TOUCHING BASE

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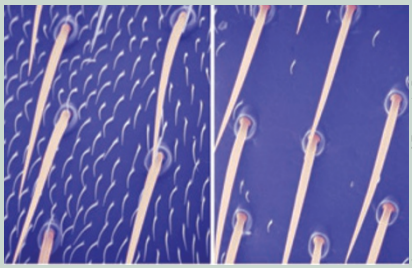
Mutant of the Month



Images courtesy of François Payre and Isabelle Delon

This month, to honor the recent publication of the genome sequences of twelve species of *Drosophila* (*Nature* 450, 203–218; 2007), we feature the *Drosophila melanogaster* mutant *shavenbaby*. In wild-type flies (left), a stereotypical pattern of actin-rich cytoplasmic extensions, called trichomes, projects from the dorsal and ventral surfaces of the cuticle. In *shavenbaby* mutants (right), most trichomes are absent, resulting in large regions of naked cuticle. *shavenbaby* encodes a transcription factor that integrates information from multiple signaling pathways to specify trichome pattern and, subsequently, activates expression of a morphogenetic module responsible for trichome formation (*PLoS Biol.* 4, e290; 2006). Comparative studies across multiple species of *Drosophila* have shown that the distinct patterns of dorsal trichomes characteristic of each species are determined by differences in the *cis*-regulatory elements responsible for controlling *shavenbaby* expression (*Nature* 424, 935–938; 2003). In mice, a homolog of *shavenbaby* has an analogous role in regulating development of the hair follicle (*Genes Dev.* 12, 3452–3463; 1998), suggesting that the module controlled by this transcription factor has been deeply conserved through evolution. ***KV***

Gruber Foundation awards at ASHG

The Peter and Patricia Gruber Foundation presented two awards at the 57th Annual Meeting of the American Society of Human Genetics (ASHG), held in San Diego in October 2007. Molly Przeworski, assistant professor at the University of Chicago, was awarded the 2007 Rosalind Franklin Young Investigator Award for her important empirical and theoretical contributions to our understanding of natural selection in humans. In the same ASHG session, the Genetics prize of the Gruber Foundation was presented to Maynard V. Olson from the University of Washington, for lifetime contributions to genome sciences. This prize recognizes leading scientists who have made fundamental contributions shaping the field of genetics, and consists of a gold medal and $500,000. The prize was presented by David Botstein, also the 2003 Gruber Genetics Laureate. "When he assembled his physical map of the yeast genome, Maynard [Olson] developed a new way to piece together the puzzle. He allowed us to mechanize, computerize and organize the process," Botstein said. "Maynard was one of the top two or three key brains behind the Human Genome Project. And he is a mentor—not just for his students, but for whole institutes." *OB*

Canine nutrigenomics

It seems that the burgeoning field of personalized genomics is, quite literally, going to the dogs. A California-based company, K9 Genetics Corporation, is marketing Personalized Chow and Personalized Treats that "are formulated based on your dog's unique nutritional specifications." As a client, you are invited to answer a few questions about your dog's breed, age, weight and activity level and, of course, to submit a DNA sample. The company then analyzes this information, produces the specially formulated fare and delivers it right to your door (in convenient single-serving pouches). The website does not disclose what genetic markers it employs to unlock the secrets of your dog's nutritional needs. Nevertheless, we think it is fair to ask whether the science undergirding the field of canine nutrigenomics has progressed to a stage where DNA marker analysis offers better guidance regarding nutrition requirements than could be gleaned from pre-genomic era variables such as breed, age, weight, etc. At this point, we remain skeptical, though we admit that the dogs featured on the website look happy and healthy (http://www.k9genetics.com/). *KV*

"You see, when a man can get up and sing in front of 3,000 people at eight in the morning, there's something special in his DNA."

--George W. Bush, in his statement awarding the Presidential Medal of Freedom to Francis Collins.

Responsible use of synthetic genomics

A new report entitled "Synthetic Genomics: Options for Governance" was released in October 2007 by the J. Craig Venter Institute (JCVI), the Center for Strategic and International Studies (CSIS) and the Massachusetts Institute of Technology (MIT). The report outlines potential safety and security concerns in the field of synthetic genomics, along with opportunities for intervention to minimize such risks. Funded by the Alfred P. Sloan Foundation, this effort involved 20 months of study, review and analysis, and included a series of workshops with researchers involved in synthetic genomics, as well as policy analysts and experts in the ethical, legal and societal implications of biotechnology. They report on three areas of policy interventions and outline policy options for each. The first area is for the commercial developers of synthetic DNA, with one suggestion being to require the use of special software to screen orders for potentially harmful DNA sequences. The second area concerns the oversight of equipment and reagents used in DNA synthesis, and one suggestion was to require registration of such machines and licenses to purchase reagents. The third area is more broadly for users of synthetic genomics technologies and includes suggestions for user education and experimental review (institutional and beyond). The core-group authors of the report include Drew Endy (MIT), Robert M. Friedman (JCVI), policy analyst Michele Garfinkel (JCVI) and Gerald Epstein (CSIS Homeland Security Program). *OB*

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