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Notable chemists who should have won the Nobel

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Personality, politics, death, and bad luck explain why the prize eluded these chemistry pioneers

By *Stu Borman*

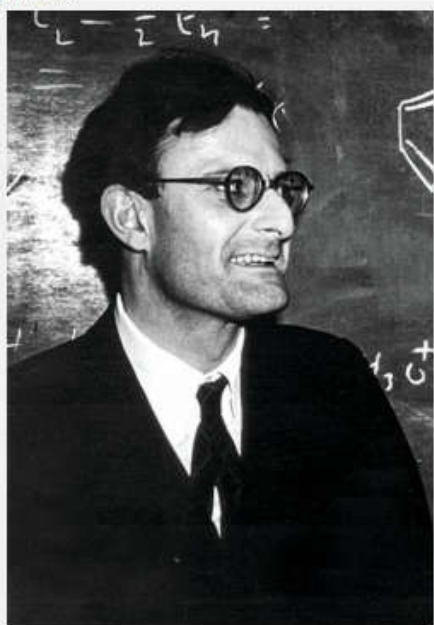
Looking back over the 115-year history of the **Nobel Prize in Chemistry**, there are some notable oversights—chemists who made important breakthroughs but never won the prize. Rules and restrictions in Alfred Nobel's will, which established the prize's guidelines, along with personal conflicts, premature death, and simple bad luck have made awarding the Nobel an imperfect and controversial process over the years.



Last month, at a Division of the History of Chemistry session at the American Chemical Society national meeting in San Diego, speakers told 10 stories about chemists who should have won the prize but didn't and why some researchers have turned out to be notable Nobel Prize losers. Here are five of those stories.

Michael Dewar

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Michael Dewar
Credit: Courtesy of Jeffrey Seeman

Dewar, who was a chemistry professor at the University of Texas, Austin, made major contributions to the development of semiempirical theory, in which chemists combine experimental data and theoretical calculations to estimate molecular properties and behavior that often aren't easily accessible with theory alone. Developed between the 1950s and 1980s, Dewar's semiempirical methods still garner 400 to 500 citations per year today and "were well worthy of a Nobel Prize," said **Eamonn F. Healy** of St. Edward's University.

Semiempirical theory makes compromises. It isn't as rigorous as ab initio theory, Healy said. That makes semiempirical methods a lot more practical than ab initio theory because they require much less computer time to give useful results. But ab initio theory is a complete solution to modeling problems, and when you use it, "you know

where you are going," Healy said—even though it is likely to be a long trip.

Despite the great utility of semiempirical theory, Dewar failed to earn a Nobel, and many think it was because of his combative personality and "acerbic tongue," Healy said.

In one notorious incident, "Michael stood up in a public forum where a prominent theoretician was speaking and called him 'a disgrace to science,'" Healy said. "He argued with everybody, really." But his long-standing conflicts with chemistry Nobel Prize winners William N. Lipscomb and Linus Pauling were key roadblocks on his path to the prize.

"Lipscomb made the very important criticism that the trouble with semiempirical theory is that when it's right, you're not quite sure why it's right, and when it's wrong, you're not quite sure why it's wrong," Healy said. "Michael would have answered that it didn't matter—just take the result and work with it." That response probably diminished the case for his work being Nobel caliber.

Pauling was a titan of theoretical chemistry, but Dewar disdained resonance theory, an electron delocalization concept Pauling had developed around 1930. Dewar felt it was misguided and had held back progress in the field of theoretical chemistry. In terms of winning a Nobel Prize, "that was a death knell right there, but Michael had many nails in his Nobel coffin at that stage," Healy said.

Dewar never got the prize and died in 1997. "There's a lesson here," Healy said. "Even if you think you're right, it's not always best to tell people so, at least not the way Michael did."