Carphology by A Fo Ben

doi:10.1136/practneurol-2013-000670

THE SOLUTION IS CRYSTAL CLEAR

If you only watch one video of a transparent mouse brain this year—make it this one. www.youtube.com/watch?v=c-NMfp13Uug. The study of brain structure and development focuses on microscopic change. Conclusions regarding pathways and connectivity are limited when looking at wafer-thin dissected tissue. Neuroanatomical research would be simpler if much of the brain was see-through. Chung *et al* of Stanford University describe a method of creating a hybrid mesh and clearing opaque fats in biological tissue. This ensures that the structure is kept intact but that the tissue is transparent. They name this revolutionary method CLARITY. In addition, the technique allows you to label neurotransmitters and genes of interest and trace a single nerve projection.

Your Nobel Prize is in the post.

Nature 2013;497:332–7

A SPARK OF GENIUS?

The use of electrical currents to treat neurological and psychiatric disorders was first documented by Scribonius Largus, a court physician to Emperor Claudius in 46 AD. Thus, the torpedo fish (figure 1) was perhaps a headache treatment of choice in ancient Rome. In modern times, we are familiar with the use of electricity in the form of electroconvulsive therapy to treat severe depression, but over the last 10 years the use of much smaller electric currents (1–2 mA) has had something of a renaissance. Transcranial stimulation methods are being trialled as potential therapies in stroke rehabilitation, but have recently made headlines when researchers showed that five daily sessions of stimulation, paired with cognitive training, improved mathematical abilities in healthy controls, and that this improvement lasted for at least 6 months. Home-stimulation kits are rapidly becoming available, raising ethical and safety concerns as their possible potential to boost performance becomes widely known.

Curr Biol 2013;23:987–92
Nature 2013;298:271–2

THE IMPORTANCE OF BEING NORMOTENSIVE

How low can you go? Blood pressure reduction has been a major target to reduce stroke risk, but what level should we be aiming for? In this large, randomised open-label trial, over 3000 patients with recent lacunar stroke were assigned to receive antihypertensive medications, with a target systolic pressure of either 130–149 mm Hg or below 130 mm Hg. After 1 year, there was a marginal reduction in the rate of subsequent strokes in the group with lower blood pressure (HR 0·81, 95% CI 0·64 to 1·03, p=0·08) and this group showed a significantly reduced rate of intracerebral haemorrhage. Although the authors recognise that the reduction in subsequent stroke was non-significant, they suggest, not unreasonably, that a lower target blood pressure is likely to beneficial.

Lancet 2013. doi:pii: S0140-6736(13)60852-1

ALPHABET SOUP: COQ2 IN MSA IN NEJM

Linkage analysis in six families with multiple system atrophy (MSA) identified one family with a suitable linkage region; one individual from this family had their genome sequenced. Of the four variants within exons or splice sites, two were within *COQ2*. This gene encodes an enzyme important in the mitochondrial respiratory chain. One further MSA family harboured homozygous *COQ2* mutations that segregated with phenotype. *COQ2* mutations (in a heterozygous state) were subsequently detected more frequently in people with sporadic MSA than in controls, with a corresponding reduction in tissue coenzyme Q_{10} in a small sample of tested cases. The modest effect size of *COQ2* variation in sporadic MSA suggests that it is no more than a susceptibility factor.

N Engl J Med 2013;369:233–44

▶ Additional references are published online only. To view please visit the journal online (http://dx.doi.org/10.1136/practneurol-2013-000670).

Figure 1 *Torpedo torpedo*—the common torpedo fish (image from Wikimedia Commons).