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Science Briefs

By Stephen Reucroft and John Swain, 10/2/2001

Cells like glass

A cell is commonly thought of as a sort of bag of fluid, but new research has just shown it's a lot more like a lump of glass. Ben Fabry of Harvard University attached a tiny magnetic bead to a smooth muscle cell (the sort that you might find in lungs), and used an external magnetic field to shake it at ever-increasing frequencies. Much to his surprise, rather than suddenly getting stiffer, which is what happens to a balloon full of water, it firmed up only gradually. This sort of behavior also happens in glasses, where the molecules are disordered and continuously sliding around. The research could be useful because many diseases, such as asthma, may have their roots in the mechanical behavior of cells.

ref.: Physical Review Letters, Oct. 1, 2001.

Brighter than ever

An ultraviolet laser more than 1,000 times more powerful than any before it has come out of DESY, the German particle physics laboratory in Hamburg. Based on free electrons in an accelerator, rather than more conventional lasers that use electrons bound to atoms, the device can increase the strength of an incoming ultraviolet light beam by a factor of 10 million! The work is a key step toward a powerful X-ray laser, estimated to be about a year off, which would open up whole new ways to look at very small structures, including cells, viruses, protein molecules, and complex materials.

ref.: <http://www-hasyllab.desy.de/facility/fel/>

Bad news for coffee lovers

After many reports of beneficial effects of drinking coffee and relatively few indications of serious side effects, we were probably overdue for a bit of bad news. Benedicte Christensen and colleagues from the Ulleval University Hospital and the University of Oslo in Norway found that people who regularly drank caffeinated filtered coffee, and who gave up the brew for six weeks, had significant reductions in homocysteine and total cholesterol levels. This suggests, but by no means proves, that coffee may be associated with increased risks of heart trouble. The suspected culprits are compounds such as terpenoids, which are only partially removed from coffee by filtering. Of course, living things are complicated, so a clear connection to heart disease is still premature.

ref.: American Journal of Clinical Nutrition, September 2001.