

# Correspondence

## European Spallation Source is on track

Olof Hallonsten underestimates the status of the European Spallation Source (ESS) project and overestimates the risks to its success (*Nature* **518**, 275; 2015).

Construction has been under way for almost six months, after Sweden and Denmark secured a combined commitment by ESS member nations to contribute more than 97% of the building costs. This commitment is underpinned by the importance of the ESS to their own national research programmes and by their prior investment in comprehensive scientific, technical and management reviews of the construction plans.

We have recruited some 300 experienced staff from around the world. More than 1,000 collaborators are bringing their collective knowledge to the project at the ESS site near Lund, Sweden, and at partner institutions in Europe.

Regarding Hallonsten's doubts about the legal and financial framework for the life cycle of the facility, a European Research Infrastructure Consortium is due to be approved this year that is set to provide such a framework.

Neither do we do deals "behind closed doors". We have engaged more than 100 independent scientific, technical and management experts to conduct routine reviews of the project. Open meetings with the scientific community are organized twice a year. There will be risks and challenges along the way, but we are firmly committed to delivering the ESS facility on time and on budget.

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## City data can inform decision theory

Data are being collected on human behaviour in cities such as London, New York, Singapore

and Shanghai, with a view to meeting city dwellers' needs more effectively. Incorporating decision-making theory into analyses of the data from these 'urban observatories' would yield further valuable information.

Huge amounts of data can be amassed from digitized social, cultural and economic records of citizens' choices and behaviours, as well as from fixed and mobile sensors, including those at urban vantage points. This information allows 'natural' experiments that chronicle the population's responses as the urban environment undergoes planned and unplanned changes.

Combining such data with models of human decision-making can provide a deeper insight into real-world choices. For example, analysis of local crime statistics together with results of cognitive testing in pre-school children showed that a murder occurring near their homes influenced children's levels of attention and impulse control at school (P. T. Sharkey *et al. Am. J. Public Health* **102**, 2287–2293; 2012).

Twitter messages, requests for city services and information, and other behavioural metrics could likewise be used to investigate human decision-making.

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*\*On behalf of 6 correspondents (see [go.nature.com/mabntz](http://go.nature.com/mabntz) for full list).*

## Access to the bigger picture in histology

Published histology images tend to focus on only a small part of a fixed tissue slice. Journals could overcome this limitation by asking authors to make histological data from the rest of the slide available wherever possible, to extend and complement their published micrographs.

Tools are already available to scan entire histology slides for online study by

virtual microscopy (see [www.histology.be](http://www.histology.be)). This enables histology images to be shared worldwide, for example from pathology archives (M. G. Rojo *et al. Int. J. Surg. Pathol.* **14**, 285–305; 2006) or to assist medical diagnostics.

Compiling the extended histology information in a public database would provide an invaluable resource for researchers. It could be used to access unexplored raw data from tissue slices, or to stimulate new analyses or alternative interpretations.

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## Scrap rainbow colour scales

It is time to clamp down on the use of misleading rainbow colour scales that are increasingly pervading the literature and the media (see <http://tiny.cc/endofterainbow>). Accurate graphics are key to clear communication of scientific results to other researchers and the public — an issue that is becoming ever more important.

Aside from the challenge they pose for colour-blind readers (S. C. Allred *et al. Nature* **510**, 340; 2014), spectral-type colour palettes can introduce false perceptual thresholds in the data (or hide genuine ones); they may also mask fine detail in the data (D. Borland and R. M. Taylor *Comput. Graph. Appl.* **27**, 14–17; 2007). These palettes have no unique perceptual ordering, so they can de-emphasize data extremes by placing the most prominent colour near the middle of the scale.

These issues can have profound consequences: for example, changing to a non-rainbow colour scale improved diagnostic accuracy for heart disease (M. Borkin *et al. IEEE Trans. Vis. Comput. Graph.* **17**, 2479–2488; 2011).

Journals should not tolerate

poor visual communication, particularly because better alternatives to rainbow scales are readily available (see, for example, [go.nature.com/zvouhq](http://go.nature.com/zvouhq) and <http://colorbrewer2.org>). We urge all journals to stipulate in their guidelines that graphics must convey accurate and accessible information.

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*\*On behalf of 5 correspondents (see [go.nature.com/usnhfy](http://go.nature.com/usnhfy) for full list).*

## Concept of multiple sexes is not new

The idea that there are more than two biological sexes is not as recent as you imply (*Nature* **518**, 288–291; 2015). It emerged in the early 1990s after feminist critics of science joined forces with an intersex activist movement. Their aim was to prevent reinforcement of the artificial two-sex construct by reforming the practice of surgical intervention (see, for example, A. Fausto-Sterling *The Sciences* **33**, 20–24 (1993) and S. J. Kessler *Lessons from the Intersexed* Rutgers Univ. Press, 1998).

These groups pointed out that science is not isolated from society: ideas that stimulate understanding travel into the lab from street activists, literature and varied scholarship, and move back out again. As a result of their efforts, research scientists were pushed into visualizing the previously invisible.

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### CORRECTION

In the Outlook article 'Taking a shot at protection' (*Nature* **516**, S12–S13; 2014), the x axis on the graphic 'Immunity boost' was incorrectly labelled. It should have read 'Age at liver-cancer diagnosis'.