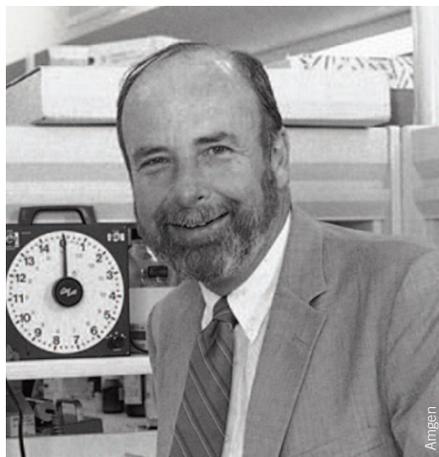


George Rathmann 1927–2012

Not for nothing was the founding father of Amgen known as the Golden Throat.



The success of any researcher turned entrepreneur depends, in large part, on their vision, leadership, intelligence, charisma and people skills. The 6-foot-5-inch frame of George Rathmann contained all of these qualities, except in greater abundance than most. Indeed, his magnetic personality was a key factor in setting the small Thousand Oaks, California–based startup Amgen on the road to becoming the world's largest biotech company.

It all could have been very different. Rathmann began premed studies at Northwestern University and applied to the medical school after his second year, hoping to transition into medical research. But the school denied him, and though he was accepted the next year, that first refusal turned Rathmann toward Princeton for postgraduate research in physical chemistry. There he fell in love with polymers and, weighing several options after graduation, decided on the fluorochemical division of polymers at 3M. He stayed 20 years.

After helping develop such 3M products as Scotchgard, Rathmann moved into management with a short stint at Litton Medical Systems, before joining Abbott in 1975 to build a new diagnostics division. Three years later, he'd established a highly profitable business together with Kirk Raab (later to become CEO of Genentech). But a fact-finding trip to the West Coast with colleague Ira Ringler (then head of Abbott Pharmaceuticals) was to change everything. A visit to two biotech startups, Cetus and Hybritech, alerted Rathmann to the rapid advances taking place in recombinant DNA and monoclonal antibody technology. He felt certain this was the future of medicine.

It would not be long before the scientific advisory board of Applied Molecular Genetics (or Amgen as it was later known)—Leroy Hood, Marvin Caruthers, Arnold Berk, John Carbon and Norman Davidson, among others—came calling. Frustrated in his efforts to incorporate recombinant technology at Abbott, Rathmann took the plunge. By 1980, he was at the helm of Amgen and was building an R&D team based on the principles and culture learned at 3M. Faced with an acute shortage of funding and armed with an offering memorandum, he visited his old employer. It is testament to the respect in which he was still held (and his abilities of persuasion) that the pharma invested \$5 million. This opened the door for other investors, allowing Amgen to amass a healthy \$19 million.

Three years later, with its voracious R&D program eating through the funds, Amgen's coffers were again running low. But this time investors were loathe to hand over any more money and Rathmann had to turn to the public markets—a difficult prospect as the offering window was closing. What's more, before he could even consider a floatation, he needed to settle a festering dispute; Abbott, as part of its initial investment, had first right to any Amgen program.

But the sides had begun to argue over the expediency of Abbott's reviews, which was preventing Amgen from finding other partners, and the conflict seemed destined for court. Rathmann set up a personal meeting in Palm Springs with Abbott CEO Bob Shellitom to allay the tensions. He left the meeting not only with the court cases dropped but also a new multimillion dollar research collaboration deal on diagnostics.

Company executives worked connections at Smith Barney and Dean Witter to mount the initial public offering. It was a difficult pitch, but the one thing Amgen had going for it, Rathmann later recalled, was that it had spent the lion's share of its initial \$19-million round, and thus the banks assumed they "must have done something with it!" The offering came off in 1983, raising \$42 million, the windfall for biotech stocks slamming shut behind it.

Again, Rathmann and his team ploughed the money into R&D—a wide-ranging program that included chicken growth hormone, interferons, bacterial naphthalene dioxygenase for use in dye production and toluene monooxygenase for bioremediation. Company scientists were also in hot pursuit of erythropoietin (EPO). Amgen wasn't alone in the chase, but it had three things going for it: a plentiful supply of Gene Goldwasser's purified EPO, access to Lee Hood's Sequinator technology and Amgen employee Fu-Kuen Lin, whose team would end up cloning the gene (*Proc. Natl. Acad. Sci. USA* **82**, 7580–7584, 1985) and filing the first EPO patent in December 1983. With patents in place, Amgen now had to turn the gene into a drug.

Taking EPO to market as Epogen took another six years. This time Rathmann defrayed development costs by selling Epogen rights to Kirin Brewery for all indications in Japan and China and to Johnson & Johnson everywhere else, except for the key indications of dialysis and diagnostics in the US. Following registration in 1989, these deals certainly took billions of future dollars off Amgen's table, but Epogen ushered in a succession of drug approvals that would push Amgen's market cap to more than \$100 billion.

Rathmann stepped down as CEO in 1988 and left the board in 1990. He ran ICOS from 1990 to 2000; the company eventually produced the blockbuster erectile dysfunction drug Cialis and was bought by partner Eli Lilly for about \$2.1 billion in 2006. He also served as CEO and chairman of Hyseq. But his contributions as the leader of Amgen are what he is most widely acknowledged for. Amgen's success and flagship products have gone hand in hand with the biotech industry's success. And the team that Rathmann created has served as the crucible for many other ventures.

The biotech industry has lost one of its pioneers. But it has also lost a delightful, witty and charming individual who touched many lives and careers. It was no surprise then that his memorial service overflowed with people from all walks of life. **15**

Nature Biotechnology acknowledges the Regional Oral History Office in The Bancroft Library at University of California, Berkeley, for insights in drafting this article.