The Paternity of Aspirin

The Random Samples piece "Aspirin's paternity debated" (1 Oct., p. 39) describes the assertion by chemist Walter Sneader at Strathclyde University, Glasgow, that Arthur Eichengrün discovered aspirin (acetylsalicyclic acid), not Felix Hoffmann, as the archives of pharmaceutical company Bayer indicate (both men were chemists at Bayer). I uncovered information similar to Sneader's when I wrote an account of the clinical development of aspirin for *Collier's* magazine back in 1953 (*1*).

Although its antecedents can be traced back to ancient times, acetylsalicyclic acid was first prepared by Charles von Gerhardt (1853), and it sat on the shelf, unused and untested, for nearly 50 years. The Bayer account is that Hoffman found it relieved the pain of his arthritic father, and then Henrich Dreser, head of Bayer laboratories at the time, introduced it into clinical use.

The account I wrote was based on a memoir written by Eichengrün while he was in a Nazi concentration camp. This memoir, entitled "50 jahre aspirin," was published in a leading German pharmaceutical journal (*2*). I obtained a copy of this memoir from the American Institute of the History of Pharmacy, University of Wisconsin School of Pharmacy.

In Eichengrün's account, methylsalacyclic acid was known to be an effective pain-killer, but it had serious side effects. Acetylsalicyclic acid had sat on the shelf for years. At Eichengrün's suggestion, a relative who was a dentist tried using it for extractions and found it to be an effective pain-killer.

However, Dreser held that the efficacy of any drug depended on how well it conducted electricity. Acetylsalicylic acid failed this test, and he rejected it. Eichengrün then secretly gave the powder (there were no tablets then) to dentists and physicians to give to their patients and gathered overwhelming evidence of its effectiveness as a pain-killer. Eichengrün presented his clinical data to Bayer directors, who then authorized the manufacture and sale of acetylsalicyclic acid despite Dreser's efficacy theory and contract. That contract required any product developed in his laboratories to be credited to him—and in the medical literature Dreser got the credit.

Eichengrün's account ends, "I believe that by the creation of aspirin I have done a great favor for humanity without any

personal profit." Of Dreser, he wrote, "It is hard not to be sarcastic," a comment deleted by *Collier's*.

Obviously Eichengrün did not discover acetylsalicylic acid, but his memoir recounts how aspirin was introduced into clinical practice. It is never mentioned by Bayer. I had no denials or complaints from Bayer when my article was published, and I received a "thank you" letter from a surviving Eichengrün relative in England.

Harry Henderson
Post Office Box 69, Croton on Hudson, NY 10520, USA

References

1. H. Henderson, *Collier's* **132**, 112 (27 November 1953).
2. A. Eichengrün, *Die Pharm.* **4**, 582 (1949).

Fear of Biotechnology: Hysteria or Due Caution?

The special section about agricultural biotechnology in the 16 July issue ("Plant biotechnology: Food and feed," p. 367) seemed to imply that this technology is God's gift to mankind, and that those who believe otherwise are hysterical (such as some of the European countries). But caution is not hysteria.

It is well established that host-pathogen/pest interactions follow a model of a coevolutionary "arms race" (*1*). That fact is absent from Roger N. Beachy's Editorial (p. 335) and appears to be so elsewhere in the section. The scale of problems that this kind of arms race may present us with is well illustrated by the tale of antibiotics. When penicillin was found, it seemed that we were on the verge of eradicating infectious diseases. Now, half a century later, we have a host of different antibiotics, yet we are at risk of loosing the arms race to multiresistant bacteria. Not to note such experiences or to acknowledge that the arms race will not be a problem in biotechnology systems seems one-sided.

One of the biotechnological strategies being pursued is the introduction into crop plants of genes encoding insecticides. One example was the introduction of *Bacillus thuringinsis* toxin into cotton plants, a strategy also referred to in Beachy's Editorial. The logic was that because resistance to the toxin is likely to be a recessive trait, dilution of this trait into the population of pests not feeding on the modified crop would at least significantly delay the development of resistance. What appeared to be the case, when the larvae of the pink bollworm moth were fed on the modified cotton plants, was that their development was delayed (*2*). Consequently, the adult moths were likely to appear later than they would normally, and therefore predominantly mate with one another, rather than with the diluent population, thus causing resistance to arise early rather than late or not at all (*3*).

If we respect the independence of nations, each should be free to make its own choice. Thus, if the United States decides in favor of genetically modified crops, they should be free to do so. Likewise, if Africa decides to raise modified crops to fight starvation, then that's their choice. However, Europe should similarly be allowed to decide.

We are living in a time when the public trust in science and scientists is at its lowest (*4*). A major reason for this regrettable turn of events is the commercialization of science (*4*). We do nothing to better this situation by allowing prestige and money to drive decisions rather than true insight and a striving toward a better future for this planet and the myriads of diverse creatures living on it, including our own kind.

Jørn Koch
Department of Cytogenetics, Danish Cancer Society, Tage Hansend Gade 2, DK-8000 Aarhus C, Denmark

References

1. R. Dawkins and J. R. Krebs, *Proc. R. Soc. London Ser. B* **205**, 489 (1989).
2. Y.-B. Liu *et al.*, *Nature* **400**, 519 (1999).
3. M. J. Crawley, *Nature* **400**, 501 (1999).
4. B. Haerlin and D. Parr, *Nature* **400**, 499 (1999).

CORRECTIONS AND CLARIFICATIONS

In the Perspective "Computation without current" by Charles G. Smith (9 Apr., p. 274), the second-to-last full sentence in the first column should have read, in part, "the current device only works at 0.1 K (or –273.05 °C)."

In the 27 August This Week in *Science* item "A global analysis reveals nearby effects" (p. 1326), author Fiorenza Micheli was incorrectly identified as "he."

In the News Focus article "Biological invaders sweep in" by Martin Enserink ("Biological invaders," 17 Sept., p. 1834), the caption to the image on page 1836 should have read that yellow star thistles are poisonous to horses, not cattle.

A News article by Dan Ferber about postdoctoral associations ("Getting to the front of the bus," 3 Sept, p. 1514) that cites a new policy at Johns Hopkins University limiting the length of service by postdocs to 6 years misrepresents its intent. The policy does not require the university to hire postdocs as permanent employees after that time. Rather, it holds that the status of a postdoc is a temporary one, lasting a maximum of 6 years, and that individuals are expected to assume another position after that time.