

Ladies and gentlemen tonight marks a significant milestone in the growth of our organization. Thanks to the philanthropy of Dr. Kurt M. Dubowski, IACT is the recipient of an endowment to fund in perpetuity an award memorializing his esteemed friend and colleague Professor Robert F. Borkenstein. This award will recognize individuals who have made outstanding career-long contributions consistent with the ideals and achievements of the University of Oklahoma George Lynn Cross Distinguished Professor of Medicine Dr. Kurt M. Dubowski. These contributions will be in the area of chemical testing in relation to transportation or workplace safety. As the highest peer recognition the International Association for Chemical Testing will bestow upon one of its members, it will be conferred upon individuals not as annual award but only when one of its members contributions to our field have been recognized nationally or internationally. Tonight we are here to celebrate an individual earning this recognition and the first presentation of the IACT Kurt M. Dubowski award.

### **Overview & Summary**

Natalie A. Essary, in a long, varied, and productive professional career, has amassed a panoply of accomplishments and contributions which are truly in keeping with the ideal and examples of Professor Kurt M. Dubowski and his career-long friend and colleague Professor Robert F. Borkenstein. This year (2003) is the 50<sup>th</sup> year of Natalie's continuous professional association and partnership with Dr. Dubowski, in Iowa, Florida, and Oklahoma.

Natalie is a proud native of Centerville, Iowa, and received her academic education in chemistry and other sciences at Iowa State University. After completing a medical technology training program in Iowa, she began working with Dr. Kurt Dubowski in 1953 at Iowa Methodist Hospital and the Polk County Coroner's Office, Des Moines, IA as the lead clinical chemistry and toxicology technologist.

Her career, like his, initially involved parallel activities in clinical science and forensic science, and during the past 35 years was entirely in forensic science. Based successively at Des Moines, IA, Gainesville, FL, and Oklahoma City, OK, they formed a professional partnership which resulted in nationally and internationally recognized world-class contributions in Laboratory Medicine and the Forensic Sciences, especially in clinical chemistry and toxicology and in forensic chemistry and toxicology.

About one-half of their total professional efforts over the years were in the subject areas of alcohol toxicology and alcohol-and-drug-impaired driving. They were especially active in and recognized for their contribution to the pharmacology, pharmacokinetics and toxicology of ethanol and the development, evaluation, and application of blood and breath-alcohol analysis in all forensic contexts, especially in medicolegal death investigations and in traffic law enforcement, and in development and application of quality assurance practices in clinical chemistry and toxicology.

They carried out their work in tertiary care hospitals, academic medical

centers, county coroner offices, regional and statewide medical examiner operations, and in local and statewide forensic laboratory and major research-university environments. Their joint academic careers spanned 45 years and produced, i.a., more than 175 peer-reviewed scientific publications appearing in everything from the Journal of the American Medical Association and the New England Journal of Medicine to U. S. Government-sponsored monographs published by the Government Printing Office.

Natalie held a series of professional positions in three locations:

1. Lead Chemistry and Toxicologist Technologist 1953-58  
Iowa Methodist Hospital & Raymond Blank Memorial Hospital  
for Children  
Des Moines, IA
2. Chief Technologist, Clinical Laboratories 1958-61  
University of Florida Teaching Hospital & Clinics  
Gainesville, FL
3. Chief Technologist 1961-65  
Clinical Chemistry & Toxicology Laboratories,  
University of Oklahoma Hospitals 1961-65;  
  
Chief Research Technologist, & Research Assistant  
Department of Medicine and Toxicology and  
Forensic Science Laboratories 1965-2001  
University of Oklahoma Health Sciences Center,  
Oklahoma City

During her career, Natalie participated in and greatly contributed to a number of pioneering clinical and forensic science landmarks –

- as a member of the third medical team in history to perform

successful open-heart surgery in humans

- in the development and evaluation of a new o-toluidine method for body fluid glucose measurement, which became the most widely used clinical chemistry test for the decade 1961-1971
- in the organization and initial operation of a statewide medical examiner system (the Oklahoma State Medical Examiner's office)
- in human subject studies on cannabis – as a member of the fourth research team nationally to be authorized to conduct human subject studies with marijuana
- in pioneering studies on human alcohol pharmacokinetics, including the first documentation that alcohol pharmacokinetics in women differs from that in men.

## **Accomplishments, Contributions, and Milestones**

Over Natalie's 50-year professional career, she made hundreds of important and significant accomplishments and attributions. The following merely exemplify them.

- She was involved with and contributed to the development, refinement and validation of the Dubowski gas chromatographic headspace analysis method for ethanol in biological fluids, the acknowledged national reference method for more than 3 decades.
  
- she helped to establish and then provided reference laboratory services for about 25 years to the leading nationwide program for performance evaluation of whole-blood and serum ethanol analysis and serum ethanol analysis, the Whole Blood and Serum Volatiles Survey programs, operated by the American Association for Clinical Chemistry and the College of American Pathologists, for about 25 years.
  
- she provided blood/serum-alcohol reference laboratory and supervisory services for the American Association Clinical Chemistry / College of American Pathologists Alcohol Survey Programs, for the states of Florida, California, Oklahoma, Pennsylvania, Wisconsin and for the Oklahoma State Bureau of Investigation, Oklahoma City Police Forensic Laboratory, and Tulsa Police Department Forensic Laboratory, for more than 25 years.

- she provided and supervised national reference laboratory services for the U S National Bureau of Standards and the US Public Health Services Centers for Disease Control, in the first nonfederal laboratory to do so.
  
- she is the coauthor of 21 Dubowski and Essary scientific articles in the peer-reviewed literature (1964-99), and was a full scientific partner in each of the underlying research projects.
  
- she was importantly involved with the establishment and initial operation of the US Public Health Services System of Poison Control Centers (1955-57), and with the Iowa Poison Information Center and the Florida Poison Information Center. [Dr. Dubowski was one of seven physicians and scientists convened by USPHS to develop this concept in 1954 and was director of both the Iowa and Florida Centers.]
  
- she was a key member of the research team headed by Dr. Dubowski, which for more than 35 years conducted toxicology and forensic science research externally supported, in excess of \$25 million, by the National Institutes of Health, National Institute of Justice, US Department of Transportation, Insurance Institute for Highway Safety and other sources. That research included studies on effects of marihuana on human subjects; numerous studies on alcohol pharmacokinetics, pharmacology, and toxicology; the automation of toxicological

analyses for barbiturates and other drugs in biological fluids; studies on breath-alcohol analysis and respiratory physiology and respiratory parameters, specificity of breath-alcohol analyses; studies on carbon monoxide and its postmortem measurement, etc.

- her personal research includes extensive studies on the scientific basis and performance of breath-alcohol simulators, compressed (dry-gas) vapor-alcohol control materials, human respiratory parameters, duplicate breath sampling, specificity of breath-alcohol analyzers, alcohol pharmacokinetics, remote breath-alcohol sampling and analysis, quality assurance in forensic toxicology, breath and blood-alcohol measurements, gas chromatographic headspace analysis for volatile organic substances, studies on the blood/breath alcohol relationship, the pharmacokinetics of cannabinoids.

### **Teaching and Mentoring Accomplishments**

During her entire career, Natalie has been a highly effective and admired teacher, instructor, and mentor to a cumulative total of thousands of students and professionals. These activities included direct personal teaching and mentoring, and career-long support services for Dr. Dubowski's teaching and mentoring activities 1953-2003. Those who have benefited from her contribution include

- medical technology students and medical technologists
- medical students, resident physicians in Medicine, Pathology, Forensic Pathology, and other medical specialties
- graduate and postdoctoral students in Biochemistry, Toxicology and other disciplines - including those for whom Dr. Dubowski was the major faculty advisor
- several generations of police officers, state troopers, forensic scientists at local, state and federal levels, prosecutors, judges.

Natalie's most recent category of mentoring is first and second year medical students. In recognition of her life and work accomplishments and experiences, Natalie was invited at the inception of the new **Senior Mentor Program** at the **University of Oklahoma College of Medicine** in 1997 to serve as an official Senior Mentor to first and second year medical students, and became a charter member of that select group.

### **Leadership Qualities**

Ever since her girl scout days in Iowa, collecting scarce materials for WW II use, Natalie has been a natural leader and innovator in her personal and professional life. She was always officially in charge of Dr. Dubowski's technical workforce in each of the three locations in which they worked together. That entailed recruiting, supervising, training, managing, and mentoring up to 100 diverse persons, including for about 12 years 24 hours/7 days weekly/365 days per year clinical laboratory operations.



At the University of Florida and the University of Oklahoma, she not only held official supervisory and management positions, but was also elected and appointed to nearly 100 staff leadership positions. That includes the highest peer-elected position as **Chairman of the OUHSC Staff Senate (1984-85)** - representing more than 3,000 non-faculty University staff and employees at the OU Health Sciences Center to the University Administration. She was so effective in that office that upon completion of her term as Chairman, she was asked to remain on the Staff Senate as a counselor and adviser for the remainder of her University service.

Natalie was also a most effective and welcome unofficial liaison to the Oklahoma Legislature during Dr. Dubowski's 30+ years service as State Director of Tests for Alcohol and Drug Influence and Chairman of the Board of Tests for Alcohol and Drug Influence, Oklahoma's independent State agency regulating and supporting the State's program of alcohol and drug testing in traffic law enforcement. She worked behind the scenes with Executive and Legislative staffs of the Oklahoma Senate and House of Representatives and the multiple Legislative councils and committees, especially in the annual appropriations process.

### **Awards and Honors**

Among the many professional recognitions received by Natalie during her career, two stand out as especially unique and well-deserved.

In 1988, Natalie became the very first University of Oklahoma staff member on any of OU's three campuses (among more than 6,000 total staff) to receive the newly created University of **Oklahoma Regents' Award for Superior Staff**. That award is the equivalent of a distinguished professorship conferred on OU faculty members, and only one such award is given each year on the OU Norman, Oklahoma City, and Tulsa campuses to the most outstanding staff member selected by the OU Regents.

In 1997, Natalie received a unique commendation from the Oklahoma State Bureau of Investigation acknowledging her support for the establishment of and forensic toxicology services for, the Oklahoma State Medical Examiner System, outstanding service to the Board of Tests for Alcohol and Drug Influence, quality assurance for alcohol analysis at the State Bureau of Investigation, and the Oklahoma City and Tulsa Police Departments and co-authorship with Dr. Dubowski of a series of articles in forensic science which have become recognized standards.

### **Personal Aspects**

In addition to and parallel with her outstanding professional career, Natalie has also managed a full and exemplary personal and family life. She is now the matriarch of a large and productive family, which encompasses her husband Doug, daughter Pam, sons Irvin and David, eight grandchildren, three great-grandchildren and two very friendly and lovable beagle dogs (her "babies"). Natalie and her family are true practicing patriots - her

husband is a veteran of U.S. Army Aviation, one son served as a submariner in the US Navy, and a grandson is now serving overseas as a paratrooper in the US Army airborne infantry. The daughter of an electrical engineer who taught her how to climb utility poles, she expertly uses every kind of hand and power tool. Despite limited free time, Natalie also successfully pursues many avocations and active hobbies - photography, quilt making, many kinds of artistic work including decorative painting, providing beautiful and practical handmade gifts of all kinds for family and friends, and keeping in touch with all of her hometown Centerville, Iowa high school classmates.

Ladies and Gentlemen, fellow IACT members and invited guests, it is my distinct honor and great pleasure to present to you the first recipient of the IACT Kurt M. Dubowski Award, Natalie A. Essary.