

## EDITOR'S CORNER

### Dr. Howard Adler and Oxyrase

Readers of the *Journal* no doubt have come across many papers in this *Journal* in relation to the importance of Oxyrase in applied microbiology. We have published numerous papers on the stimulative effects of Oxyrase on the growth of facultative anaerobic pathogens for more rapid detections of these organisms from food and laboratory systems. We have also published papers on the effect of Oxyrase on the stimulative effects on starter cultures which reduce the fermentation time of many food processes. Yet another area was on the stimulatory effects of Oxyrase on starter cultures in the control of food pathogens during fermentation. Many other uses of Oxyrase can be explored to keep liquids and solids in an anaerobic condition either to encourage anaerobes and facultative anaerobes to grow or to suppress the growth of aerobes, or to keep liquid and solid materials in an anaerobic or microaerophilic conditions for different applications.

Thus it is with considerable sadness that I inform readers of the recent death of Dr. Howard Adler. A moving tribute to Dr. Adler was published in *ASM News*, June 1998 issue pp. 354-355 written by Dr. Alvin M. Weinberg. Here I would like to use part of Dr. Weinberg's "In Memoriam: Howard I. Adler" as a tribute to Dr. Adler's work and especially on the story of the development of Oxyrase and its applications. I have interacted with Dr. Adler many times in the past several years and if ever there was a gentleman Dr. Adler exemplified that characteristic to the maximum. He was intelligent, sensitive, soft spoken, friendly, and perceptive.

Here is the story of Oxyrase:

"Microbial genetics lost a major figure when Howard I. Adler died of pancreatic cancer on March 12, 1998, at the age of 66. His career, played out almost entirely at the Oak Ridge National Laboratory, was masked by highly original discoveries in radiation genetics of microorganisms, the physiology of anaerobic bacteria, and the effects of oxygen on microorganisms. Although Adler regarded himself as a radiation microbiologist — following the tradition established by the first director of the ORAL Biology Division, Alexander Hollaender — his two major discoveries, mini-cells and the oxygen-getting enzyme system Oxyrase have had important influence on microbiology generally.

Adler was a gifted, meticulous experimenter. Although most of his career was concerned with radiation biology, perhaps his most important work, Oxyrase, has already influenced many processes and techniques outside of radiation biology.

The Oxyrase story began around 1980 when Adler, in collaboration with Weldon Crow, observed that sterile cytoplasmic membrane fragments obtained from certain bacteria which he was using in radiobiological experiments, might be

useful in removing oxygen from liquids. Adler and his associates quickly established that a large number of anaerobic species grew rapidly and to high concentrations in both solid and liquid media made anaerobic by the sterile membrane fragments. Adler and Crow obtained a U.S. patent covering the invention and its application.

In 1987, Adler, with Crow and his former student James Copeland, formed a company, Oxyrase Inc., in order to promote the use of these membrane fragments in anaerobic microbiology. Adler served as Vice President for Research of Oxyrase until his death; and even during his dreadful illness, he continued to consult with the company.

The full importance of Oxyrase is just beginning to be manifest. Over 1,000 microbiologists use Oxyrase now; and new applications for this oxygen getter are being discovered in situations where biological reagents must be stabilized against attack by oxygen. Fortunately, Adler lived long enough to witness and appreciate that his brain-child finally became the basis for an important biological business venture.

Adler's quiet, sincere manner endeared him to all who know him. Whether it was helping an elderly friend who had suffered a stroke, or consulting on a construction job undertaken by a theoretically-minded colleague, Adler could always be counted upon to assume responsibilities that went beyond simple friendship. In short, he was a superior person whose memory will always enrich the lives of his family, his friends, and his colleagues."

I am sure many more papers on Oxyrase will appear in this *Journal* and we will remember Dr. Howard Adler's discovery and impact on applied microbiology in years to come.

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Editor