

STRATEGY

SYNERGY

SCIENCE

SOLUTIONS

INDUSTRIAL & ENVIRONMENTAL SECTION

HELPING INDUSTRY GROW

Bio[®]
BIOTECHNOLOGY
INDUSTRY ORGANIZATION

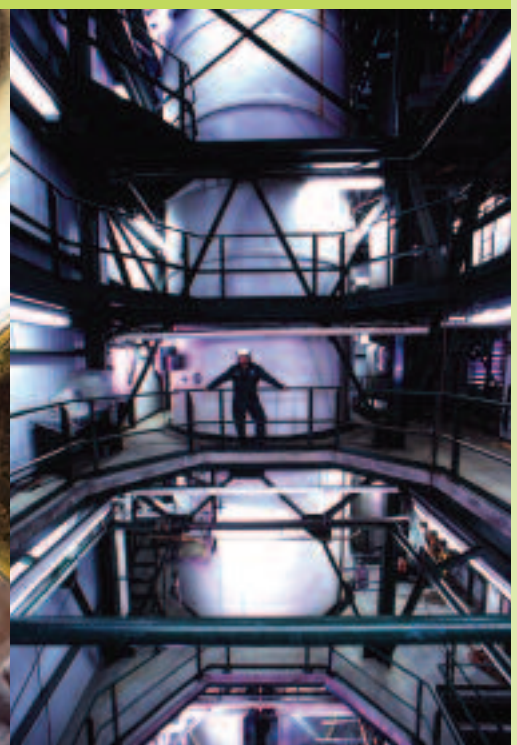


BIO can help integrate biotech into your

How is biotechnology going to change your company?

How can you stay in step with—or leap ahead of—the competition by using biotech to cut costs and create new products?

The Biotechnology Industry Organization's Industrial & Environmental (BIO I&E) Section can help you find the answers. We want to be your partner in navigating the complex, fluid world of industrial biotechnology.





R&D and business strategy.

As a BIO I&E Section member, you'll join Fortune 500 corporations that are incorporating industrial biotechnology into their operations, as well as small, emerging companies with exciting new technologies. Although our member companies are diverse, they all recognize the value of unity in growing industrial biotechnology.

Your membership strengthens BIO's voice as the industry's advocate. In return, we help you with every aspect of business strategy: from finding partners and investors to keeping abreast of the latest biotechnology breakthroughs affecting your industry. We even offer savings on essential products and services.

Members enjoy the focused attention of the dedicated I&E Section as well as the benefits of scale that the BIO umbrella organization has achieved. Based in Washington, DC, BIO's membership spans 1,100 biotechnology companies, academic institutions, state biotechnology centers and related organizations involved in the business of biotechnology across the United States and in more than 30 nations.

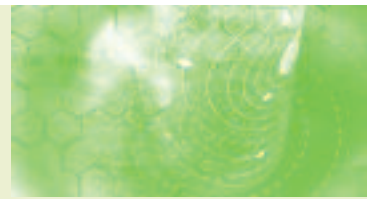
We are the world's largest and most influential biotechnology trade organization, representing companies pursuing breakthroughs in healthcare, agriculture, manufacturing and energy.

We want to represent your company, too. BIO has created membership options to meet the needs of every firm with an interest in the life sciences, including emerging companies. It takes as little as 15 minutes to apply, and you can do it online at bio.org/joinbio or via a paper application.

Call our Membership Department at 202.962.9200 for details.

We represent life science, biotechnology and industrial companies that create solutions for manufacturing, energy production and environmental performance.

Member companies develop or partner with firms that use enzymes, whole-cell systems or other biologic processes to transform manufacturing and chemical synthesis.



Synergy with Your Business Goals

All of BIO's member benefits are designed to work in synergy with our members' business objectives. As a member of the BIO Industrial & Environmental Section, your company will enjoy:

"BIO has done a tremendous job organizing the industry and forging connections between the industry and key policy-makers on Capitol Hill and inside federal agencies."

Jack Huttner, Vice President of Genencor International, a Danisco company

- **Washington access and advocacy.** BIO is your Washington office, voicing your concerns to the federal agencies, Congressional staff and elected officials who set the ground rules for R&D and marketplace success.
- **On-call expertise.** Our I&E team includes global experts on biotechnology policy and the uses of biotechnology in manufacturing and energy. As a BIO member, you are never more than a phone call or e-mail away from that expertise.
- **Exclusive investor and partnering events.** BIO's I&E Section hosts invitation-only events that connect our members with the financial community and potential corporate partners. BIO members have access to all of these events, including opportunities to speak and present.
- **Exposure.** BIO has garnered coverage of I&E Section member companies in such outlets as *The Washington Post*, CBS News, *Business Week*, *The Economist* and *Forbes*. We have featured our members at press events at the National Press Club and BIO conferences that have attracted as many as 500 top journalists. Plus, every BIO member is listed on bio.org, which generates in excess of 400,000 hits per month.
- **Intelligence.** We monitor and analyze legislation, regulatory activity, news reports and academic studies. You'll get the strategic intelligence you need through a suite of award-winning publications, a members-only Web site, an I&E newsletter and other resources.
- **International representation.** Our reach extends to international bodies such as the Organization for Economic Cooperation and Development, the World Trade Organization, the Convention on Biological Diversity, and the World Intellectual Property Organization.
- **Savings on essential products and services.** BIO members save up to 75% through the *Bio Business Solutions* group purchasing program. Covered products and services include lab supplies, office supplies, press-release distribution and insurance.
- **Chemical, agricultural and engineering associations.** We have established partnerships and advocacy coalitions with a number of professional societies and associations to educate their members about industrial biotechnology and enlist their support.

BIO Spotlights Members at Signature Events

Because BIO never thinks small, in 2004 we set out to create the preeminent international industrial biotechnology conference. The **World Congress on Industrial Biotechnology & Bioprocessing** is now an annual event that defines trends, introduces new discoveries and technologies, and offers the year's best opportunity for networking and business partnering. In 2006, we expanded our event lineup again, with the **Pacific Rim Summit on Industrial Biotechnology & Bioenergy**, a conference linking European and U.S. companies with potential Asian partners.

BIO also hosts the biotech industry's largest showcase, the *Bio International Convention*, which attracts almost 20,000 life sciences executives, scientists and policymakers, as well as 500 mainstream and trade journalists. Industrial biotech breakthroughs are showcased in media events and a three-day session track featuring BIO I&E member companies.

I&E Section members receive registration discounts and preference for speaking opportunities at BIO conferences.



Dr. Alan Shaw, President & CEO of Codexis and Chairman of the BIO I&E Section, speaks at the *Bio Pacific Rim Summit on Industrial Biotechnology and Bioenergy*.



Your Guide to Emerging Science

Using biological techniques perfected for medicine and crops, industrial and environmental biotechnology has been called biotechnology's third wave, and it's one you cannot afford to miss. Already, manufacturing and energy firms around the world are adopting enzymes, whole-cell manufacturing and other biotech tools to slash resource consumption, pollution and manufacturing costs.

Biotechnology can even create brand-new products—for example, new flavors and biodegradable polymers. And it can help manufacturers expand production of other products. Within a couple of decades, U.S. energy companies could be using biotech enzymes to extract enough ethanol from crop waste and grasses to meet 25% of our transportation fuel needs. This technology could satisfy growing world demand for fuel at a lower cost, with a renewable resource that is widely available and generates no net carbon dioxide emissions.

That's all good news. But the best news is you don't have to have a Ph.D. in the life sciences to incorporate these breakthroughs into your operations. What you do need, however, is a partner who can explain the science and introduce you to the key players. BIO can be that partner. We host technical and partnering conferences, author reports such as *New Biotech Tools for a Cleaner Environment*, and stimulate a cross-flow of expertise among academics, manufacturers and policymakers.

Market Growth Areas

- Ethanol Production
- Fine Chemicals
- Bulk Chemicals
- Chiral Compound Synthesis
- Pharmaceutical Manufacturing/Processing
- Synthesis of Vanillin and Other Food Flavor Agents
- Biopolymers/Plastics
- Oil and Gas Desulfurization
- Leather Degreasing
- Control of Biofilms
- Biohydrogen Production
- Coal Bed Methane Water Treatment
- Chem/Bio Warfare Agent Decontamination
- Pulp and Paper Bleaching
- Biopulping
- Specialty Textile Treatment
- Metal Ore Leaching
- Antibiotic Production
- Electroplating/Metal Cleaning
- Rayon Production
- Metal Refining
- Vitamin Production
- Sweetener Production
- Oil Well Drill Hole Completion
- Road Surface/Asphalt Treatment
- Textile Dewatering
- Vegetable Oil Degumming

Industrial & Environmental Biotech Facts

- Potential reduction of chlorine use if biotech processes were used industry-wide in the paper industry: **10-15%**
- Potential reduction in energy costs related to bleaching: **40%**
- Petroleum savings when plastics production shifts to bioprocesses: **Up to 80%**
- Number of barrels of oil those savings amount to, per year: **90-145 million, or the equivalent of one week of U.S. oil consumption**
- Barrels of petroleum used for organic chemical production that could be replaced each year with biofuel produced from agricultural crop residue: **700 million**
- Estimated cost to produce a gallon of bioethanol by 2020, according to the National Commission on Energy Policy: **80 cents**
- Percentage of transportation fuel needs that could be met by bioenergy by 2025: **25%**

Sources: BIO, Organization for Economic Cooperation and Development, National Commission on Energy Policy, Ag Energy Working Group

Advocacy That Delivers Solutions

BIO's I&E Section advocates for government solutions to take industrial and environmental biotechnology to the next level. Over the last five years, we have built Washington's most effective advocacy team for industrial biotech.

The results? Let's start with the **Energy Policy Act (EPACT)** of 2005. One of the Department of Energy's highest priorities—thanks to four years of BIO advocacy—is commercial development of bioethanol made from plant cellulose using biotech enzymes.

The EPACT authorizes \$3.6 billion in industrial biotech funding. BIO is following up on this success with continued advocacy to ensure the programs are fully funded.

BIO and the I&E Section also have achieved advocacy results on these fronts:

- **Bio-based Research and Development Act.** We helped achieve passage of this measure, which promotes bio-based industrial products. The act funds \$50 million in research and development on enzyme and biomass technologies.
- **Farm Bill.** BIO helped draft and support an amendment to the 2002 Farm Bill establishing mandatory federal purchasing preferences for bio-based products.
- **Energy Future Coalition.** BIO's Executive Vice President for Industrial & Environmental Biotechnology chaired the EFC's Bioenergy and Agriculture Working Group, which recommended federal funding and bio-based purchasing to spur bioethanol production. These measures were adopted in the Energy Policy Act of 2005.
- **Organization for Economic Cooperation and Development.** BIO's Executive Vice President for Industrial & Environmental Biotechnology was Vice-Chair of the OECD's task force on biotechnology, which produced a favorable case-study report on the technology's impact across multiple industries.

"We must change how we power our automobiles....Our goal is to make this new kind of ethanol practical and competitive within six years."

U.S. President George W. Bush



Brent Erickson (left), Vice President of BIO's Industrial & Environmental Section, and Jack Huttner (right), Vice President of Communications and Public Affairs for Danisco Genencor International Inc., present Senator Tom Harkin (D-IA) (center) with BIO's Legislator of the Year Award.

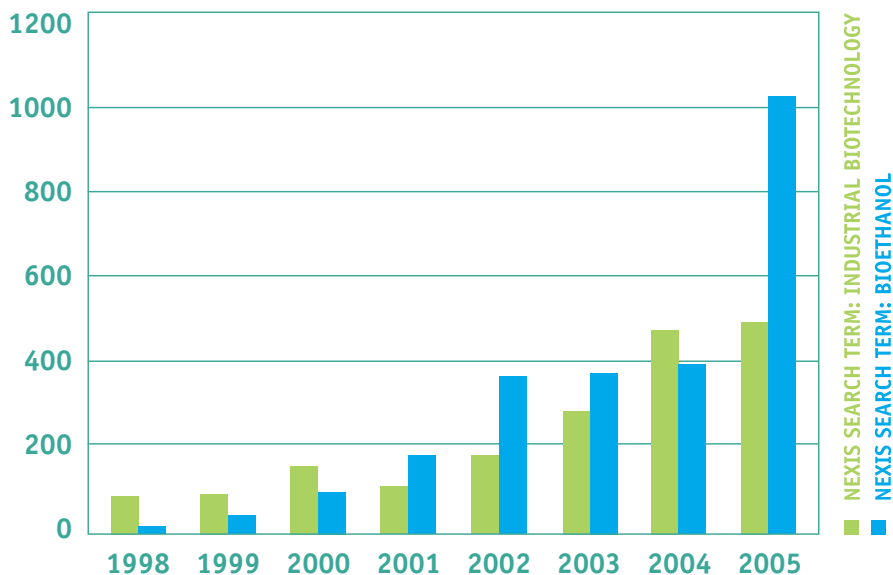
Advocacy Solution: The Energy Policy Act

The Energy Policy Act of 2005 includes many BIO-advocated provisions that support our members' efforts to increase production of bioethanol and other bio-based products:

- A renewable fuels standard that doubles the volume of ethanol and biodiesel in the nation's fuel supply, to 7.5 billion gallons annually by 2012.
- \$2.9 billion over 10 years for research and demonstration of new bioenergy crops, biotechnology for biomass processing, and development of bio-based products, such as corn-based plastics and soy-based lubricants.
- Loan guarantees for the construction of up to four demonstration biorefineries capable of producing ethanol and other high-value products from biomass.
- \$1 billion in grants and incentives for the first commercial production of cellulosic ethanol.
- Expanded federal bio-based product procurement regulations, to require all federal agencies, contractors and the U.S. Capitol complex to use bio-based products.
- U.S. Department of Agriculture (USDA) small-business grants of up to \$100,000 for bio-based product marketing and certification.
- USDA Bioeconomy Education program to familiarize consumers with bio-based fuels and products.
- A suite of tax incentives for the production and distribution of ethanol and biodiesel.

BIO Helps I&E Section Members Make News

I&E Press Coverage Skyrocketing



BIO's Industrial & Environmental Section has catalyzed growth in media coverage of the industry. Since the section was created in 1998, the number of articles in the Nexis news database with the words "industrial biotechnology" or "bioethanol" has risen dramatically.

BIO's media outreach has dramatically increased coverage of industrial biotechnology applications and advances in both mainstream and industry media, generating literally hundreds of news stories and feature articles. In recent years, industrial biotech has been featured in cover stories in *Forbes*, *The Economist*, *Industry Week*, and *The Washington Post's* business section.

We've hosted events at the National Press Club and on Capitol Hill. At the *Bio International Convention* in 2006, we hosted a media brunch spotlighting a broad spectrum of industrial biotech products, including high-fashion clothes made from biopolymers. That event attracted approximately 150 journalists from such outlets as:

Associated Press
 Newsweek
 Bloomberg
 New York Times
 Chicago Sun-Times
 PBS Nightly Business Report
 Chicago Tribune
 Wall Street Journal
 Dow Jones Newswire
 Washington Post
 Financial Times
 Women's Wear Daily



Some 150 journalists attended a bioproducts media brunch at the 2006 *Bio International Convention*. Among the products featured were biopolymer fabrics such as that used in a gown designed by Halston. Also pictured in the background (left to right) are Steen Riisgaard, President & CEO of Novozymes; Brian Foody, President & CEO of Iogen Corporation; and Dr. James Barber, President & CEO of Metabolix, Inc.

Industrial & Environmental Section

GOVERNING BODY 2005-2006

Alan Shaw, Ph.D., Chairman
Codexis, Inc.
President & CEO

James Barber, Ph.D.
Metabolix, Inc.
President & CEO

James R. Stoppert
Cargill, Incorporated
Senior Director, Industrial
Bioproducts Development

Dennis McGrew
NatureWorks, LLC
President & CEO

Roger Wyse, Ph.D.
Burrill & Company
Managing Director

Jack Huttner
Danisco Genencor International, Inc.
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Public Affairs

Leendert Staal, Ph.D.
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Bio-Based Materials

Thomas Nagy
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Bernhard Hauer
BASF AG
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Director of Biotechnology

Brian Foody
logen Corporation
President & CEO

Stephan Kutzer, Ph.D.
Lonza America Inc.
President, Lonza Biopharmaceuticals

Erin O'Driscoll
The Dow Chemical Company
Business Development Manager
Oleochemical Program

Gerson Santos-Leon
Abengoa Bioenergy
Director Corporate, R&D

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DSM, NV
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logen Corporation
Jak's LLC
Lonza Biologics, Inc
Mascoma Corporation
Metabolix, Inc
Monsanto Company
NatureWorks, LLC
Novozymes, A/S
PureVision Technology, Inc
Strathkirk, Inc
Synthetic Genomics
Tate & Lyle

"BIO provides a respected, credible platform from which to influence and direct positive government policy. The stronger BIO's membership, the more likely we are to succeed. So the bigger, the better!"

Dr. Alan Shaw, President & CEO of Codexis, Inc., and Chairman of the BIO I&E Section



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MEMBERSHIP QUESTIONS?

To learn more about joining BIO's Industrial & Environmental Section, call **202.962.9200** and ask for the Membership Department. Or visit us online at bio.org/joinbio, where you'll find an application and detailed information on member benefits and dues.