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ARE WE PREPARED FOR LIFE ON A BIOTECH PLANET?
**NEW BOOK EXPOSES DANGEROUS FLAWS IN RISK ASSESSMENT OF CURRENT
AND EMERGING BIOTECHNOLOGIES AND GENETIC ENGINEERING**

*Serious concerns about bioterrorism, environmental and human health effects
demand better risk assessment, more public scrutiny*

Washington, DC (December 5) – Are we driving the products of biotechnology into the market so quickly that we’ve become blind to their real risks? Yes, according to a timely new book by Denise Caruso entitled, *Intervention: Confronting the Real Risks of Genetic Engineering and Life on a Biotech Planet* (Hybrid Vigor Press, 2006).

Intervention adds a new and sobering dimension to the global debate surrounding genetic engineering and biotechnology, by challenging the methods by which these risks are assessed. Drawing on a large body of peer-reviewed research and examples, Caruso, the former Technology columnist for *The New York Times*, makes a convincing case that using the wrong methods to assess the risks of genetic engineering has allowed industry and government regulators to rush powerful biotech products to market, while ignoring their potential hazards.

Caruso, co-founder and director of the non-profit Hybrid Vigor Institute, paints a vivid picture of the limits of science and scientists in assessing risks, and details the critical scientific uncertainties that biotech risk evaluations continue to dismiss or ignore. In one of many historical examples, *Intervention* reveals how regulators used a false assumption to declare the safety of the first genetically engineered foodstuffs, deliberately passing over the legitimate concerns of agency scientists and others. The book also anticipates the next wave of commercial development, and the risks these new products might entail. Examples include:

- **Gene silencing and bioterrorism:** The threat of “weaponized” anthrax and smallpox bacteria are dramatic examples of the potential for bioterrorism. But some scientists fear these techniques can also be used to design harmful agents that evolve over time, or don’t kill outright. A relatively new discovery known as “gene silencing,” for example, may lead to new radiation therapy drugs that can more effectively target and kill cancer cells by silencing certain cell repair functions; yet in the wrong hands, this same ability could become a kind of “molecular dirty bomb” that kills quietly and indiscriminately.
- **The risks of “going native”:** Fish, insects and microbes are well known for their inability to be contained or controlled by virtually any means, a fact that makes them bad candidates for genetic engineering. Still, salmon engineered to contain a fast-growth gene are already in the queue for regulatory approval, and malaria-resistant mosquitoes and microbes designed to “clean up” pollution are in early stages of commercial development as well - despite warnings from scientists that these varieties could easily become invasive species that threaten native plants, animals, and the health of ecosystems.

- **Synthetic biology:** This radical new technology aims to build whole new living organisms from scratch by snapping together DNA fragments. Given how little is known about how “natural” biology works, any commercial development in this realm may seem dangerously premature. Yet the cash is pouring in and, so far, synthetic biologists are even less enlightened about risk than previous generations of genetic engineers.
- **Nanotechnology:** Despite serious, well-known health hazards, the U.S. government is investing billions of dollars in nanotech applications, with only 1 percent of those billions directed toward assessing its risks. Scientists and regulators have known for more than a decade that nanotech materials do not behave by the rules of ordinary chemistry, thus historical risk assessments don’t apply. Nevertheless, more than 300 nanotech products are already on the market and according to one report, regulatory agencies won’t even talk about what they’re doing about nanotech’s risks.

While shedding much-needed light on these troubling trends, *Intervention* is not an anti-biotech screed. Caruso does not take sides in what she calls the pro-versus-con “fundamentalism” that has so far typified the official global conversation about biotechnology. Indeed, she pays tribute to the benefits that we have derived from biotechnology, and emphasizes that *Intervention* is not a call to halt scientific progress or research in any of these areas.

Rather, Caruso offers a prescription that involves more and better targeted research, as part of a more inclusive approach to risk assessment that was developed specifically for scientific discoveries by a group of the nation’s top risk experts. This powerful method, documented in the 1996 *Understanding Risk* study published by the U.S. National Academies, combines traditional risk analysis methods with a deliberative process that includes an expanded group of experts and stakeholders. Caruso believes this method is the key to making better, safer biotech products; it is also the best possible defense against the health, environmental, and security hazards that biotech products could engender in the future.

In a chapter entitled, “Putting Pigs to the Test,” Caruso provides a practical demonstration of how using such a method might improve biotech risk assessments. She describes a National Science Foundation-backed project she co-led with Baruch Fischhoff, a leading risk expert at Carnegie Mellon University, where they developed an enhanced version of the *Understanding Risk* method and tested it on a real biotech risk: that of using transgenic pigs as human organ donors. In just a single, day-long deliberation with a group of experts in biology, economics, anthropology, political science, zoology, risk assessment and business and health policy, a set of critical concerns about the safety of transplants were raised that Caruso says would never have been included in a traditional risk analysis.

Caruso takes the practical approach one step further by presenting her idea of BIOTA, an agency that would serve as a “biotech” revival of the now-defunct Office of Technology Assessment (OTA). BIOTA could serve as a much needed clearinghouse for biotech data and analysis, she says, and could convene the kinds of risk-and-benefit deliberations that would help lawmakers establish the best and most effective policies for the products and processes of biotechnology.

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About Denise Caruso:

Denise Caruso is the co-founder and executive director of The Hybrid Vigor Institute, a not-for-profit research and consulting practice that began operations in 2000. Her recent work has focused on new, collaborative methods for addressing the risks of innovations in science and technology, as well as global infectious disease (specifically, pandemic avian flu). Also a veteran technology journalist and analyst, she spent nearly 20 years chronicling the digital age, from the beginning of the personal computer revolution to the convergence of computing, telecommunications and media which became the commercial Internet. She was an early advocate of free speech and privacy online, and was one of the first journalists to focus on the intersection of technology, commerce and culture. For the five years prior to founding Hybrid Vigor, she wrote the Technology column for *The New York Times*.

About The Hybrid Vigor Institute:

The Hybrid Vigor Institute is a nonprofit (501C3) educational organization dedicated to interdisciplinary and collaborative problem solving. Its particular focus is on the complex problems — such as analyzing the risks of science and technology breakthroughs, curing and preventing infectious disease and designing enforceable health and environmental policies — that have overwhelmed the capabilities of any one area of expertise or field of study. Introducing experts to each other's work has long been known to be a powerful catalyst for breakthroughs in scientific research, but Hybrid Vigor's operating principal is that systematic, rigorous collaboration can also speed the solution to many intractable problems that exist outside the lab, in the real world.

For more information, chapter synopses or to purchase your own copy of *Intervention*, please visit <http://hybridvigor.org/intervention>.