TOUCHING BASE

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Photo courtesy of Parson's Lobster Pound (Bar Harbor, Maine, USA)

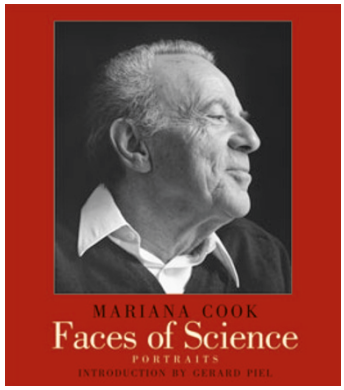
Mutant of the Month

This month's mutant is the rare blue-pigmented variant of the North American lobster (*Homarus americanus*); a couple of these turn up each summer during prime lobster-eating season in the Northeast. This and other wild lobster carapace-color variants, such as yellow, orange and calico, are assumed to be genetically determined, but the responsible genes have not yet been discovered. The chemical basis of lobster shell coloration has been elucidated: it is the result of a macromolecular complex of the astaxanthin carotenoid and the crustacyanin protein. Astaxanthin is an antioxidant structurally similar to β-carotene and is obtained by lobsters through their diet. Free astaxanthin is red, but when bound by crustacyanin, its spectral properties are shifted towards blue. The combination of free and protein-bound astaxanthin produces the muddy greenish-brown color that normally camouflages the lobster on the ocean floor. This carotenoprotein interaction is of interest for drug design for antioxidant delivery and because it is one of the largest reported protein-induced spectral shifts. When lobster is cooked, crustacyanin is denatured, releasing the red astaxanthin pigment that lends cooked lobster its color. Unfortunately, blue lobsters also turn red when cooked. ***EN***

EST patent rejected

The US Patent and Trademark Office (PTO) awarded the first patent for expressed sequence tags (ESTs) in 1998 to Incyte Pharmaceuticals for human kinase ESTs. This decision was met with broad criticism from the scientific community because it seemed to entitle the patent holder to claim the entire cDNA or gene. Under pressure to raise the bar for gene patents, the PTO issued more stringent standards in 2001 requiring demonstration that the invention has "specific" and "substantial" utility. Now, the US Court of Appeals for the Federal Circuit has upheld the decision of the PTO to reject an application by Monsanto scientists to patent five maize EST sequences. The PTO rejected the application because it failed to demonstrate specific or substantial utility as it did not identify the genes from which the ESTs were derived or any specific function of the underlying genes. The Monsanto application claimed that the ESTs could be used as tools for further research, serving as genomic markers or identifying the presence or absence of polymorphisms. But the PTO argued that these uses failed to meet the utility standard because they were so vague as to be meaningless. This ruling makes it unlikely that many of the other numerous pending EST patent applications will be accepted. *EN*

Faces of science



Last month saw the publication of Mariana Cook's book of photographs, *Faces of Science* (W.W. Norton). Cook started photographing scientists at a symposium in Santa Cruz, California, in 2001, and the book contains 77 of her portraits, along with autobiographical essays from each of the scientists. She says of her subjects: "It is wonderful to work with them. They are incisive, clear-thinking, and determined…". Many of the portraits are telling and memorable, including those of Francis Crick, David Baltimore, François Jacob (appropriately featured on the cover of the book), Paul Greengard, Hans Bethe, Neta Bahcall and Christiane Nusslein-Volhard (in a lovely still life with pears). The New York Academy of Sciences will be displaying a selection of the photographs until 14 October. For a preview, see http://www.nyas.org/snc/gallery.asp. *AP*

"Whatever advantage these genes give, some groups have it and some don't. This has to be the worst nightmare for people who believe strongly there are no differences in brain function between groups." – Anthropologist John Hawks of the University of Wisconsin in Madison (as quoted by *New Scientist*).

"I do think this kind of study is a harbinger for what might become a rather controversial issue in human population research." – Bruce Lahn (as quoted by the *New York Times*)

Comments on two recent papers in *Science* by Bruce Lahn and colleagues describing evidence for ongoing adaptive evolution of two genes implicated in the regulation of brain size in humans.

Touching Base written by Emily Niemitz and Alan Packer.