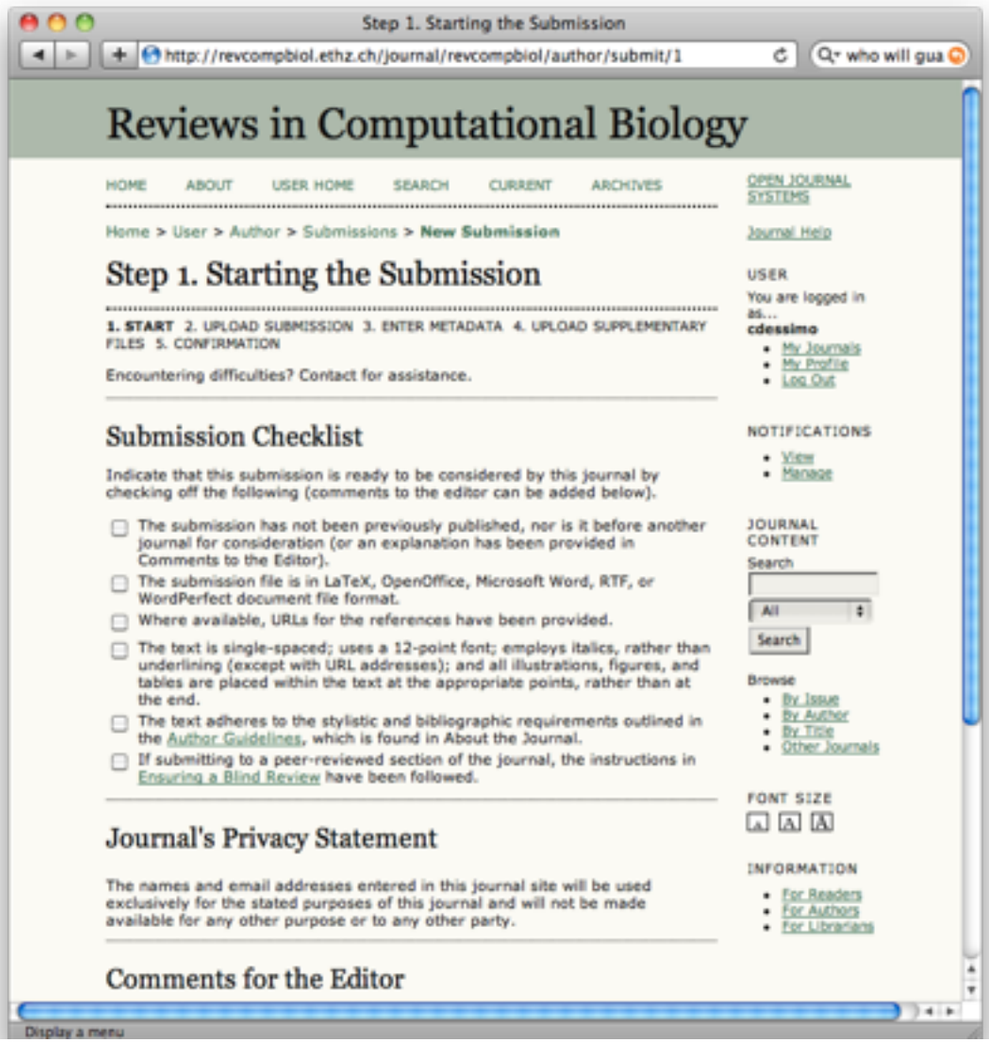
Welcome to the course homepage of *Review in Computational Biology*, which will take place at DAMTP, Centre for Mathematical Sciences, Wilberforce Road, Cambridge during **Lent Term 2012**.

This course mainly aims at developing two critical skills for research: the ability to identify relevant questions from the scientific literature and effective scientific writing. In addition, it introduces students to the process of peer reviewing. Every week, the course reviews a current computational biology research topic. Each student will write one review, and provide two reports on colleagues' written work.

Lecturers	Christophe Dessimoz and James Smith
Target Group	1st and 2nd-year PhD Students (and interested Masters, Part III and 4th-year undergraduates)
Lecture Room & Time	Wednesdays during Lent Term, 2pm CCBI Seminar Room, 3pm MR15 (tbc)
Office Hours	Mondays, 9 - 11am and 12 - 2pm (tbc)
Course	Pilot Doctoral Training Course

- **Course details**
- Schedule
- Slides
- Link to course journal (+article management)
- Email/Skype details

Course Journal



- Based on “Open Journal System” used by real journals
- Upload your article as author and your report as reviewer.
- Read published reviews.

Authorship

Guidelines

for Research Integrity and Good Scientific Practice at the ETH Zurich[1]

of 14 November 2007 (as of 31 March 2009)

Art. 14 Author Information

[2] All individuals meeting all the following criteria will be considered as authors; therefore those who:

a. contribute in an essential way to the planning, execution, control or evaluation of the research work through their personal work;

b. participate in the drafting of the manuscript; and

c. approve the final version of the manuscript.

Typical authorship requirement

Authorship according to

To qualify as an author one should

*1) **have made substantial contributions** to conception and design, or acquisition of data, or analysis and interpretation of data;*

*2) **have been involved in drafting the manuscript** or revising it critically for important intellectual content; and*

*3) **have given final approval** of the version to be published.*

*[…] **Acquisition of funding, collection of data, or general supervision of the research group, alone, does not justify authorship**.*

http://genomebiology.com/authors/instructions/method

Copyright of your written work

- Detailed information see BoGS or the University's Legal Services Office
- Copyright is owned by the student and where working in collaboration [...] gives rise to joint [...] copyright.
- Discussion between the lecturers and assigned student

Taken from the DSpace website (containing students' written works)

Detailed information on copyright and commonly encountered copyright issues can be found on the website of the University's Legal Services Office.

Who owns copyright?

In the case of University staff, the position regarding copyright in works they create is set out in their terms and conditions of employment and in the University's Intellectual Property Rights policy. The policy states that for most works, copyright in a work belongs to its creator, except where a funding or sponsorship agreement provides otherwise or the work is created for the administrative or managerial purposes of the University or is commissioned by the University e.g. special reports on University policy, library catalogues etc.

The University's Intellectual Property Rights policy also addresses copyright in works generated by students. Generally, copyright in a work created by a student is owned by that student, except where the student's funding or sponsorship agreement states otherwise, or where the student is engaged in research that is governed by an agreement between the University and a third party which states otherwise, or where the student is working in collaboration with others in a way that gives rise to joint or interdependent creation of intellectual property including copyright. More information on copyright issues pertaining to sponsored and collaborative research is available from the **Board of Graduate Studies**.

Ownership of copyright for non-textual works (eg pictures!)

Following are very general guidelines on who owns copyright for non-textual material (employer or sponsor arrangements apply as explained above): The photographer is the first owner of copyright in a photograph. For sound recordings the first owner of copyright is the producer, for films the copyright lies jointly with the producer and principal director. For typographical arrangements of a published edition the copyright lies with the publisher.

Important guidance for all people taking, recording, commissioning and using photographs, video and audio is provided by the Legal Services Office and the Office of External Affairs and Communications of the University of Cambridge.

Our Expectations

- Demanding course
- Presence and participation on Wednesday
- Strong commitment to both review and peer-review
- Intellectual honesty:
  no plagiarism nor fabrication!

26 hours in class, and another 3 weeks full time!

Your Expectations

- Ask for expectations.

Discussion:

- Who has experience writing literature reviews?
- talk to us after class; send us an email