

Konrad Bloch: A man of humility

*A man of habit.
A pioneer.
An Old World gentleman.*

Winner of the 1964 Nobel Prize in Medicine and Physiology and the 1988 Supelco AOCs Research Award, Konrad Bloch is not what one would expect a great scientist to be, according to Armand Fulco, professor of biological chemistry at UCLA. Fulco, who worked as a postdoctoral fellow for Bloch shortly before Bloch received the Nobel Prize, remembers how surprised he was that Bloch kept incredibly regular hours. "He didn't come into the lab at 6 a.m. and leave at midnight; he was not completely consumed by his work. Science occurred between 9 a.m. and 6 p.m. during the week and on Saturday mornings. The rest of his time was devoted to family, friends and interests," Fulco said.

Bloch, who smiled when told of this assessment, says he tends to be a man of habit. The regular hours evolved quite early in his career. From 1936 to 1946, Bloch had a three-hour daily commute to and from his laboratory at Columbia University in New York City. His children were small, and it just wasn't feasible to return to the lab in the evening. "I decided that if I were organized, I would not have to work much at night."

During the time Bloch was developing regular habits, his fascination with cholesterol—the molecule that set the course of his career—was growing.

Bloch speaks eloquently about the cholesterol molecule. He has described it as beautiful, well-designed and Janus-faced. When he was a young scientist, Bloch wanted to discover the origin of each of the 27 carbon atoms in the molecule. He and his colleagues have met that challenge.

Although known for many contributions to lipid chemistry, Bloch is most often cited for determining how cholesterol is synthesized. He proved that acetate was the source of all carbons in cholesterol by demonstrating that acetic acid was metabolized to form squalene. In later work, he showed that squalene cyclization produced lanosterol, and lanosterol, after a series of intermediate steps, led to cholesterol. More recently, he has worked with enzyme inhibitors. For this work, Bloch (in July) received the National Medal of Science, the highest

award a scientist can receive from the U.S. government. Bloch said the award gave him special pleasure because it was "for research on enzyme inhibitors, which are beginning to be useful as chemotherapeutic agents."

Bloch had little idea how important a role cholesterol would play in his career when he was introduced to the molecule in 1934. In fact, Bloch's first encounter with cholesterol was a nonencounter. His assignment as a research assistant at the Schweizerisches Hohenforschung's Institut in Switzerland was to verify the presence of cholesterol in human tuberculosis bacilli. He couldn't find it because it simply wasn't there.

However, that project made him familiar with the work of Rudolf Schoenheimer and R.J. Anderson, two men who would play vital roles in Bloch's life. Anderson, a professor at Yale, managed to get Bloch to the U.S. at the time his Swiss residential permit was to expire and he had little hope of getting a position elsewhere in Europe. Bloch had tried to find positions at universities in Germany, Poland and Holland, but the impending anti-Semitic laws of Hitler's Germany made it impossible.

Bloch describes much of his life and career as being a "matter of luck, circumstance and the fates being kind." Not being accepted to certain European universities prior to World War II, meeting his mentor Rudolf Schoenheimer, having good students and colleagues and a challenging environment all contributed to his good fortune, according to Bloch. "My work at Columbia (with Schoenheimer) particularly determined my career, because it exposed me to problems that were central and interesting."

He completed his doctorate in biochemistry at Columbia's College of Physicians and Surgeons in 1938 under Hans Clarke and then joined Schoenheimer's group. Under Schoenheimer, Bloch began to learn more about metabolic pathways by using radioactive isotopes, a pioneer technology in the 1930s. This technique played a crucial role in his work at Columbia and later at the University of Chicago and Harvard University.

Just as Schoenheimer had challenged him, Bloch

challenged his students. "Professors have an obligation to put graduate students onto problems that are not trivial," Bloch said. He believes part of the reason he always had good students—he credits them with much of his success—is because he allowed them to choose projects in which they were interested. He also gave them independence. "There's a natural selection process that goes with having good students. Word gets around that they have choices in challenging work. That attracts good students."

As a professor, "my greatest thrill was to talk to my graduate students in hopes of hearing interesting results," Bloch said. In fact, Bloch's group met faithfully every afternoon at 4 o'clock to "talk science," according to Fulco. Quite often those "scientific talks" covered ski conditions (Bloch used to be an avid downhill skier), music, baseball and the relative merits of Boston compared to Los Angeles, Fulco's hometown. Bloch's interest in his students was never limited to their scientific results. "He has always supported and been loyal to the people who worked with him. He knew what was going on in the lives of the people who passed through his lab and he kept up with us after we left. All his students have a warm feeling for him," Fulco said.

Bloch's talents as a professor are as important as his research skills, according to George Popjak, a biochemistry professor at UCLA, and John Law at the University of Arizona. In letters written to support Bloch's nomination for the Supelco AOCS Research Award, Popjak said Bloch's inspiration to young scientists contributed "enormously to the flowering of lipid biochemistry;" Law said Bloch's training was responsible for producing a large number of today's leaders in lipid research.

But who inspired Bloch? It certainly was not his high school chemistry teacher who was "incompetent and most uninspiring," Bloch said. As a young man, Bloch did not find natural products chemistry interesting. His early passion was metallurgy, but that interest faded at the hands of another poor instructor at the Technische Hochschule (Technical University) in Munich. "Then, I attended an organic chemistry lecture by Hans Fischer, whose manner and style were quite matter-of-fact. Nevertheless, that's how I was attracted to natural products chemistry."

Bloch remembers other chemists from those days in Munich, but one—Heinrich Wieland—was particularly memorable. In his writings, Bloch has called Wieland "a model, a great human being as well as a great scientist." Wieland, who had discovered and named pteridines (the pigments from butterflies), announced in a lecture in 1934 that he would be unable to continue his research. The reason: the government considered the collecting of butterflies cruel and "incompatible with the ethics of the National Socialist Party." Recalling the memory of that lecture, Bloch said he was struck by the man's courage in criticizing the government in a lecture hall filled with brown-shirted (Nazi) students.

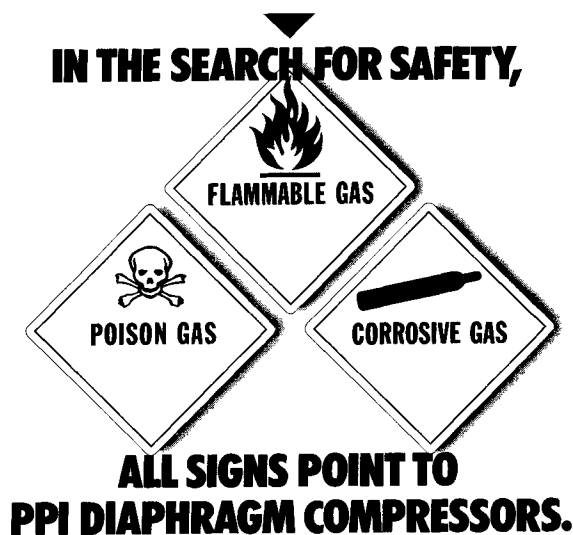
"Success comes from being fully committed to what you do," Bloch says. Along with the commitment, free choice is important. Choice is something his parents offered him. Bloch grew up in Neisse, Germany, at a time when parents often dictated a child's future. "But my

family did not insist that I follow a certain career; they left it up to me."

However, his parents did not allow him a choice in one case. Bloch's uncle offered young Konrad a canoe or a cello at the time of his bar mitzvah. His parents insisted that it be the cello. Music won over sports, and Bloch said it took him many years to reconcile himself to the cello. In retrospect, Bloch notes his parents' choice may have been for the best. After all, the last question in his interview with Clarke prior to entering graduate school was, "By the way, do you play a musical instrument?"

Choice, chance and environment all played roles in determining his choice of careers. But, Bloch adds, for anyone to become a scientist, "the question of temperament also is involved. Mathematicians may be fated to become mathematicians. Temperamentally, physical and theoretical chemists have deductive natures. There's a pen-and-pencil component to their work. These chemists have a hard time in biological fields. They are less intuitive, less likely to play things by ear."

Bloch's own approach is open and intuitive and quite respectful of the natural world. He describes nature as a superb designer and says cells are "infinitely more sophisticated than our present understanding of chemistry." He calls himself old-fashioned, in that he opposes



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the idea that "I can improve on nature. To do this kind of science requires humility and a respect for nature."

Last December, Bloch closed his lab at Harvard University, where he had taught and worked since 1954. He continues to write scientific articles and enjoys having more time to garden, cross-country ski and play the piano. When he looks back at his distinguished career, Bloch doesn't claim to have had many highly original ideas, but, "It was glorious entertainment, and I was paid to have fun."

Bloch's Supelco AOCS Research Award address, presented at the 1988 AOCS annual meeting in Phoenix in May, is published in this issue of JAOCS, beginning on page 1763.

President's Club and Honor Roll

The AOCS members listed here have qualified for the 1988-89 AOCS President's Club or Honor Roll. Members who recruit at least one new member qualify for the President's Club; those recruiting three or more qualify for the Honor Roll. President's Club and Honor Roll members receive recognition at AOCS annual meetings. Forms for use in recruiting new members are available from AOCS Headquarters, PO Box 3489, Champaign, IL 61821-0489.

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J.J. Castellanos	R. Rodriguez
B.H. Cho	M.T. Savinsky
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C.L.G. Dayton	R.L. Tucker
D.F. Decker	J.E. Williams
G.W. Demaree	J.R. Yaste
A.M. Ehrman	G-H. Yeoh
D.R. Erickson	C.A. Yong
	K.L. Zilch

New members

The following persons had applied for membership in the American Oil Chemists' Society through mid-September 1988. If an applicant was invited to join AOCS by a current member, that member's name appears in parentheses at the end of the listing. The new members' listing is published bimonthly.

Bob K. Arundale II, Oak Mill Inc., North Aurora, Illinois.

Franklin I. Auerbach, Vaport Inc., Portsmouth, Virginia

Fahim A. Benkhayal, University of Al-Fateh, Tripoli, Libya (El-Hamdy)

Suraj B. Bhangadia, Auburn University, Auburn, Alabama (Berner)

Cecil D. Bogy, Woodson-Tenent Laboratory Inc., North Little Rock, Arkansas (Peden)

Robert W. Brooks, Woodson-Tenent Laboratory Inc., Gainesville, Georgia

James D. Brown Sr., Environmental Services Co. Inc., Little Rock, Arkansas

Patrick C. Choy, University of Manitoba, Winnipeg, Manitoba, Canada

Yamaguchi Chozo, Itoh Oil Mfg. Co. Ltd., Yokkaichi, Mie, Japan

John J. Contario, Hill Top Biolabs Inc., Cincinnati, Ohio (Madison)

Roger L. Daniels, Capital City Products Co., Columbus, Ohio

Anabel Maravilla Gaytan, Grasas Vegetales S.A., Guadalajara, Jalisco, Mexico (Hastert)

William S. Gilman, United States Testing Co. Inc., Hoboken, New Jersey

S. Goldstein, Sheman Industries Ltd., Haifa, Israel

Fernando Gonzalez, EPA Ltd., Windsor, Ontario, Canada (Ackman)

Muhammad Javaid, Ahmed Chemicals (Pvt.) Ltd., Faisalabad, Punjab, Pakistan

Ju-nan Kao, Procter & Gamble, Cincinnati, Ohio (Peffly)

Noboru Kato, Hohnen Oil Co. Ltd., Tokyo, Japan (Komoda)

Edward A. Kruszynski, LaFrance Manufacturing Co., Maryland Heights, Missouri (Berner)

Hyeon-Sook Lim, Chonnam National University, Kwangju, Korea (Cho)

James B. McCormick, Acheson Colloids, Port Huron, Michigan

Donald G. McQuillen, Henkel Corp., Ambler, Pennsylvania

Armundo Quintero, Grasas S.A., Cali, Colombia

Magdalena Rodriguez, Caleb Brett USA Inc., Cincinnati, Ohio

Gaotama Setiawan, P.T. Sarpindo Soyabean Industri, Cilincing, Jakarta Utara, Indonesia (Yong)

Richard A. Sikorski, SVO Enterprises, Eastlake, Ohio

Charles B. Stunkard, Cagon Carbon Corp., Pittsburgh, Pennsylvania

Pritam S. Sukhija, Ohio Agricultural Research and Development Center, Wooster, Ohio (Palmquist)

Frank Ullrich, Institut für Lebensmittelchemie, München, West Germany

Charles D. Werner, Formula Corp., Seattle, Washington