Under My Skin

A team of chemists, bioengineers and medical scientists at Penn and the University of Minnesota have devised nanosized particles, called near-infrared-emissive polymersomes, that can “light up” a tumor. A microscopic sack of water enclosed by an artificial membrane, a polymersome mimics human cells. The researchers inserted light-emitting molecules or fluorophores into the membranes of polymersomes. When excited by near-infrared light, the synthesized particles could be “seen” giving off light beneath the skin of a living rat. “The fluorophores function like reflectors stuck in the spokes of a bicycle tire,” explains Michael Therien. “When this structure absorbs light, it gives rise to an intense, localized fluorescence.” Polymersomes can be coded to attach to specific types of tumor cells, and the glowing nanoparticles could be used to image tissue deep beneath the skin in humans. Therien, the Alan MacDiarmid Endowed Term Chair in Chemistry, was a leader of the team that published its findings in the Proceedings of the National Academy of Sciences (February 22, 2005). Together with Daniel Hammer, a Penn engineering professor, Therien believes polymersomes would make good carriers to deliver drugs “directly to a tumor, which will allow clinicians to actually see if chemotherapy is really going to its intended target.”

Straussians Amok

“From the time that I first came to the University of Chicago,” political scientist Anne Norton writes of her student days, “professors took me aside to tell me stories of Strauss and the Straussian.” Norton, the Alfred L. Cass Term Professor, studied with Straussian and has written her own stories about the German-born philosopher Leo Strauss and the intellectual lineage that spilled out of the academy and into the halls of power in the Bush administration. Pundits have noted that students descended from Strauss, like Paul Wolfowitz and Abram Shulsky in the Pentagon, have played a leading role in shaping government strategy, including the war in Iraq. Leo Strauss and the Politics of American Empire, a mix of anecdote and analysis, looks at Strauss’s disciples who became conservative political theorists and neconservative policy-makers and writers. Norton stresses that the neoconservatism of Bush officials, which backs up a new world order with American power, is a “radical departure” from traditional conservatism. “I am sorry for the name ‘Straussian,’” she writes, “because it implicates Strauss in views that were not always his own,” but this is what they call themselves. Norton observes that the neoconservative agenda and its global crusade are the legacy of the Strausians but not of the timid and bookish scholar from whom they take their name.

Many Worlds, One Nation

In 1989, when Eastern European rebels quoted the Declaration of Independence as they broke from the crumbling Soviet Union, history professor Richard Beeman began 14 years of research that became his fifth book. In The Varieties of Political Experience in Eighteenth-Century America, Beeman finds that American ideals of democracy developed in a contradictory and decidedly undemocratic place. “America before the Revolution was not a nation,” he explains, “but a collection of colonies whose residents’ primary loyalty was not to ‘America’ but rather to the king.” Political ideals and practices varied from region to region, opinions differed on the basic responsibilities of voters and candidates, and expectations on how elected officials should serve the population were all over the map. Still, he writes, “most colonies were moving, slowly and unevenly, in the same direction” – toward a democratic nation. Beeman synthesizes the work of colonial historians to create a unique overview of the many political and cultural worlds across the colonies. His book shows us the seeds of red and blue states in today’s politics and suggests some lessons for the troubled Iraqi elections. “When we see how difficult the establishment of a democratic nation in America was,” he notes, “it should not surprise us that we find it more difficult in places like Iraq.”

—STEPHANIE BROWN, C’92

Near infrared confocal scanning microscope image of light-emitting polymersomes

Richard Beeman

Jim Abbott
Neuroethics

“What the late 20th century was for molecular genetics, a time of great scientific breakthroughs and unprecedented ethical challenges, the early 21st century is proving to be for neuroscience.” So says Martha Farah, the Bob and Arlene Kogod Term Professor in Psychology and director of the Center for Cognitive Neuroscience. In “Neuroethics: The Practical and the Philosophical” (Trends in Cognitive Sciences, January 2005) Farah explores how advancing brain sciences are posing tough ethical questions about how neurotechnologies can be used and abused, and what the new knowledge might suggest about how we think of ourselves. “For the first time, it may be possible to breach the privacy of the human mind,” she says, “and see thoughts, plans and feelings that a person might not wish to communicate.” Neuroimaging could provide exploitable information to marketers about motivations to buy or be used by some futuristic police force to detect a predilection for violent crime.

“Neuroscience is showing that not only perception and motor control – longtime objects of laboratory study – but also character, consciousness and sense of spirituality are all physical functions of the brain,” Farah notes. How will this evolving knowledge change our notions of what it means to be human? We already pop pills to deal with depression, and drugs are increasingly used to enhance brain function in healthy people. More potent psychopharmacology and even neural implants will affect our lives in years to come. Farah concludes, “The question is therefore not whether, but rather when and how, neuroscience will shape the future.”

Promises I Can Keep

Touters of family values often look askance at the flood of unwed mothers welling up among the urban poor. The proliferation of single-mother families and relaxed sexual mores, they charge, show that marriage is not sufficiently esteemed. To find out whether these disparagers are right, associate professor of sociology Kathryn Edin spent five years with 165 of these families in some of the most destitute communities in Philadelphia and Camden. In Promises I Can Keep: Why Poor Women Put Motherhood Before Marriage, she and co-author Maria Kefalas of Saint Joseph’s University discover that low-income mothers value marriage just as much as their middle-class counterparts.

“Our goal,” they write, “is to give poor single mothers the opportunity to address the questions so many affluent Americans ask about them.” The authors give names and faces and personal stories to the voices that usually get “heard” only as statistics on the desks of policy-makers inside the Beltway. For most of the poor women in the study, a failed marriage held a greater stigma than having an out-of-wedlock child. Finding a good mate and a stable situation were seen as a lifelong quest, but raising children is what these women do along the way, despite the poverty, crime and drugs that infect their neighborhoods. “When we asked these young mothers what their lives would be like if they hadn’t had children, we thought they’d express regret over foregone opportunities for school and careers,” Edin and Kefalas write. “Instead, most believe their children had saved them.”