Reviews in Computational Biology

1. Introduction

Christophe Dessimoz and James Smith

January 2013

Today

Course introduction

Review writing

About Christophe

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

  ~30 research articles
  ~70 peer-reviews written for 19 journals
  ~15 funding proposals
  Edited a special issue of *Briefings in Bioinformatics*
  Editor of new journal PeerJ

About James

- BSc(Hons) Biological Sciences
- PhD in Computer-aided Drug Design
- Now at U Cambridge and Birkbeck, U London
- **Previous experience:**

  ~25 research articles
  ~30 peer-reviews for 12 journals
  ~15 funding proposals
  Experience as a technical editor

What is doctoral training?

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

from 2013

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

http://www.epsrc.ac.uk/funding/students/centres/Pages/default.aspx

http://www.bbsrc.ac.uk/dtp

http://www.mrc.ac.uk/Fundingopportunities/Studentships/joint_centres/MRC008945

Course in a Nutshell

Assimilate
Write
Evaluate
} Reviews

Why assimilate?

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

Why write?

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

Why peer-review?

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

Learning Outcomes

- Recognise 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

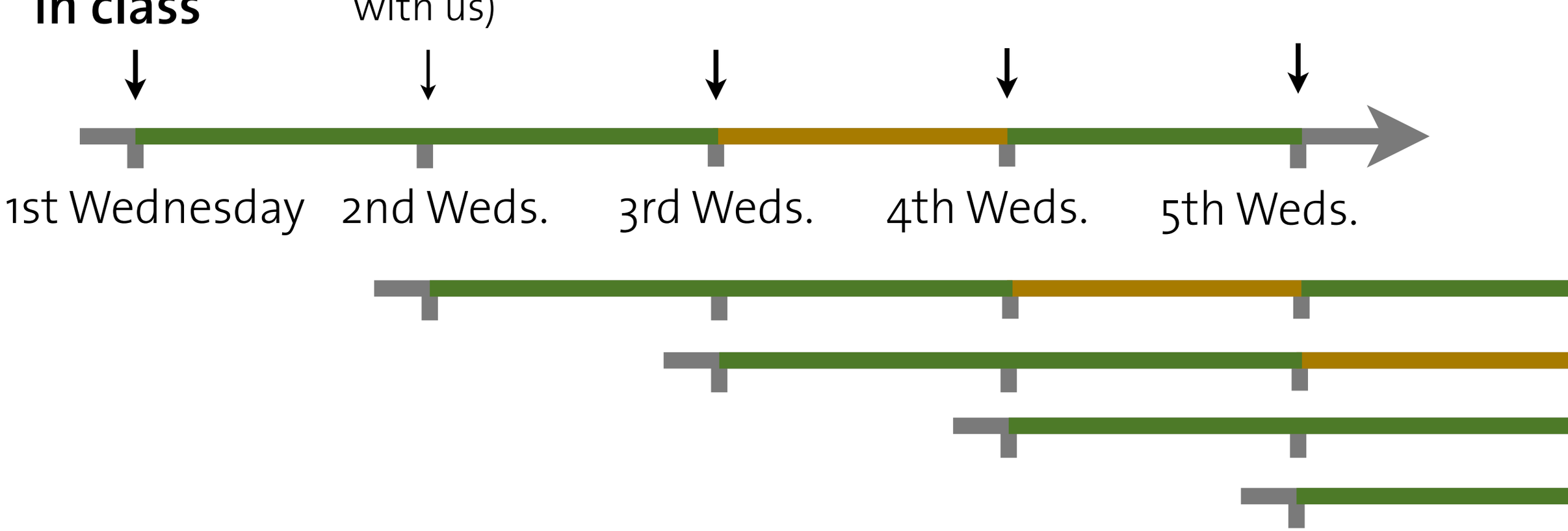
Organisation on Wednesdays

- **Group sessions (2-4.30pm)**
  - 1hr review on a special topic, usually by an invited speaker
  - 1hr on writing, feedback, meta
  - *Presence mandatory!*
- **Supervisions (A 4.30-5.30pm, B 1-2pm)**
  - Get preliminary feedback on your draft
  - Ask questions, give suggestions, etc..

Assignments

Write 1 review and 2 peer-reviews

topic presented in class | **supervision** (discuss draft with us) | **paper due** | **peer-reviews due** | **revision due**



Co-authoring Topics

- Topics can (but need not) be co-authored in groups of two or three.
- If joint submission, include a statement of author contribution at the end, e.g.:

JS wrote most of the introduction and section on PPI network and produced Table 1. CD wrote most of the section on regulatory network and produced the figures.

Manuscript

- Quality matters more than quantity, but ~2000 words is a typical length.
- Prepare your review in LaTeX or Word (.doc) format.
- Initially submit as a PDF only with a references and any images and tables.
- Revised version as a PDF with a cover letter addressing the referees' criticisms.

Certificate of Attendance

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

Topics for 2013

Dr Pedro Beltrao	*Cell Network Biology*
Dr Julio Saez-Rodriguez	*Systems Pharmacology*
Dr Daniel Henk	*Ecological Epidemiology*
Dr Kathi Zarnack	*Transcriptomics*
Dr Christophe Dessimoz	*Evolutionary Biology*
Dr Pedro Ballester	*Drug Discovery*
Dr Elizabeth Murchison	*Cancer Biology*
Dr Laurent Gatto	*Analyses in Proteomics*

Tentative Schedule Lent 2013

Week	Dates	Main Topic 14:00 (CCBI Seminar Room)	Other Topic 15:30
0th	Jan 9th	Introduction	Review Writing (1/2) [CD & JS]
1st	Jan 16th	Seminar 1 - **Evolution of cellular interaction networks** **Dr Pedro Beltrao (EMBL-EBI)**	Review Writing (2/2) [CD]
2nd	Jan 23rd	Seminar 2 - **Integration of functional genomics and pathway information to elucidate deregulation of signal transduction and drugs' mode of action** **Dr Julio Saez-Rodriguez (EMBL-EBI)**	Peer Reviewing [JS]
3rd	Jan 30th	Seminar 3 - **Ecological niche modeling and infectious disease** **Dr Daniel Henk (U Bath)**	Structuring & Outlining [JS]
4th	Feb 6th	Seminar 4 - **TBA** Dr Kathi Zarnack (LRI)	Editing [CD]
5th	Feb 13th	Seminar 5 - **Methodological challenges in the pursuit of the tree of life** **Dr Christophe Dessimoz (EMBL-EBI)**	Tables & Figures; Effective Titles & Example Reference Manager(s) [JS]
6th	Feb 20th	Seminar 6 - **Machine learning approaches to predicting protein-ligand binding** **Dr Pedro Ballester (MRC Methodology Research Fellow and EMBL-EBI)**	Punctuation & Citations [CD]
7th	Feb 27th	Seminar 7 - **Clonally transmissible cancers** **Dr Elizabeth Murchison (Sanger Institute and King's College Cambridge)**	**Q&A/roundtable discussion on scientific publishing** with **Dr. Johanna McEntyre (Europe PubMedCentral),** **Dr. Peter Rogers (Features Editor, eLife),** **and Dr. Roland Roberts (Assoc. editor, PLoS Biology)**
8th	Mar 6th	Seminar 8 - **Computational analyses of mass-spectrometry experimental organelle proteomics data** **Dr Laurent Gatto (Biochemistry, U Cambridge)**	Cover letters [CD]
9th	Mar 13th	Conclusion	Summary & Feedback [CD & JS]

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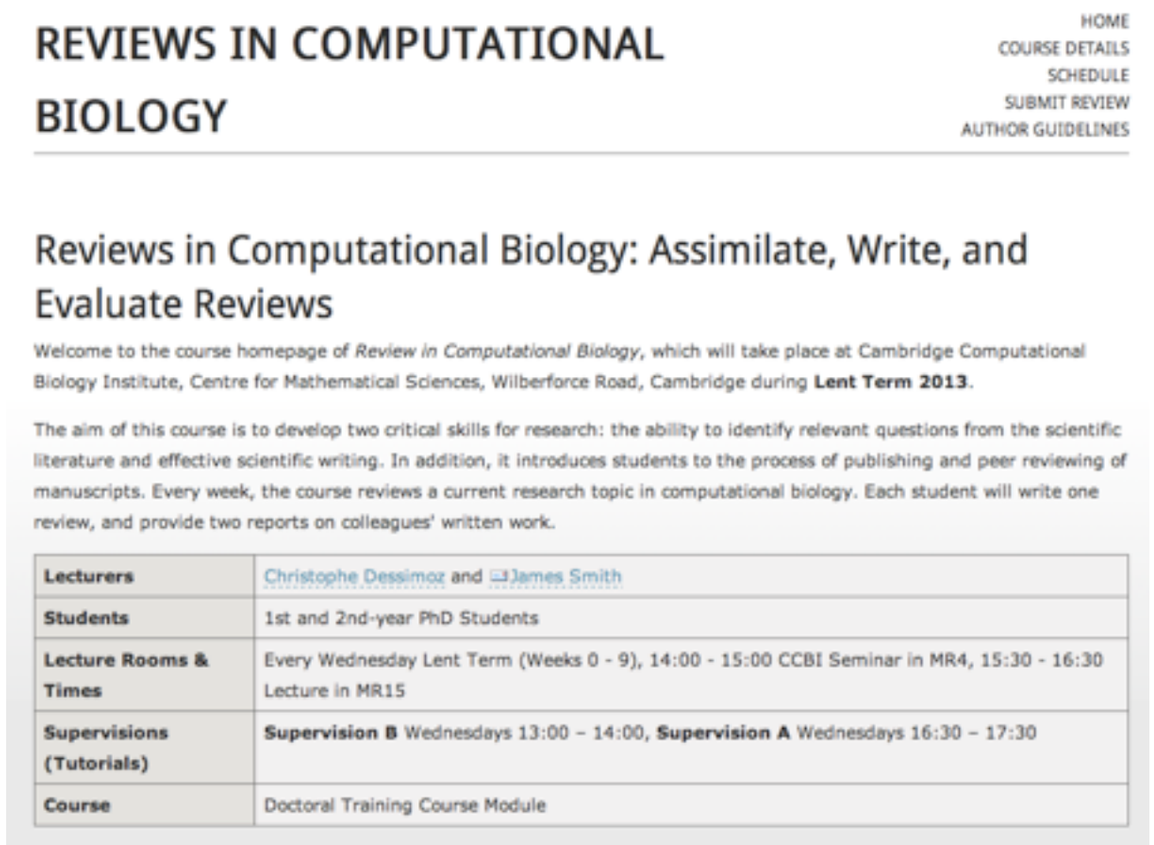
Planning of Assignments

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

Link to poll on course homepage

Course Homepage

http://christophe.dessimoz.org/revcompbiol/



REVIEWS IN COMPUTATIONAL BIOLOGY

HOME
COURSE DETAILS
SCHEDULE
SUBMIT REVIEW
AUTHOR GUIDELINES

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

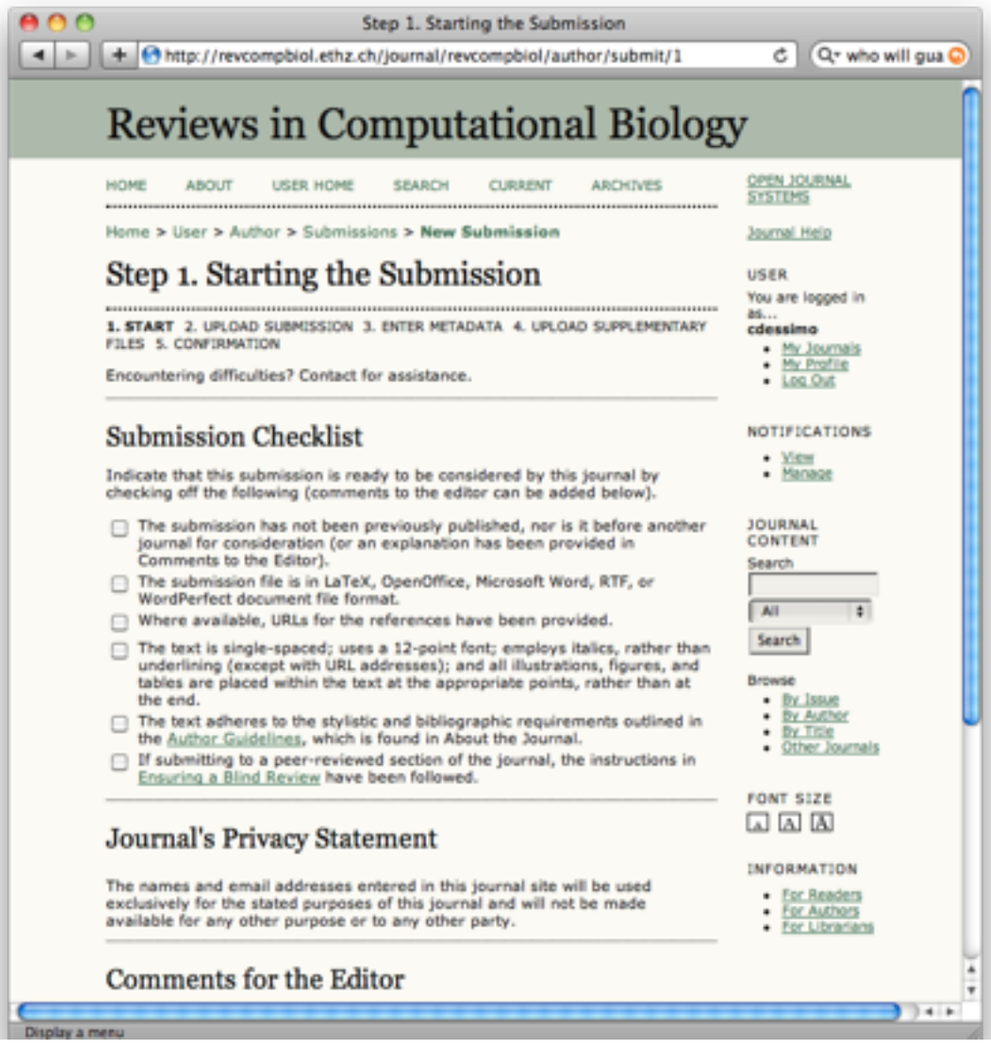
Welcome to the course homepage of *Review in Computational Biology*, which will take place at Cambridge Computational Biology Institute, Centre for Mathematical Sciences, Wilberforce Road, Cambridge during **Lent Term 2013**.

The aim of this course is to develop 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 publishing and peer reviewing of manuscripts. Every week, the course reviews a current research topic in computational biology. Each student will write one review, and provide two reports on colleagues' written work.

Lecturers	Christophe Dessimoz and James Smith
Students	1st and 2nd-year PhD Students
Lecture Rooms & Times	Every Wednesday Lent Term (Weeks 0 - 9), 14:00 - 15:00 CCBI Seminar in MR4, 15:30 - 16:30 Lecture in MR15
Supervisions (Tutorials)	**Supervision B** Wednesdays 13:00 – 14:00, **Supervision A** Wednesdays 16:30 – 17:30
Course	Doctoral Training Course Module

- 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.

Authorship according to

Genome Biology

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

Share credit with speaker

- In virtually all cases to date, reviews written in this course heavily draw from the presentation.
- Thus, the speaker is typically listed as last author on your submission.
- Note that if this was a *real* submission, the other two requirements would also need to be fulfilled.

Copyright of your written work

- Detailed information see BoGS or the University's Legal Services Office

http://www.admin.cam.ac.uk/cam-only/offices/legal/copyright/copyright.pdf

http://www.admin.cam.ac.uk/offices/research/Research/IPR.aspx

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

Our Expectations

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

Your Expectations

?

GATCGT
TCCBIA
TTACCG
AGCCTA
GAACGT

Cambridge Computational Biology Institute

Reviews in Computational Biology: Assimilate, Write and Evaluate Reviews

Two Page Newsletter for Lent Term 2013

1 Reviews in Computational Biology

This doctoral training course module starts at **14:00** on **Wednesday 9th January (Lent Term Week 0)**. The course is unique in Cambridge as it focuses on developing all the skills for publishing: writing a review article, manuscript submission and peer-review. The course is one afternoon per week for ten weeks and includes eight research seminars at the CCBI, DAMTP.

This is an interdisciplinary course that allows PhD students to collaborate with new colleagues. Each week during Full Term (Lent Term Weeks to 8), a guest speaker presents an outline for a new review topic in their field of Computational Biology. Students are allocated a topic area an co-author one mini-review based on the resear seminar. All students work in small groups and are supervised throughout the writing process. The course has a strong track record for publishing our students' work. Previous reviews were published in *Briefings in Bioinformatics*, *Drug Discovery Today* and book chapters. We hope the course this Lent Term 2013 will generate a large number of accepted articles.

2 Course Content

Each year, speakers are chosen from very different research disciplines that bridge the life sciences with the physical sciences. Research areas address questions exploring the dynamic and self-organising systems found in biology, involving data analyses at different scales.

The topics will include: evolution of cellular interaction networks (Pedro Beltrao), integratio of functional genomics and pathway informatio (Julio Saez-Rodriguez), ecological niche modelling and infectious diseases (Daniel Henk), machine learning approaches to predicting protein-ligand binding (Pedro Ballester), clonally transmissible cancers (Elizabeth Murchison) and more speakers. Previous topics from 2012 included: an assessment of multiple sequence alignments (Christophe Dessimoz), cofactor control of metabolism (Ben Luisi), drug re-purposing from genomic data (Francesco Iorio), probabilistic frameworks for gene function (Lorenz Wernisch), structural and evolutionary dynamics of proteins (Joseph Marsh), biophysical network descriptions of metabolism and PPIs (James Smith), making sense of ncRNAs (Judith Zaugg) and determining patterns of parasite-host shifting (John Welch).

3 Research Seminar Guest Speakers

The eight seminars introduce diverse topics in Computational Biology, each one presented by a leading researcher at the forefront of their field.

Every year the course organisers look for new guest speakers, from all disciplines, who are enthusiastic communicators willing to engage with PhD students and prepared to encourage them to push boundaries.

4 Scientific Publishing Guest Speakers

and, because this is a certificate bearing course, a register of attendance will be taken.

7 Wednesday Afternoon Timetable

13:00 – 14:00	Supervision B for authors
14:00 – 15:00	**Research Seminar (in MR4)**
15:00 – 15:30	Tea, coffee and biscuits
15:30 – 16:30	**Lecture Series (in MR15)**
16:30 – 17:30	Supervision A for authors

8 Further Information

Detailed course information is available on our website:
http://christophe.dessimoz.org/revcompbiol/
The schedule for Lent 2013 is available from the link: **Schedule, slides, and assignments**

9 Networking Opportunities on the Course

The eight research seminars for this course are advertised widely and are very well attended. The short tea break after each seminar gives an opportunity for networking and discussion

10 Course Preparation – A Peer-Review

During your career, you will notice that once you publish research articles, the editors of the journals are very likely to ask you to critically peer-review recently submitted manuscripts.

In this short exercise, as homework and in preparation for the third week of the course, we would like you to identify and peer-review a primary research article that has been published from any research journal in your field in 2012 or 2013.

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Please bring a copy of this short peer-review and a copy of the published research article with you on **Wednesday 23rd January (Week 2 in Lent Term)**.

11 A Writing Competition – Win an iPad!

This is not part of our course and is entirely optional. We would like to draw your attention to this competition, which is very relevant and good experience. Some of you might like to enter and write another 800 words. One of you might even win!

If you are interested, see:
http://europepmc.org/ScienceWritingCompetition

The winning entry will be published by *eLife*. The winner will also receive an iPad. The deadline for this is **5pm GMT** on **Friday 11th January 2013**.

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Questions?