

### AICHE

General Inquiries  
1-800-AICHEM  
(1-800-242-4363)

Education Services  
(212) 591-7770

Career Services  
(212) 591-7524

Meetings/Expositions  
(212) 591-7324

Member  
Activities/Services  
(212) 591-7329

### AICHEXtra

Senior Editor  
Lois DeLong  
(212) 591-7661  
loisd@aiiche.org

Managing Editor  
Beth Shery Sisk  
(212) 591-7845  
beths@aiiche.org

### EDITORIAL ADVISORY BOARD

William W. Doerr  
Factory Mutual  
Research Corp.

Stevin H. Gehrke  
Kansas State University

Dennis C. Hendershot  
Rohm and Haas Co.

Robert F. Hoch  
Consultant

Laura A. Hofman  
H&R Technical  
Associates

Kenneth Kamholz  
Consultant

Stephen P. Lombardo  
The Coca-Cola Co.

Jerry L. Robertson  
Consultant

Bruce Vaughen  
DuPont/TeijinFilms

### EXECUTIVE DIRECTOR

John Sofranko  
johns@aiiche.org

### GROUP PUBLISHER

Stephen R. Smith  
steps@aiiche.org

### PUBLISHER AND EDITOR-IN-CHIEF

Kristine Chin  
(212) 591-7662  
krisc@aiiche.org

### MANAGING EDITOR

Cynthia F. Mascone  
(212) 591-7343  
cynfm@aiiche.org

### SENIOR EDITOR

Rita L. D'Aquino  
(212) 591-7317  
ritad@aiiche.org

### ART DIRECTOR

Fran Fresquez  
(212) 591-8669  
franf@aiiche.org

### PRODUCTION COORDINATOR

Karen Simpson  
(212) 591-7337  
kares@aiiche.org

### ILLUSTRATOR

Alice Schwade

### WASHINGTON EDITOR

Darlene Schuster  
(202) 962-8690  
dc@aiiche.org

### REGULATORY EDITOR

William A. Shirley  
(888) 674-2529  
envtlaw@earthlink.net

### PATENT LAW EDITORS

M. Henry Heines  
(415) 576-0200  
mhh@townsend.com

Frank C. Eymard  
(504) 585-0449  
eymardfc@arlaw.com

### CLASSIFIED ADVERTISING AND REPRINTS

Malvin Moore  
(212) 591-7683  
malvm@aiiche.org



Audit Bureau of Circulations  
Member



## Outsourcing R&D

Corporate strategy in the U.S. places high importance on R&D because of its proven capability to improve competitiveness and profitability. However, research is becoming increasingly interdisciplinary and corporations can no longer house all competencies necessary to stay competitive. Further, new tools and growing complexity are increasing R&D costs. So although corporate labs spend as much as \$800 million for a new drug, they are confronted with the law of diminishing returns. Pharmaceutical companies tripled R&D spending to \$30 billion in the past decade, but could launch only 37 new drugs in 2001 — the lowest in 20 years.

Companies will need several strategies to overcome this crisis in R&D productivity because pursuing multiple R&D projects is critical to staying competitive in the long term. One strategy, to quote Harvard Business School professor Henry Chesbrough, is “open innovation,” which includes embedding research labs at universities, turning customer-vendor relationships into partnerships, or simply outsourcing R&D.

Outsourcing is driven by cost, and R&D is no exception. Leveraging India's infrastructure and cheap, yet talented, labor to harvest new ideas is an attractive opportunity. Every year, India graduates 3,500 PhDs and 125,000 engineers. Some write code in Silicon Valley and work in Fortune 500 companies, while most populate India's first-class scientific infrastructure of 2,000 R&D institutions. Together, they could help accomplish outsourced R&D at 10–20% of the costs in the U.S.

India's success with information technology is widely known. In comparison, awareness of India's emerging contract R&D capabilities is limited. However, some companies have leveraged Indian R&D effectively for a long time. General Electric (GE) began collaborating with India's National Chemical Laboratory (NCL) in the area of polymer chemistry in the early 1990s. The relationship continues even today and has resulted in several patents, which have been assigned to GE.

However, nothing runs smoothly in India. Outsourcing R&D to India is fraught with issues related to intellectual property rights and the regulatory climate. India stopped honoring product patents in the early 1970s and patented products could be manufactured so long as a different process was employed. However, India has wisely adopted legislation committing itself to the World Trade Organization's intellectual property regime starting in 2005. In anticipation, companies have started ramping up Indian operations. For example, Eli Lilly and Pfizer are either planning to or already are leveraging India's large patient pool for clinical research trials. Such examples will multiply once the Indian government further simplifies regulatory issues related to clinical research.

If the Great Indian Rope Trick beguiled western scientists in ancient times, modern Indian science is no less fascinating. Labs in India could help U.S. companies discover drugs, develop materials, and design cars at a fraction of U.S. costs. This Great Indian R&D Trick could change the way U.S. companies innovate and invent.

Uday T. Turaga,\*  
Sorbent Development Chemist, Conoco Phillips  
turagauday@hotmail.com

\*Turaga holds BS and MS degrees from India and a PhD from the U.S.