

The Question of Nepotism in the Award of Nobel Prizes: A Critique of the View of Hans Krebs

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Abstract—While reviewing his development as a scientist, in 1967, Hans Krebs traced his scientific geneology to the von Baeyer 'family'. Almost every other member of this scientific family became a Nobel laureate. Krebs was of the opinion that there was no nepotism in the selection of the Nobel awards. This paper presents evidence, based on the recently released census of Nobel nominees and nominators for the chemistry prize between 1901 and 1937, that the von Baeyer 'family' of scientists had in fact practised a sort of 'nomination-nepotism'.

Introduction

In 1967, the distinguished biochemist Hans Krebs presented an eloquent address at the inauguration of the Department of Biochemistry, University of Newcastle upon Tyne, UK. In that address, he described the geneology of the von Baeyer 'family' of scientists, of which he was fortunate enough to join as a member (1). According to Krebs, the 17 names (von Baeyer, Fischer, Buchner, Wieland, Willstätter, Windaus, Warburg, Diels, Lynen, Kuhn, Butenandt, Alder, Meyerhof, Theorell, Krebs, Ochoa and Lipmann—all of whom were Nobel laureates) included in that geneology chart could be 'associated with outstanding discoveries' made in the biomedical sciences during the past century.

Krebs also observed that 'seeing this kind of agglomeration of laureates within a scientific family, the sceptic might well suspect a bias in favour of

giving prizes to pupils of laureates. In short, does nepotism play a part in the awards? I hope everybody will agree that the answer to this question is an emphatic 'No'(1).

The present study attempts to show evidence contrary to what Krebs had addressed in 1967. The first two generations of the von Baeyer 'family' of scientists (hereafter mentioned as 'the family'), during their long association with the Nobel prize in chemistry, as nominators for the annual awards have, in fact, periodically opted to nominate one of their members of 'the family'.

I had previously reported on some historical aspects of the Nobel awards in Medicine (2,3) and Physics (4).

Data sources

The opening of the archives of the Nobel Foundation in 1974, with the released information on

documents (which are at least five decades old) about the nominators and nominees for the prizes in physics and chemistry has made it possible to delve critically into the Nobel award history. Based on this opening of the Nobel archives, the 1901 – 1937 Nobel population census of nominees and nominators has been published (5). Factual material for this study was mainly based on this source. The studies of Zuckerman (6), Crawford (7) and Kupperts et al (8) on Nobelists were also consulted.

Results

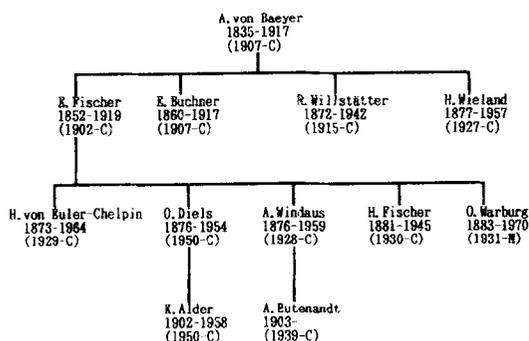


Figure Geneology of the von Baeyer 'Family' (The figure in parenthesis under each name refers to the year in which the Nobel award was given. C-chemistry; M-Medicine)

The figure shows the geneology of the von Baeyer 'family' of scientists, whose members received the Nobel prizes in the first five decades of this century. It has been modified from what Krebs (1) had provided earlier. The names of Hans Fischer and Hans von Euler-Chelpin were also added to the three names (O. Diels, A. Windaus and O. Warburg) presented by Krebs, as pupils of Emil Fischer. All members of this geneology were awarded the chemistry Nobel prizes between 1902 and 1950, with the exception of Warburg, who received the Nobel prize in medicine in 1931. The research contributions for which the 'family' members were awarded the Nobel prizes are shown in Table 1.

It is evident that von Baeyer had two generations of pupils. Emil Fischer and Eduard Buchner belonged to the earlier generation. Richard Willstätter and Heinrich Wieland were a decade or two younger than Fischer and Buchner. This is

more refelcted by the fact that Emil Fischer's five pupils (Diels, Warburg, Windaus, H. Fischer and von Euler-Chelpin) were in the same age group as that of Willstätter and Wieland. After the death of Emil Fischer in 1919, Willstätter and Wieland seem to have assumed the role of mentors to Emil Fischer's talented pupils.

von Baeyer and Emil Fischer

During the first 16 years of the Nobel awards, von Baeyer had nominated two of his pupils (E. Fischer and Willstätter) for the Nobel prize in chemistry. E. Fischer was von Baeyer's nominee for the 1901 prize, though that year J.H. Van't Hoff was awarded the prize. E. Fischer became the 1902 Nobel laureate in chemistry, though von Baeyer's nominee for that year was W. Ramsay, who subsequently won the chemistry Nobel prize in 1904.

von Baeyer himself became the chemistry Nobelist in 1905, after being nominated by ten scientists. One of the ten nominators, J. Volhard, nominated von Baeyer's other pupil, E. Buchner for the 1905 prize as well. Though E. Fischer had become the Nobel laureate before his teacher von Baeyer, for the 1905 chemistry award, he nominated H. Moissan (and did not nominate von Baeyer), who became the chemistry Nobelist in 1906.

Buchner

Buchner was awarded the 1907 Nobel prize in chemistry, after being nominated by von Euler-Chelpin and Carl Harries. As shown in geneology (Fig.), von Euler-Chelpin belonged to the 'family'. Buchner seems to have subsequently returned Harries's favor by nominating him for the chemistry prize in 1913 and 1914, though Harries was never made a Nobelist.

Willstätter

Willstätter won the 1915 Nobel prize in chemistry. There were 15 nominations for him, of which five (including that of P. Ehrlich, the 1908 Nobelist in Medicine) were disallowed. Among the 10 nominations which were considered for Willstätter's candidacy, two were from the 'family'; one from teacher von Baeyer and the other one from von Euler-Chelpin. In 1916, Willstätter nominated his colleague E. Fischer (already a Nobelist in chemistry) for the chemistry Nobel prize, though no award was given that year.

Table 1 Nobel Award winning research contributions of the von Baeyer 'family'

<i>Year of Nobel award</i>	<i>Laureate</i>	<i>Research contribution</i>
1902-C	Emil Fischer	research on sugar and purine synthesis
1905-C	A. von Baeyer	research on organic dyes and hydroaromatic compounds
1907-C	E. Buchner	biochemical research and discovery of cell-free fermentation
1915-C	R. Willstätter	research on plant pigments especially chlorophyll
1927-C	H. Wieland	investigations on the constitution of bile acids and related substances
1928-C	A. Windaus	research on the constitution of the sterols and their connection with the vitamins
1929-C	H. von Euler-Chelpin	investigation on the fermentation of sugar and fermentative enzymes
1930-C	Hans Fischer	studies on the structural composition of the coloring matter of blood and of leaves and for synthesis of hemin
1931-M	O. Warburg	discovery of the nature and mode of action of the respiratory enzyme
1939-C	A. Butenandt	research on sex hormones
1950-C	O. Diels	discovery and development of the diene synthesis

C - Chemistry; M - Medicine

For the 1925, 1926, 1927 and 1929 Nobel prizes in chemistry, Willstätter returned the favor of von Euler-Chelpin by repeatedly nominating him. Ultimately, von Euler-Chelpin was awarded the 1929 chemistry Nobel prize, with A. Harden. For the 1928 chemistry award, Willstätter's nominee was Adolphe Windaus (a student of E. Fischer, and another member of the 'family') who became the Nobel laureate that year. In 1934, Willstätter nominated Adolf Butenandt (a student of Windaus) for the chemistry Nobel prize. Butenandt was subsequently awarded the 1939 chemistry Nobel prize.

Hans Fischer

Hans Fischer received one nomination for the Nobel chemistry prize in 1928, when Windaus won the award. In 1929, he was nominated again by eight scientists of whom two (Wieland and Windaus) belonged to the 'family'. The 1929 chemistry Nobel prize was awarded jointly to A. Harden and H. von Euler-Chelpin. Hans Fischer became a chemistry Nobelist in 1930, on the

strength of another six nominations, of which one again belonged to Wieland.

Wieland, Windaus and Diels

By far the most persistent effort by the fellow members of the 'family' to make a Nobelist in chemistry seems to have been made for Otto Diels. Since the details of the Nobel nomination in chemistry have been released up to the year 1937, Table 2 provides the list of nominators for Diels between the years 1931 and 1937. Hans Fischer, Windaus and Wieland had nominated Diels repeatedly, with Fischer making his nomination for all seven years. In 1933 and 1934, Hans Fischer nominated Wieland as well for the chemistry Nobel prize (probably returning the favor Wieland had done for him in 1929 and 1930) though Wieland had already been made a Nobelist in 1927. Otto Diels became a Nobelist in 1950, sharing the chemistry award with his student Kurt Alder.

Discussion

All nominations do not lead to the ultimate selection in any prize situation. However, since the

Table 2 The nomination of O. Diels for the chemistry Nobel prize by fellow members of 'the family' between 1931 and 1937

<i>Year</i>	<i>Nominators for Diels</i>	<i>Winner</i>	<i>Comments</i>
1931	H. Fischer	C. Bosch & F. Bergius	Fischer's nomination was disallowed
1932	H. Fischer, A. Windaus & H. Wieland	I. Langmuir	
1933	H. Fischer, A. Windaus & H. Wieland	(no award)	Fischer nominated Wieland as well
1934	H. Fischer & A. Windaus	H.C. Urey	Fischer nominated Wieland as well
1935	H. Fischer & H. Wieland	I. Joliot-Curie & F. Joliot	
1936	H. Fischer & H. Wieland	P. Debye	
1937	H. Fischer, H. Wieland & A. Windaus	W.N. Haworth & P. Karrer	

nomination process is the first crucial step to the selection of a Nobel laureate, the prevalence of a sort of nepotism among scientists belonging to a particular 'family' or group should be viewed with some concern. The extent of this kind of 'nomination-nepotism' and how it would have affected the chances of other equally talented candidates among scientists competing for the Nobel honor, will be revealed when additional records in the Nobel archives become released for public scrutiny and research.

To be fair to the von Baeyer 'family' of scientists, one should accept that they made their significant contributions to the advances in biomedical sciences when the prevailing socio-political atmosphere in Germany was not conducive for trend-setting research. Due to Germany's involvement in the two World Wars (1914–18 and 1939–45) many members of the 'family' suffered serious personal losses. In World War I, Buchner died of a grenade wound in the trenches of the Romanian front, while serving as a major in the German army. Warburg served as an officer on the Russian front and was wounded in action. Emil Fischer lost two of his sons and killed himself in 1919 after becoming despondent over the personal and national tragedy. Similarly, during the World War II, Hans Fischer committed suicide in despair, after losing his laboratory to air-raids of the Allies. Diels also lost two of his sons and bombing raids demolished his home and the laboratory. Virulent anti-semitism in the 1930s also hindered the research output of Willstätter and Warburg.

The fact that the von Baeyer 'family' of scientists did make outstanding discoveries in biomed-

ical sciences which made them eligible as prospective Nobel laureates is accepted without reservation. Krebs himself had commented that, 'Nobel awards are to some measure a matter of good luck, because their number is too small to do justice to all who would merit an award' (1). What is revealed in this paper is that, this 'good luck' was reinforced to a considerable degree by the nomination practices adopted by the von Baeyer 'family' of scientists.

Conclusion

Though the von Baeyer 'family' of scientists contributed much to the development of biomedical sciences in the past century, evidence is shown that between 1901 and 1937, they also nominated their mentors, protégés, pupils and colleagues to the Nobel prize awards in chemistry. This finding is contrary to what Hans Krebs had presented in 1967 that nepotism does not play a part in the Nobel awards.

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