

Lab Times competition: win a calendar

Child's Play!

Guess right and win a great calendar! *Lab Times* wants to know the name of the Danish scientist who discovered a famous device that is present in every human cell.

Life on Earth has its own currency, and this currency is adenosine-5'-triphosphate (ATP). Forget DNA, polysaccharides, and all the other long-chain posers – the multifunctional nucleotide ATP is the most important biological molecule. Wherever a living cell is involved in chemical energy, wherever it produces, relocates, releases or consumes energy, the 'mighty midget' ATP makes an appearance. Along with its energetic functions, it is crucial in signal transduction as well as an essential 'brick' for macromolecules. The importance of ATP is highlighted by another fact: five scientists have received Nobel awards for their findings linked to ATP.

A jack of all trades

After the detection of this jack of all trades in 1929, it took decades to unravel some of ATP's multifaceted abilities. The Germans Karl Lohmann and Otto Meyerhof discovered some of the molecule's basic properties in the 1930s. Scarcely twenty years later the Scottish biochemist Alexander Todd succeeded in producing the very first man-made adenosine triphosphate. The unimposing white powder with the molecular formula $C_{10}H_{16}N_5O_{13}P_3$ resulted in an imposing ceremony, when, eight years later, Todd was awarded the first Nobel prize to be associated with ATP.

Todd's British colleague, Peter Mitchell, a man with an exceptionally colourful and unconventional biography (he founded a charitable company to promote his own fundamental biological and ethical research), became famous in the 1960s with his "chemiosmotic hypothesis". This hypothesis describes the sophisticated mechanism by which ATP is created in the mitochondria. Mitchell linked the movement

of ions across intracellular membranes with the creation of energy-rich ATP and assumed that the latter was coupled to an electrochemical gradient. Even after the 1978 Nobel prize (the 2nd related to ATP) was awarded to Mitchell for his hypothesis, many scientists battled to disprove his off-beat findings.

A novice's exciting discovery

Mitchell's courageous theory was confirmed by the discoveries of three colleagues. One of them is a Danish surgeon (and, at the same time, the sought-after so-



Moroccan rocks. Our bodies partly consist of them.

lution to our little brainteaser!) This man, the offspring of a Jutland timber and coal merchant, was an assistant professor (and a total novice with no experience of laboratory work) when he made the discovery of his life. In the early 1950s, he studied the impact of narcotics on cell membranes. Using the shore crab (*Carcinus maenas*), or rather the crab's leg nerves, as a model system, the skinny, bespectacled scientist from coastal Denmark isolated a novel sodium-potassium pump with exciting features.

Actually, the pump was the first ion-transporting enzyme ever discovered.



Actually, the device was driven by ATP fuel.

Actually, you already know this Danish scientist's name? In that case, go on reading to become acquainted with your prospective prize.

Magic landscapes in black and white

ATP is indeed a complex molecule. Its, frankly daunting, IUPAC name is perfect for making non-chemists run, screaming, out of the room. Take a deep breath and repeat: 5-(6-aminopurin-9-yl)-3,4-dihydroxy-oxolan-2-yl methoxy-hydroxy-phosphoryl oxy-hydroxy-phosphoryl oxy-phosphonic acid.

Hard to believe, but for a particular kind of hardcore scientist this 5-6-aminopurin thing sounds like candy floss.

Anyway, phosphates are capable of interesting your average joe, too. This is demonstrated by a wonderful new almanac, recently released by the German publishing house Palazzi. The *NatureFineArt – Landscapes 2009* calendar was photographed in monochrome by Graham French, a British landscape and commercial photographer living in Toronto. We are presented with a selection of twelve beautiful regions, such as the cliffy (but idyllic) Cannon Beach near Portland (Oregon, USA), a small forested island in the middle of Lake Superior, and the monumental silhouette of an iceberg near the coast of Newfoundland.

The metamorphosing fertiliser

Next to the familiar (and hackneyed) faces of the Iguazu and Yosemite Falls, the calendar includes three beautiful black-and-white photos of Moroccan desert regions. And now guess, dear reader, what Moroc-

co's largest industry is. You're right! Phosphate mining (from rocks containing calcium phosphate, better known as apatite). Morocco produces a quarter of the world's phosphate and is therefore an important supplier to the worldwide fertiliser industry. In crops, the phosphate fertiliser metamorphoses and migrates via the food chain into human bodies to end up as bones and, well, adenosine-5'-triphosphate.

In fact, our bodies partly consist of Moroccan rocks.

We should keep this fact at the back of our minds when viewing the calendar's impressive photographic masterpieces, such as the mighty rocks of the Moroccan Dadès Valley (photographed at twilight for the February photo) and the Erg Chebbi Desert, with its smooth dunes (pictured on the August sheet). The calendar has 70 x 50 centimetre dimensions, is subtitled in German, English and French, and is entirely worth its sale price of €44.80. Send the Danish scientist's name to the e-mail address below by December 15th and you stand the chance of winning one of four free copies.

Flowers in muted ...

Landscapes often come across as extra spectacular when pictured in monochrome. In reality, nature is more diverse, it is multifaceted, and, of course, coloured. For this reason, Palazzi provided us with an additional six calendars that are colourful and are also part of the *Lab Times* end-of-the-year competition.

One of them is *Blüten/Flowers 2009*, photographed by the German Micha Pawlitzki, who has in only a few years published more than 60 books and calendars, which have sold a total of a million copies. *Blüten/Flowers 2009* was produced with the official support of the Munich Botanical Gardens, whose directorate made the twelve flowers accessible to the photographer.

These flowers – the blossoms of cute angiosperms like *Calceolaria spec.* (lady's purse), *Calliandra tweedii* (red tassel bush), and *Lilium pumilum* (coral lily), are pushed into the spotlight in a very quiet and, well, flowery manner. They are brightly illuminated, against a white background, which makes the translucent petals, stipules, petioles, and lamina appear like very realistic drawings rather than 'just' photographs. A masterpiece, with 50 x 60 centimetre pages, that will appeal to all.

... and vibrant colours

The third calendar up for grabs is the jumbo-sized *Nature's Design 2009*, photo-

graphed by William Neill, a world famous landscape photographer and resident of Yosemite National Park. In contrast to the *Blüten/Flowers* almanac, and in contrast to Neill's regular opus, *Nature's Design 2009* is a collection of macroscopic eye-catchers in a 50 x 70 centimetre format. 'Ordinary' objects are reproduced on twelve high-quality sheets, such as honeycombs, flint pebbles, wet lupines, rose petals, and the fossil shell of an ammonite. It's the extreme closeness that lets these photographs work their magic.

Unique opportunity for *Lab Times* readers

The Palazzi publishing house has given *Lab Times* ten of these great calendars (four copies of *NatureFineArt-Landscapes*, three copies of *Blüten/Flowers*, and three copies of *Nature's Design*). Just pin down the Danish scientist's name (see above) and e-mail it to wk@lab-times.org (including your own name and postal address). The ten winners will be selected at random. All correct answers received before December 15th will be considered. Good luck!

WEANÉE KIMBLEWOOD

To compete for a calendar, please provide the following:

- ▶ the Danish scientist's name
- ▶ your own name and postal address

E-mail before Dec 15th to:
wk@lab-times.org

- ▶ Micha Pawlitzki: *Blüten/Flowers 2009* (German/English/French). Palazzi, 2008. Upright format, 50 x 60 cm, €39.80.
- ▶ William Neill: *Nature's Design 2009* (German/English/French). Palazzi, 2008. Upright format, 50 x 70 cm, €44.80.
- ▶ Graham French: *NatureFineArt – Landscapes 2009/Black & White* (German/English/French). Palazzi, 2008. Landscape format, 70 x 50 cm, €44.80.

