

# nature biotechnology

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## Ome is where the art is

This has been the decade of the “ome.” It began when investors rushed to put their money into companies that had anything, however peripheral, to do with the “genome.” Subsequently, recognizing investors’ need for a portfolio approach, bright-minded scientists and entrepreneurs created new “omic” niches—the transcriptome, the proteome, the metabolome, and the physiome. Although simply adding the letters O-M-E to the end of what you were already doing is clearly revolutionary, we believe these pioneers have been a little timid. By restricting their use of the suffix to matter biological, they are shunning potential multi-billion dollar markets elsewhere. Therefore, encouraged by William Bains of Merlin Biosciences, *Nature Biotechnology* proposes that venture funds focus future coverage on some additional omic areas.

*The Eurome*—the complete sum of all European initiatives and their funding. The ideal company would focus on detecting lethal mutations in the Eurome, technically called “thatchers”. Like the human genome, vast expanses of the Eurome are apparently without function.

*The Acronome*—a universal resource of forced and contracted phrases the initial letters of which spell out supposedly meaningful and memorable words. The acronome is based on four fundamental units—greed, ambition, cunning, and terpitude: G always pairs with C, and A with T to create a downward spiral of DNA (Do Not Ask). The ideal reverse acronomics company would consist of a monkey, a typewriter, and 300 management consultants. The monkey would generate random sets of letters to which the management consultants would fit meaningless but credible phrases. We would take out key person insurance on the life of the monkey.

*The Investome*—the complete sum of all the money invested in biotechnology companies. Investome researchers study the apparently random sequence of events and interactions that modulate events in the buy-sell cycle in biotechnology. Over the past two decades or so, a great deal of effort has been devoted to understanding why so much of the biotechnology investome is devoted to junk. One hypothesis is that biotechnology is sustained by pathways that link a gradient of credibility to the production of corporate energy and hype. As money from investors flows down that gradient (from barely conceivable to almost believable), flashes of light are emitted. Early in the cycle, these flashes lure more investors to other unlikely projects. Thus, the cycle is apparently self-sustaining. However, with time investors become immune to the attractant light and biotechnology has to adapt to new circumstances.

*The Extrapolome*—the entirety of the conclusions that can be drawn from a single scientific finding. Pioneers in this field have already shown that global environmental disasters can be clearly predicted by feeding snowdrop proteins to rats, and that all health care systems worldwide will improve just as soon as the human genome sequence is completed (see also the investome, above). With scientific research becoming so expensive, it is in everybody’s interests that the slightest piece of new knowledge be stretched to its limits. Through linkage studies, extrapolomics companies can form a chain of logical links from everything that is currently unknown to the one experiment that will enable all phenomena to be understood.

*The Paradome*—a systematic database of paradigms. This will involve the commissioning of an executive search firm to look for a team

of people that can capture new paradigms efficiently. They must be able to maintain continual surprise and amazement at new advances in knowledge, advances that less sensitive individuals perceive merely as minor and obvious extensions of current practices. The ideal paradome company would analyze paradomes on highly complex microdevices related to the biochip called a financhip, many versions of which are already being sold in London. The paradome is itself a whole new paradigm, of course, so that once the paradome reaches a certain size it continues expanding without any further input: the ideal investment.

## Bad press and biotech

It’s been a rough year for biotechnology in the media. With GM food phobia reaching epidemic proportions around the globe, British Biotech and Monsanto beleaguered by hostile press on every side, angiogenesis inhibitors lauded, then pilloried in the papers, Amgen’s leptin obesity drug trashed after dismal clinical results, and now the death of six patients in gene therapy trials, it’s difficult to recall a year where publicity has been as intense or as bad.

As news is first and foremost a business, it is inevitable that the more controversial aspects of biotechnology are increasingly finding their way into the headlines—after all, topicality rather than significance tends to sell newspapers. With column inches and broadcast time at a premium, science is often reduced to sound bites, issues are oversimplified, and viewpoints are polarized into universal acceptance or rejection of a particular technology, with little room for reasoned discourse. Unfortunately, while this extreme, bifurcated presentation of scientific, ethical, and moral issues increases circulation and ratings for media moguls, it also foments public anxiety and resistance to technology.

More than any other time, there exists a fundamental incompatibility between the nature of scientific progress and its presentation in the mass media. While science proceeds by slow, incremental advances, media coverage highlights advances as instantaneous and dramatic breakthroughs.

To complicate matters further, the equivocal nature of most scientific findings is lost in journalistic attempts to simplify science for mass consumption. Nowhere is this more apparent than in the promulgation of genetic reductionism and oversimplification of complex biological problems such as cancer and other chronic metabolic diseases.

As society comes into closer and closer contact with the new biotechnologies, the inevitable result will be the increasing politicization and widening public debate of the relative merits of the research. While biotechnology companies clearly cannot influence the way technologies are presented by the media, they can forestall and anticipate potential controversies by discussing, rather than sidestepping, some of the troublesome ethical and social issues involved. In this respect, the recruitment of ethicists to company scientific advisory boards is a step in the right direction. As the past year has shown, not all publicity is good publicity. And if companies do not make some attempt to address the so-called soft issues in biotechnology, the resultant media backlash could make this year’s sensationalist and negative coverage of biotechnology research look like a tea party.