Carl Djerassi: 'father of the pill' and renaissance man

Born on 29 October 1923 in Vienna, Carl Djerassi died peacefully at home from complications of cancer on 30 January 2015. He was considered by many to be the 'father of the pill' because his 1951 synthesis of norethindrone (norethisterone) was the initial step in the development of oral contraceptives. He was also known as an art collector, novelist, playwright and philanthropist.

MOVING TO AMERICA

Having an Austrian mother and Bulgarian father, both medical doctors and Jewish, Djerassi fled Vienna in 1938 due to the Nazi *Anschluss,* and in December 1939 arrived in New York with his divorced mother aged 16 and almost penniless. A personal request to Eleanor Roosevelt for a higher education scholarship was successful: he graduated in chemistry within 3 years and the thesis for his doctoral degree at the University of Wisconsin in 1945 was on the synthesis of estrogens from androgens.

CAREER AS A CHEMIST

The industrial production of cortisone had become a priority with its use in the treatment of inflammatory diseases, particularly rheumatoid arthritis. In 1949, Djerassi was headhunted by Syntex, a small company that wanted to produce cortisone from diosgenin found in Mexican wild yam roots. He seized the opportunity to work in Mexico City on the synthesis of steroid hormones, which then was cutting-edge research. Having rapidly managed to synthesise not only cortisone but also estrone and estradiol, in 1951 his focus switched to the synthesis of oral progestogens by exploring the value of strophanthidin, a poison used for arrows in Africa. Progress was so swift that the application for the patent for the production of norethisterone, as an orally active formulation, was submitted in November 1951 and the related scientific article published in 1952.

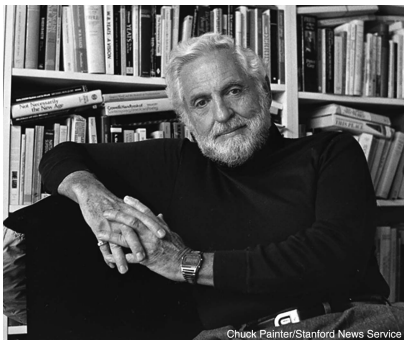
Djerassi's academic career began at Wayne State University in Detroit in January 1952, 3 months after his synthesis of norethisterone. Seven years later, he moved permanently to Stanford University in California, where he held concurrent senior appointments in industry. He was very active in international debates on the implications of contraceptive services for humanity: he used a computer analogy to differentiate between his role in the development of contraceptive methods (the 'hardware') and the socioeconomic, cultural, religious and political considerations for their actual utilisation (the 'software').

Norethisterone continues today to be the mainstay for the progestogen component of oral contraceptives and moreover, most other progestogens used for contraception resulted from minor chemical modifications. It is noteworthy that the research activities of Djerassi's original team were not specifically focused on oral contraception. This was being investigated simultaneously and independently in Massachusetts by the biologist Gregory Pincus in collaboration with John Rock, a Catholic gynaecologist, who justified the application of modern forms of naturally occurring sex hormones as merely prolonging the safe period – a variant of the rhythm method. These "big three males" have, at one time or another, each been perceived as being the 'father of the pill'. But Djerassi denied paternity: feeling that birth was more important than conception, he preferred to be known as the 'mother of the pill'. He went much further by crediting Ludwig Haberlandt, from Innsbruck in Austria, with the title of 'grandfather of the pill' for having demonstrated, in 1921, the value of progesterone for contraception, thereby attracting the pharmaceutical industry to contraceptive development long before World War II.

Djerassi was presented with the National Medal of Science by President Richard Nixon in 1973, despite being named on Nixon's blacklist of political enemies who opposed the war in Vietnam. There is a widespread feeling of regret that Djerassi did not receive a Nobel Prize whether for chemistry, medicine or even peace in recognition of his key role in averting the global population bomb. This situation reflects poorly on the Nobel Committees rather than on Djerassi's achievements, though the contraceptive movement could have been more proactive in the nomination process.

FROM PILL TO PLAYS

Djerassi felt strongly that scientists should not be confined to the narrow



limits of topics within their specialty. Having won much public respect for his scientific achievements, at the age of 62 years he diversified into creative writing. He made his name as an author by incorporating themes from his personal experience as a scientist into his fiction as exemplified by novels such as *Cantor's Dilemmas*, *The Bourbaki Gambit* and *Menachem's Seeds,* and plays such as *An Immaculate Misconception*, *Oxygen* and *Phallacy.*

PHILANTHROPY

Djerassi accumulated massive wealth through the exponential increase in the value of his stock in Syntex and became an avid art collector of modern art. As an expert on Paul Klee, Djerassi compiled two complementary sets of this artist's works that he donated to the Albertina in Vienna and the San Francisco Museum of Modern Art.

He built a 1200-acre cattle ranch with ocean views near San Francisco and named it SMIP: 'Steroids Made It Possible'. He initiated the Djerassi Resident Artists Program by converting the ranch into an artists' colony to host individuals on month-long residencies.

Undoubtedly, Carl Djerassi will be honoured by many initiatives, and indeed within days of his death, there was the somewhat idiosyncratic suggestion of raising funds from grateful American college students to erect a memorial monument on the National Mall in Washington DC, in an area with the proposed name of 'Djerassic Park'.

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