

# Ralph A. Magnotti, Jr.

## Clinical Chemist, Biochemist, Teacher, Author, Inventor and Entrepreneur

---

### EXPERTISE

Clinical chemist experienced in the development of medical diagnostic assay kits from concept to launch.

**Specialties:** surface science, immunochemistry, reagent formulation, fluorescence, microparticles and rapid-test devices

### EDUCATION

**B.S., Biochemistry**, University of Pittsburgh, 1977; **Ph.D., Chemistry**, University of Cincinnati, 1985;

**DABCC** (Diplomate, American Board of Clinical Chemistry), 1996; AACC 2007 Clinical Chemist's Recognition Award

### WORK EXPERIENCE

**Scientist**, R&D Futures, IDEXX Laboratories, Inc., Westbrook, ME, 1998 – 2009

Developed rapid-test and automated chemistry/immunoassay reagents and platforms for veterinary diagnostics. Managed a team of four scientists which produced six dry-reagent chemistries. Diagnosed and rescued a crash of the flagship rapid assay product line. Produced quantitative video techniques to improve and troubleshoot rapid assay products. Created new renal (ClearGFR™) and thyroid (SNAP®-ispTSH) diagnostics. Created novel glass and polymer immunochemical media with tenfold enhanced diagnostic sensitivity. Created and produced SNAP®-Melamine, quickest concept-to-launch (7 months) of any IDEXX product. Provided company-wide technical support for the veterinary, water and dairy businesses.

**Lecturer**, University of Southern Maine, Portland, Maine, 2000 – 2007

Taught the Chemistry course: CHY 105, "Chemistry for the Health Sciences", including general, organic and biological chemistry as part of the core curriculum of the School of Nursing.

**Scientist**, Seradyn, Inc., Indianapolis, IN, 1997 - 1998

Developed immunoassay methods and reagents using time-resolved fluorescent and magnetic microparticles.

**Partner**, EQM Research, Inc., Cincinnati, OH, ([www.eqmresearch.com](http://www.eqmresearch.com)) 1987 – 2001

Produced plasma proteins: plasmin, lys-plasminogen, and  $\alpha_2$ -antiplasmin distributed by American Diagnostica (Stamford, CT). Created and produced the POC device: Test-mate™ Cholinesterase System for the measurement of pesticide and nerve gas exposure, FDA license 510(k): K961656. In its 2008 review (USACEHR 0801, p.21) the U.S. Army noted: "The Test-mate™ system represents the best commercially available field test kit for ChE activity."

**Chemistry Supervisor**, Cincinnati Health Department, Cincinnati, OH, 1994-1995

Initiated lead testing by atomic absorption and glycohemoglobin testing using the Abbott IMx. Supervised two technicians, performed automated chemistry tests, and reported laboratory results to the five Health Department clinics.

**Clinical Fellow**, Pathology & Laboratory Medicine, University of Cincinnati, 1992 - 1994

Reviewed many patient cases during hands-on training in clinical laboratory procedures and interpretation. Evaluated the usefulness of various markers for diabetes, including: fructosamine, glycohemoglobin, and POC blood glucose.

**Assistant Professor**, Nephrology & Hypertension, University of Cincinnati, 1986-1992

Supported investigation of new thrombolytic agents for glomerulonephritis, stroke and AMI. Established a renal profile for diabetes at Children's Hospital. and for testing for exposure to nephrotoxic pollutants near Superfund sites in Kentucky.

**NIH Fellow**, Hematology-Oncology, Tufts-New England Medical Center, Boston, MA, 1985-1986

Radiolabeled and characterized prothrombin produced by hepatoma cells in tissue culture in preparation for stable-isotope studies by <sup>13</sup>C-NMR. Created new amidinophenylalanine peptide anticoagulants by solid-phase peptide synthesis.

**Research Assistant**, Merrell Research Center, Cincinnati, OH, 1979-1980

Developed "suicide substrate" inhibitors designed by the Merrell group as antacid and neuroleptic drugs.

**Research Assistant**, University of Pittsburgh Department of Biochemistry, 1977-1979

Purified and characterized the skeletal muscle enzyme adenylate deaminase as part of an investigation of muscular dystrophy. Provided automated amino acid analysis as a core service to the Department of Biochemistry.

### PATENTS

Eberly JP, Magnotti RA. (1991) Multisource photometric device. **U.S. 5,073,029**

Magnotti RA. (2008) Detection of gadolinium chelates US application 20080085563

Magnotti RA, Panta GR. (2009) Detection of melamine WIPO application WO 2010/101777 A1

## PUBLICATIONS

- Magnotti RA. (1985) Role of allotropic and reactive center interactions in the mechanism of inhibition of plasma proteinase inhibitors. Ph.D. dissertation, University of Cincinnati.
- Magnotti RA, Halsall HB. (1986) Alpha-2-plasmin inhibitor comprises a single domain. *Biochem Biophys Res Comm* 139:1062-1070.
- Magnotti RA. (1987) Methyltrypsin: a novel probe of proteinase-inhibitor interactions. *Biochim Biophys Acta* 915:46-52.
- Magnotti RA, Eberly JP, Quarm DEA, McConnell RS. (1987) Measurement of acetylcholinesterase in erythrocytes in the field. *Clin Chem* 33:1731-1735.
- Magnotti RA. (1988) Indirect active-site titration of plasminogen activators. *Anal Biochem* 170:228-237.
- Magnotti RA, Dowling K, Eberly JP, McConnell RS. (1988) Field measurement of plasma and erythrocyte cholinesterases. *Clin Chim Acta* 176:315-332.
- Magnotti RA, Stephens GW, Rogers RK, Pesce AJ. (1989) Microplate measurement of urinary albumin and creatinine. *Clin Chem* 35:1371-1375.
- McConnell RS, Anton AFP, Magnotti RA. (1990) Crop duster aviation mechanics: high risk for pesticide poisoning. *Am J Publ Hlth* 80:1236-1239.
- McConnell RS, Anton FP, Magnotti RA. (1992) Hazards of closed pesticide mixing and loading systems. *Br J Industr Med* 49:615-619.
- Magnotti RA, Eberly JP, Khoury PR, Daniels SR, Drozda DJ, Turner AM, Dolan LM. (1992) Simultaneous assay of albumin, transferrin, IgG and  $\alpha_1$ -microglobulin as a profile of renal permselectivity using a new ELISA reader. *Clin Chem* 38:636-641.
- McConnell RS, Magnotti RA (1994) Screening for organophosphate insecticide exposure under primitive conditions. *Am J Publ Hlth* 84:479-481.
- Magnotti RA, Zaino J, McConnell RS. (1994) Pesticide-sensitive fish muscle cholinesterases. *Comp Biochem Physiol C* 108:187-194.
- Kimball TR, Daniels SR, Khoury PR, Magnotti RA, Turner AM, Dolan LM. (1994) Cardiovascular status in young patients with insulin-dependent diabetes mellitus. *Circulation* 90:357-361.
- Magnotti RA, Ghosn S. (1995) Microalbuminuria: Review of Methods. In: *Check-Sample Continuing Education Series*, American Society of Clinical Pathology Press, Chicago, IL.
- Magnotti RA, Eberly JP. (1996) Test-mate ChE: new simplified cholinesterase assay system. *Proceedings, 1996 Medical Defense Bioscience Review*, Vol. III, pp. 1192-1201.
- McConnell R, Pacheco F, Wahlberg K, Klein W, Malespin O, Magnotti R, Akerblom M, Murray D. (1999) Subclinical health effects of environmental pesticide contamination in a developing country: cholinesterase depression in children. *Environ Res* 81:87-91.
- Dorgan L, Magnotti R, Hou J, Engle T, Ruley K, Shull B. (1999) Methods to determine biotin-binding capacity of streptavidin-coated magnetic particles. *J Magnetism Magnetic Mat* 194:69-75
- Magnotti RA, Connell JL, Marietta PM. (2009) Automated colorimetric gadolinium assay for verification of clearance and estimation of glomerular filtration rate. *Clin Chim Acta* 399:59-63.

## POSTER PRESENTATIONS

- Heineman WR, Simone MJ, Magnotti RA, Kreishman GP. (1982) Development of Long Optical Path Length Thin Layer Spectroelectrochemical Cells. *Biophys J* 37:72a, M-AM-Po111.
- Magnotti RA, Wolfbeis OS, Jenkins SH, Champlin R, Hurtubise P, Ghosn S. (1994) Urinary albumin assay using a new fluorimetric dye, Albumin Blue 580. *Clin Chem* 40:997.
- Magnotti RA, Jenkins SH, First MR, Weiskittel PD, Ghosn S. (1995) Usefulness of serum fructosamine and glycoalbumin for monitoring glycemic control in diabetic patients. *Clin Chem* 41:S165.
- Magnotti RA, Jenkins SH, Ghosn S. (1995) New automated fluorimetric glycoalbumin test. *Clin Chem* 41:S148.
- Magnotti RA. (1995) Immunoturbidimetric assay of serum apo H. *Clin Chem* 41:S137.
- Magnotti RA, Dorgan L, Shull B. (1998) Specific activity and kinetics of streptavidin-coated magnetic microparticles. *Clin Chem* 44:A18
- Magnotti RA, Connell JL, Marietta PM. (2008) Automated colorimetric gadolinium assay. *AACC abstract* B-62.
- Panta G, Magnotti R, Tiwari S, Uygur B, Marietta P, Groat R. (2009) Development of a rapid method to detect melamine. *IDF World Dairy Summit*, Berlin, Germany