Roger C. Wiegand

39 York Rd.
Wayland, MA 01778
(508) 358-2563
rwiegand@yahoo.com

Summary:

Leader in the identification, development, and implementation of new biotechnologies. Biotechnologist with broad experience in product discovery and development in both large company and start-up environments. Notable strengths in genomics, biotechnology, and technology strategy. Drug development experience through pre-IND and Phase I clinical trials.

Objective:

Chief Technology Officer or similar scientific leadership position in a pharmaceutical or biotechnology company

Positions Held:

Founder, Chief Science Officer, Member Board of Directors, Cantata Laboratories; 2002—2004

Founder of Cantata Laboratories. Created concept and scientific plan. Cantata employed mass spec-based biochemical profiling to develop human diagnostics and biomarkers for safety and action of human pharmaceuticals. Responsible for science strategy and direction of the company, supervision of technical staff, and management of outside technical relationships.

- Raised $10M in venture capital from 2002-2004
- Recruited and hired a outstanding science and informatics/biostatistics team
- Achieved CLIA certification and launched a diagnostic product in 18 months from inception
- Developed a network of sample providers for human diagnostic development, multiple academic collaborations, completed two successful pilot biomarker projects with major pharmaceutical companies
- Quadrupled platform capability, oversaw implementation of a full bar coding and LIMS system for sample and data tracking as well as automation of data analysis
- Built out laboratory from shell space

Senior Fellow, Monsanto/Cereon, 2001--2002
Director Technology Innovation, Cereon Genomics, LLC; **Vice President, Technology Partnering**, Monsanto Genomics Business Team; 1999—2002

Responsible for new technology identification, selection, acquisition, and reduction to practice for corporate-wide genomics programs. Technology director and member of senior management team for Cereon with responsibility for transcript and metabolic profiling, automation engineering, and molecular genetics.

- Developed novel technology for metabolic (small molecule) profiling using high resolution mass spectrometry

- Co-lead for Monsanto genomics long range planning team
- Identified novel technologies and collaborative opportunities for Cereon and Monsanto; developed and assessed pilot and proof-of-principle studies; negotiated external terms and internal support for new collaborations. Successful examples include single nucleotide polymorphism detection technologies and novel transcript profiling methods. Approximately 30 companies profiled in depth over six months leading to five pilot studies and two signed agreements.
- Building on successful proof of principal, developed a transcript profiling core production facility at Cereon capable of meeting enterprise needs.
- Chair Monsanto-Millennium Joint Program Team; managed day-to-day Millennium relationship, negotiate goals and milestones, monitor and assess performance for this $236M deal.
- Genomics Leadership Team; shared responsibility for day-to-day management of Cereon, setting of strategy, negotiation with Monsanto for resources.

Cereon Genomics was a wholly-owned subsidiary of the Monsanto division of Pharmacia Corporation founded in 1997 as the home for Monsanto's agricultural genomics program. Cereon was established as a collaborative partnership with Millennium Pharmaceuticals. This five-year alliance provided mechanisms for transferring proprietary technologies from Millennium to Cereon for use in agriculture. Cereon, located in Cambridge, MA had over 220 employees focused on structural and functional genomics.

Fellow & Director, Genomics Technology, Cereon Genomics, LLC; 1998—1999

As a founding member of Cereon responsible for creating, building, and maintaining Cereon's technology platform including sequencing, bioinformatics, transcript profiling, and new technology.

- Built one of the five largest sequencing facilities in the world.
- Recruited world class leaders for key functions, hired and supervised over 100 total staff.
- Implemented cost reduction and quality improvement programs that yielded 50% reduced cost per good base each year over a five year period.
- Delivered complete scaffold genomic sequences for *Aspergillus nidulans* and *Arabidopsis thaliana* as well as EST, SNP discovery and finished sequence.
- Defined bioinformatics strategy, hired key staff, and designed an automated sequence annotation and intellectual property protection pipeline.
- Established evaluation criteria for transcript profiling methods, implemented research program to develop methodology for obtaining profiles that are comparable among experiments.
- Planned Cereon corporate culture. Designed and implemented Cereon Mission, Vision, and Values.
- Dealt with all phases of company startup, from facilities and purchasing, through employee policies and practices, to scientific strategy

Fellow & Director, Genome Technology, Monsanto; 1997--1998

Responsible for establishment and day-to-day operation of a high throughput molecular biology laboratory that met enterprise needs for high throughput template preparation, EST sequencing, and related full-length cDNA and genomic sequencing. Responsible for establishment of a world-class bioinformatics group providing tools, data resources,

consultation, training, and project results to project teams in all business units. Technology representative on mergers and acquisition core team for genomics.

- Doubled Monsanto's sequencing capacity every three months for two years
- Built superior bioinformatics capability from near zero including recruiting staff, specifying and acquiring hardware, evaluating and acquiring software for enterprise-wide deployment
- Created and sold the concept of creating an Ag genomics subsidiary in collaboration with a leading human genomics company. Evaluated alternative partners and a core member of the team that negotiated the Millennium deal.
- Coordinated genomics approaches across the Ag, Pharma, and Nutrition Divisions of the company

Chair, Biotechnology Arena Core Team, Monsanto Growth Enterprises; 1996

Led the team that assembled and won approval for the Monsanto Advanced Genome Technology Platform project

- Created the strategic plan for genomics at Monsanto.
- Identified key outside technology suppliers. Closed successful deals with Incyte, Synteni, Perkin-Elmer-ABI, and Mendel Biotechnology.
- Won internal funding for sequencing and bioinformatics core.

Fellow & Director, Infectious Diseases Research, G.D. Searle; 1995--1996

Led biology and chemistry efforts directed toward HIV protease inhibitors, HSV and CMV Assemblin protease inhibitors, as well as antifungal drugs. Championed the development and application of high-throughput molecular biology methods to discovery, product development, and clinical trials.

- HIV protease inhibitors progressed to Phase I clinical trials. Patent estate was outlicensed.
- Herpesvirus assemblin protease inhibitors were developed and outlicensed
- Developed N-myristoyltransferase inhibitors as antifungal compounds through preclinical testing

G.D. Searle, formerly a wholly-owned pharmaceutical subsidiary of Monsanto Co. is now part of Pfizer.

Fellow, Molecular and Cellular Biology, G.D. Searle; 1994--1995

Conducted research leading to creation of new targets for pharmaceutical discovery, development and application of high-throughput molecular biology methods to discovery, product development, and clinical trials.

- Developed quantitative colorimetric PCR assay for virus load in patient samples.
- Adapted automated fluorescent sequencing to monitor levels of drug-resistant mutations in mixed virus populations.
- Cloned and over-expressed human cytomegalovirus assemblin protease

Research Group Leader II, Cellular and Molecular Biochemistry, Monsanto; 1988-1994

Led and carried out numerous projects related to creation of new targets for pharmaceutical discovery--biological reagent production, therapeutic concept testing, design and initiation of mass screens focused on infectious diseases, computer support for molecular biology

- Implemented a receptor molecular biology program with projects in NGF, angiotensin II, excitatory amino acids, phencyclidine, and prostaglandins
- Established brain mRNA-injected Xenopus oocyte electrophysiology as a superior assay to distinguish the pharmacology of various classes of glutamate receptors
- Cloned, expressed, and purified human and *Candida albicans* N-myristoyltransferase
- Provided key cloned reagents for lymphokine and interleukin programs
- With Mark Currie discovered guanylin, a hormone regulator of water balance in the gut
- Led implementation of internal GenBank searching capability and corporate-wide access to GCG tools for DNA sequence analysis
- As technical liaison to Searle Strategic Marketing wrote initial evaluation recommending in-license of Ambien, a novel sedative/hypnotic that achieved $900M in sales for Searle.

Research Group Leader, Molecular Genetics and Physiology, Monsanto; 1985--1988

Gene isolation and regulation in support of human health care projects, computer support for molecular biology

- Led design and implementation of Pollux, a graphical computer-aided experiment design tool for plasmid construction and plasmid database.
- Carried out extensive work on the regulation of atriopeptin (ANF) gene expression

Research Specialist, Corporate Research, Monsanto; 1983--1985

Atrial Natriuretic factor (ANF) gene isolation and regulation, computer support for molecular biology

Senior Research Chemist, Plant Molecular Biology, Monsanto, 1981--1983

Isolation and characterization of maize and soybean glutathione-S-transferase genes, developed systems and provided computer support for molecular biology,

Postdoctoral fellow (Anna Fuller Fund Fellow), Stanford University Department of Biochemistry 1978--1981

- Chromatin assembly and histone acetylation in *Drosophila*
- Purification and characterization of histone acetylase

(Mentor: Dr. Douglas Brutlag)

Postdoctoral fellow (NIH Fellow), Yale University; 1976--1978

Activation of a ribonuclease by double-stranded RNA in interferon treated cells
(Mentor: Dr. Peter Lengyel)

Graduate student, Yale University, 1972--1976

Discovered the biochemical principles underlying the mechanism of initiation of homologous genetic recombination
(Mentor: Dr. Charles Radding)

Undergraduate student, Yale University; Summer 1972

Analysis of crosslink repair in *uvr* mutants of *E. coli*
(Mentor: Dr. Paul Howard-Flanders)

Undergraduate student, University of Chicago; 1971–1972

Purification and characterization of DNA polymerase II from *B. subtilis*
(Mentor: Dr. Nicholas Cozzarelli)

Education:

A.B. Biochemistry, University of Chicago, 1972.

Ph.D. Molecular Biophysics and Biochemistry, Yale University, 1976.

Animal Virus course, Cold Spring Harbor Laboratory, 1976.

Postdoctoral Fellow, Molecular Biophysics and Biochemistry, Yale University, 1976-1978.

Postdoctoral Fellow, Department of Biochemistry, Stanford University, 1978-1981.

Executive Excellence Program, Center for Management Design, 1988.

IRI/Kellogg Technology Managers Development Program, Kellogg Graduate School of Management, Northwestern University, 1995.

Professional Memberships:

American Society for Biochemistry and Molecular Biology 1988-present
Society for Neuroscience 1990-1994
American Association for the Advancement of Science 1973-present
American Society for Microbiology 1995-present
Human Genome Organization 1996-present

Publications:

Wiegand, R. C., Godson, G. N., and Radding, C. M. (1975) "Specificity of the S_1 Nuclease from *Aspergillus oryzae*." J. Biol. Chem. **250,** 8848–8855.

Holloman, W. K., **Wiegand, R. C.**, Hoessli, C., and Radding, C. M. (1975) "Uptake of Homologous Single-stranded Fragments by Superhelical DNA: A Possible Mechanism for Initiation of Genetic Recombination." Proc. Nat. Acad. Sci. U.S.A. **72**, 2394–2398.

Beattie, K. L., **Wiegand, R. C.**, and Radding, C. M. (1977) "Uptake of Homologous Single-stranded Fragments by Superhelical DNA. II. Characterization of the Reaction". J. Mol. Biol. **116**, 783–803.

Wiegand, R. C., Beattie, K. L., Holloman, W. K., and Radding, C. M. (1977) "Uptake of Homologous Single-stranded Fragments by Superhelical DNA. III. The Product and Its Enzymatic Conversion to a Recombinant Molecule." J. Mol. Biol. **116**, 805–824.

Radding, C. M., Beattie, K. L., Holloman, W. K., and **Wiegand, R. C.** (1977) "Uptake of Homologous Single-stranded Fragments by Superhelical DNA. IV. Branch Migration." J. Mol. Biol. **116**, 825–839.

Ratner, L., **Wiegand, R. C.**, Farrell, P. J., Sen, G. C., Cabrer, B., and Lengyel, P. (1978) "Interferon, Double-stranded RNA and RNA Degradation: Fractionation of the Endonuclease INT System into Two Macromolecular Components; Role of a Small Molecule in Nuclease Activation." Biochem. Biophys. Res. Commun., **81**, 947–954.

Nelson, T., **Wiegand, R.**, and Brutlag, D. (1981) "RNA and other Polyanions Facilitate Chromatin Assembly." Biochem., **20**, 2594–2601.

Wiegand, R. and Brutlag, D. (1981) "An Acetylase from *Drosophila melanogaster* Specific for Histone H4." J. Biol. Chem., **256**, 4578–4583.

Shah, D. M., Hironaka, C. M., **Wiegand, R. C.**, Harding, E. I., Krivi, G. G., Tiemeier, D. C. (1986) "Structural analysis of a maize gene coding for glutathione-S-transferase involved in herbicide detoxification." Plant Mol. Biol. **6**, 203–211.

Moore, R.E., Davies, M.S., O'Connell, K.M., Harding, E.I., **Wiegand, R.C.**, Tiemeier, D.C. (1986) "Cloning and expression of a cDNA encoding a maize glutathione-S-transferase in *E. coli*." Nucleic Acids Res., **14**, 7227–7235.

Wiegand, R. C., Shah, D. M., Mozer, T. J., Harding E. I., Diaz-Collier, J., Saunders, C., Jaworski, E. G., Tiemeier, D. C. (1986) "Messenger RNA encoding a glutathione-S-transferase responsible for herbicide tolerance in maize is induced in response to safener treatment." Plant Mol. Biol., **7**, 235–243.

Wiegand R. C., Day, M. L., Rodi, C. P., Schwartz, D., Needleman, P. (1987) "Atriopeptin expression in the ventricle." in Atrial Hormones and other Natriuretic Factors, (ed. by Mulrow, P.J. and Schrier, R.), pp. 33–38, American Physiological Society, Baltimore.

Day, M. L., Schwartz, D., **Wiegand, R. C.**, Stockman, P.T., Brunnert, S.R., Tolunay, H.E., Currie, M. G., Standaert, D. G., Needleman, P. (1987) "Ventricular atriopeptin: unmasking of mRNA and peptide synthesis by hypertrophy or dexamethasone." Hypertension, **9**, 485–491.

Wei, Y., Rodi, C.P., Day, M.L., **Wiegand, R.C.**, Needleman, L.D., Cole, B.R., Needleman, P. (1987) "Developmental changes in the rat atriopeptin hormonal system." Journal of Clinical Investigation, **79**, 1325–1329.

Standaert, D.G., Needleman, P., Day, M.L., **Wiegand, R.C.**, Krause, J.E. (1988) "Expression of the gene for pre-pro-atriopeptin in the central nervous system of the rat." Molecular Brain Research, **4**, 7–13.

Stockman, P.T., Will, D.H., **Wiegand, R.C.**, Needleman, P. (1988) "Ventricular atriopeptin synthesis in chronic cardiac overload." in Biological and Molecular Aspects of Atrial Factors, pp 233–240, Alan R. Liss, New York.

Stockman, P.T., Will, D.H., Sides, S.D., Brunnert, S.H., Wilner, G.D., Leahy, K., **Wiegand, R.C.**, Needleman, P. (1988) "Reversible induction of right ventricular atriopeptin synthesis in hypertrophy due to hypoxia." Circ. Res., **63**, 207–213.

Kyger, E.M., **Wiegand, R.C.**, Lange, L.G. (1989) "Cloning of the bovine pancreatic cholesterol esterase/lysophospholipase." Biochem. Biophys Res. Commun., **164**, 1302-1309.

Davies, M., Baganoff, M.P., Grishin, E., Lanthorn, T., Volkova, T., Watson, G., **Wiegand, R.C.** (1992) "Polyamine spider toxins are potent un-competitive inhibitors of rat cortex excitatory amino acid receptors." Eur. J. Pharm., **227,** 51-56.

Wiegand, R.C., Carr, C., Minnerly, J.C., Pauley, A.M., Carron, C.P., Langner, C.A., Duronio, R.J., Gordon, J.I. (1992) "The *Candida albicans* Myristoyl-CoA:Protein N-myristoyltransferase Gene: Isolation and Expression in *Saccharomyces cerevisiae* and *Escherichia coli*." J. Biol. Chem., **267,** 8591-8598.

Wiegand, R.C., Kato, J., Currie, M.G. (1992) "Rat Guanylin cDNA: Characterization of the precursor of an endogenous activator of intestinal guanylate cyclase." Biochem. Biophys. Res. Commun., **185,** 812-817.

Wiegand, R.C., Kato, J., Huang, M.D., Fok, K.F., Kachur, J.F., Currie, M.G. (1992) "Human Guanylin: cDNA isolation, sequence, and activity." FEBS Letters, **311,** 150-154.

Kato, J., R. C. **Wiegand**, and M. G. Currie. (1993) Characterization of the structure of Preproguanylin. Adv. in Second Messenger and Phosphoprotein Research. Editors B.L. Brown and P.R. M. Dobson, Raben Press Ltd., NY Vol. **28**, 139-142.

Holwerda, B.C., Wittwer, A.J., Duffin, K.L., Smith, C., Toth, M.V., Carr, L.S., **Wiegand, R.C.**, Bryant, M.L. (1994) "Activity of two-chain recombinant human cytomegalovirus protease" J. Biol. Chem., **269**, 25911-25915.

Hsieh, H.S., Kurumbail, R.G., Stevens, A.M., Stegeman, R.A., Sturman, E.J., Pak, J.Y., Wittwer, A.J., Palmier, M.O., **Wiegand, R.C.**, Holwerda, B.C., Stallings, W.C. (1996) "Three-dimensional structure of human cytomegalovirus protease", Nature, **383**, 279-282.

http://microbial.cereon.com/ (microbial genome sequences)

http://www.arabidopsis.org/Cereon/index.html (Arabidopsis SNPs)

United States Patent:

5,969,097 Wiegand; Roger C., Currie; Mark G., Fok; Kam Fook (1999) "Human Guanylin"

Invited presentations:

Nucleic Acids Gordon Conference, 1976
Iowa State University, 1978

West Coast Chromatin Meeting, Asilomar, 1980
Hardin Conference, Kent, UK, 1980
UCLA/Keystone Chromatin Structure conference, 1981
Stanford University, 1984
Northeast Missouri State, 1985
UCLA/Keystone Atriopeptin conference, 1986
International Congress of Genetics, Beijing, 1998
"Molecular Biology's Role in Enhancing Agricultural Productivity", Amsterdam, 1999
"Genomics - Developmental Biology - Protein Structure" Ruhr-Universität, Bochum, Germany, 1999
"Genomics in Agriculture", San Diego, 1999
"Using Metabonomics and Metabolomics for Disease State Targeting" Boston, 2004