

Reproducibility?

Begley & Ellis (2012)

Nature 483, 531-533

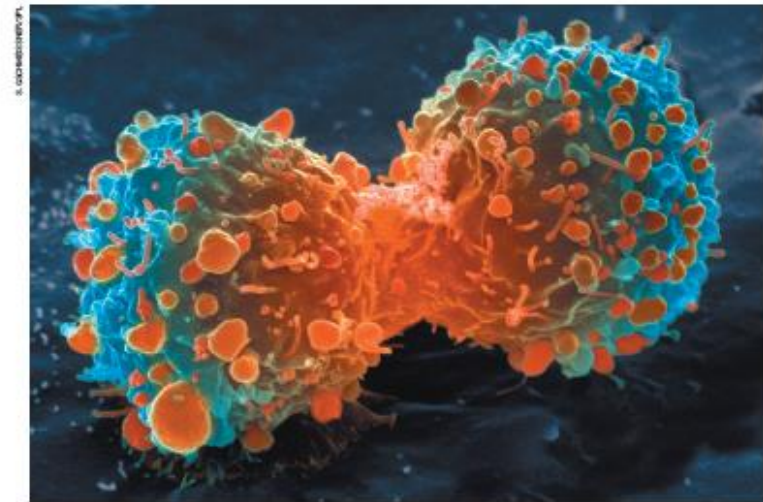
COMMENT

AWAKENING LINDA Shift expertise to track mutations where they emerge p.584

EARTH SYSTEMS Past climates give valuable clues to future warming p.587

HISTORY OF SCIENCE Descartes' lost letter tracked using Google p.590

OBITUARY Wylie Vale and an elusive stress hormone p.592



Many landmark findings in preclinical oncology research are not reproducible, in part because of inadequate cell lines and animal models.

Raise standards for preclinical cancer research

C. Glenn Begley and Lee M. Ellis propose how methods, publications and incentives must change if patients are to benefit.

Efforts over the past decade to characterize the genetic alterations in human cancers have led to a better understanding of molecular drivers of this complex set of diseases. Although we in the cancer field hoped that this would lead to more effective drugs, historically, our ability to translate cancer research to clinical success has been remarkably low¹. Sadly, clinical

trials in oncology have the highest failure rate compared with other therapeutic areas. Given the high unmet need in oncology, it is understandable that barriers to clinical development may be lower than for other disease areas, and a larger number of drugs with suboptimal preclinical validation will enter oncology trials. However, this low success rate is not sustainable or acceptable, and

investigators must reassess their approach to translating discovery research into greater clinical success and impact.

Many factors are responsible for the high failure rate, notwithstanding the inherently difficult nature of this disease. Certainly, the limitations of preclinical tools such as inadequate cancer-cell-line and mouse models² make it difficult for even ▶

“Some non-reproducible clinical papers have spawned an entire field, with hundreds of secondary publications that expanded on elements of the original observation, but did not actually seek to confirm or falsify its fundamental basis”.

Image shown is from front page of Begley & Ellis (2012), produced by the Nature Publishing Group

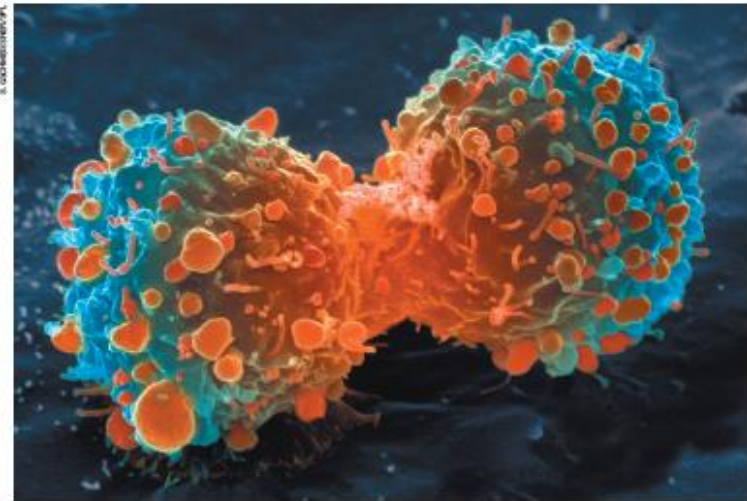
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Information Users

Now for the Lego...

1

Max. 10 people per team.

Choose a group leader – your group may want to work as three smaller sub-teams.

2

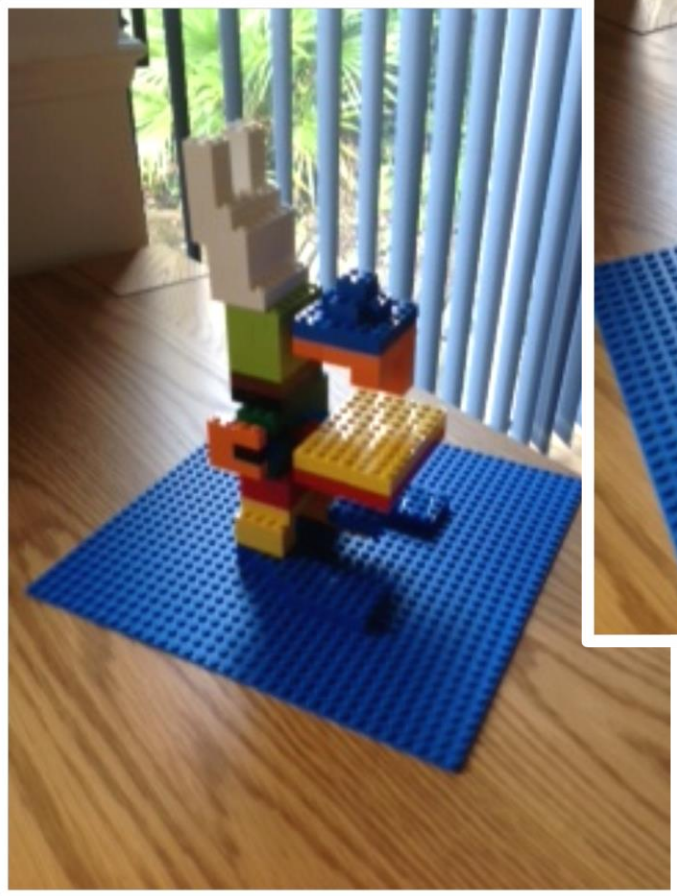
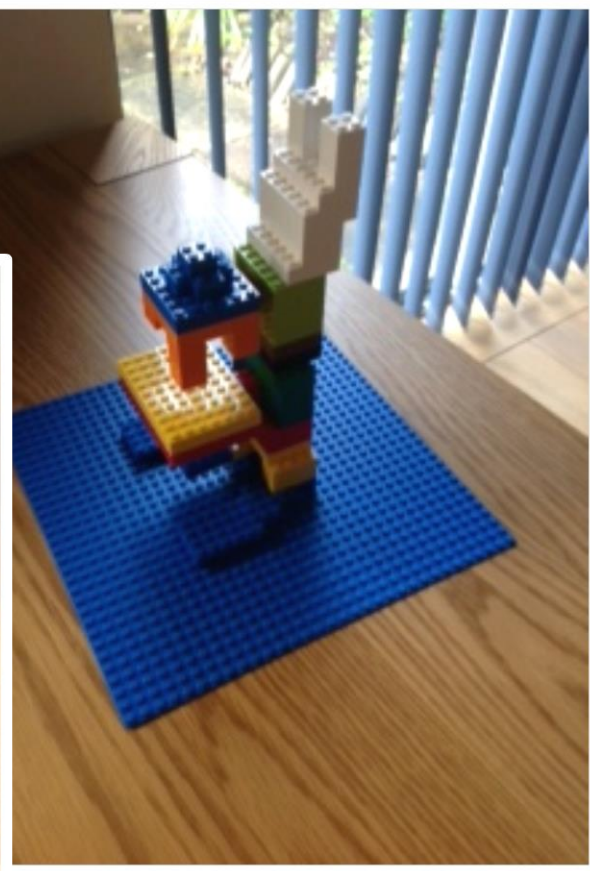
Once we've assigned your group a letter, head to <http://sophiekershaw.wordpress.com/> and download the relevant set of instructions.

3

Remember...

- **NO TALKING TO OTHER GROUPS!**
- **These instructions are designed to be flawed;**
- **Your group leader should keep track of any problems and critiques as you work;**
- **This part of the session is designed to give you the perspective of an **INFORMATION USER**.**

The end result...



Some Thoughts

Carrot vs. stick: do we incentivise or punish?

How can we train people to think about the role of the information user, rather than just the information producer?

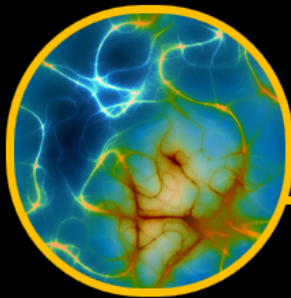
How might this relate to non-academic spheres?

How to deal with the user vs. producer perspective within academia?

Does working culture need to change to expect reduced output, but of a higher quality/utility?

www.opensciencetraining.com

Watch out for an extended Lego session of Rotation-Based Learning at the upcoming SpotOn Hackday (date TBC)



Introduction

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Reproducibility. Openness. Communication. The high connectivity of the digital age has made it easier than ever before to work collaboratively and share our research with a global audience. The Open Science movement has an instrumental role to play in this, by driving the development of data-sharing infrastructure, methodologies and licensing practices. Policy changes are starting to happen at the level of research councils and publishers, but we now need to ensure that openness can thrive at all levels of academia, requiring open science **education**. Openness in academia needs to be supported both by top-down policy change, and by bottom-up training of new recruits. At opensciencetraining.com, we aim to tackle the second of these, by helping you to integrate open science training into your existing teaching framework.

Demand a Coherent Research Story

Students starting a PhD nowadays are stepping straight into a data-rich environment and will need to handle this rapidly evolving research landscape with confidence if they are to fully realise their research potential. For example, they should understand how to license data and content, how to work collaboratively and to handle online release of their findings. We need to stop focusing on published papers, and start demanding delivery of a **coherent research story**: that is, the research report, methods, data, metadata, all appropriately licensed and readily, freely available online. We have focused too long