

**RESEARCH and MANAGEMENT BACKGROUND of  
GLENN W. BEDELL, PH.D.**

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- 1965-1973 **Ph.D. Degree Student in Biology and Post-Doctoral Teaching Assistant**, (Plant and Microbial Physiology). University of Illinois, Champaign-Urbana, IL. Advisors – Govindjee and Eugene Rabinowitch; Thesis - *Photophosphorylation in Intact Algae* (during Photosynthesis). *Pioneered the use of 100% Deuterated-Algae to show the new phenomenon of the disappearance of the Emerson Enhancement Effect and the reduction in the Quantum Yield of Photosynthesis under these conditions.* [*Science*, **152**, (1966), 1383-1384]. *Pioneered use of Luciferin-Luciferase (Firefly) Enzyme for whole-cell ATP Measurements for Photophosphorylation.*
- 1977-1980 **NIH Post-Doctoral Fellowship**, University of Iowa, Iowa City, School of Medicine, Advisor - David Soll, Molecular Basis of Phenotypic Expression *Pioneered the use of Candida albicans as a phenotypic expression model.*
- 1980-1986 **Assistant Professor of Biology**, taught medical microbiology and both plant and microbial physiology at the University of Nevada, Reno. Received the Junior Faculty Research Award – *Pioneered that metals modulate phenotypic expression, and discovered siderophore production in Candida albicans.* Result! Needed much more knowledge of biological-metal relationships in order to proceed with research. Started an outdoor, commercial, algal growth facility (for Spirulina platensis) at Wabuska, NV, that used geothermal waters for temperature maintenance. Several publications in scientific and other journals resulted. Managed grants and graduate students. *Pioneered the use of geothermal waters for the production of algal biomass.*
- 1985-1986 **GS-13-Research Biologist**, U.S. Bureau of Mines, Reno Research Center, Hydrometallurgy Section, Supervisor - Judith Eisele. In charge of a project to recover strategic metals from low-grade ores for the U.S. Strategic Metal Reserve. Saw that the Bureau of Mines was going to be closed by the U.S. Government, so I moved to New Mexico State University. Also, the EPA was making the use of living organisms for metal extraction almost impossible. [*Required security clearance*].
- 1986-1988 **Senior Research Associate and Consultant to Bio-Recovery Systems, Inc.**, New Mexico State University (NMSU), Las Cruces. In charge of screening microorganisms for adsorptive capabilities; mostly algae and fungi. Managed assistants. Supervisor: Chemistry Department Chair and President of Bio-Recovery Systems, Inc., Dennis Darnall (deceased). Publications, including CRC Press, 1990, Biosorption of Heavy Metals, B.

Volesky, Ed., two chapters; one on biosorption and one on growing algal biomass outdoors.

- 1988-1989 **Senior Research Scientist**, Bio-Recovery Systems, Inc., Las Cruces, in charge of screening and growing microorganisms that could be killed and used for the *adsorption* of heavy metals. Patented a metal ion detector. Managed assistants. Served under Dr. Dennis Darnall.
- 1990-1992 **College Associate Professor and Senior Research Specialist**, New Mexico State University, Department of Chemistry and Biochemistry. Taught Toxicology and Directed and Conducted Research on cleaning up TNT waste at Los Alamos National Laboratory. Co-winner (with Paul Jackson and Wolfgang Mueller) of the **Scientific Paper of the Year (1993)** for the DOE's Wastemanagement Education Research Consortium (WERC) by co-discovering method for biologically digesting all TNT, and its derivatives, found in Los Alamos soils by using plants. [Required security clearance to use the Los Alamos N.L. facilities while using <sup>14</sup>C-labelled TNT during the research]. Managed graduate students. *Was one of the pioneers of the use of higher plants for the remediation of toxic wastes in soils.*
- 1992-1994 **Senior Research Scientist** for Intelligent Monitoring Systems, Inc., Las Cruces, NM. Invented and patented (two patents) a detector for microorganisms found in waters. *Pioneered the discovery that the magnetite, located in New Mexico, and in most of the southern Southwestern U.S., is biogenic and contains ~12% metal-element substitutions. Of that 12%, ~0.006% are noble metals (~2 troy ounces per tonne).* Directed and managed research projects on metals recovery. Was a finalist to New Mexico's **Inventor of the Year Award, 1997**. Metals research led to the formation of a new company, Global Advanced Technologies, whose focus was to recover metals from mine-tailings.
- 1994-1998 **Senior Research Scientist**, for Global Advanced Technologies, Inc., bought out by K-2 Technologies, LLC, dba NMS Technologies, LLC in association with NMSU's Chemistry and Engineering Departments. Managed assistants and research budget. Since it was discovered that the soil (tailings-pile) that K-2 Technologies was interested in did not contain enough precious-metal values, K-2 decided to close the company and end their association with NMSU.
- 1997-1999 **Graduate Adjunct Professor of Chemistry and Biochemistry** for NMSU, advised and directed graduate student research for one more year.
- 1998-pres Research and development focus on the PIMIRS, including further development of the method for their mass-cell tissue-culture. Can now harvest 50% (20-25 lbs/500 gal.) cells per day and crystallize ~50 metallic-

ionic elements into pure metal crystals. Managed both assistants and research budgets.

**PUBLICATIONS (Refereed):** 14, plus 8 invited articles and book chapters (some relating to pioneering research that gave rise to research efforts by others). **Several popular articles have been authored and published.**

**PATENTS:** 3 – 1987, 1996, and 1997.

**RECOGNITION for Metals and Biological-Chemistry Research:**

- 1990 - Two book chapters in, “**Biosorption of Heavy Metals**,” B. Volesky, Edit., CRC Press, Boca Raton, FL.
- 1993 - Runners-up for the New Mexico Entrepreneur Association’s “**Inventor of the Year Award**” for the disease-organism detector.
- 1993- New Mexico State University, Las Cruces: **Co-Recipient of the Outstanding Research Paper Award** for the 3<sup>rd</sup> Annual Waste-management Education Research Consortium (WERC) Program Technology Conference, sponsored by the U.S. Department of Energy.
- 1996- **Slovakian Metallurgy Medal for Outstanding Research in the Field**, from Technicka Univerzita V Kosiciach, (reportedly the oldest metallurgical institute in Europe; since 1762), Kocise, Slovakia.
- 1998- Listed in: **American Men & Women of Science, 20<sup>th</sup> Edition**, and in the **International Who’s Who of Professionals**.