

Peter R. Seoane, Ph.D.
427 Spring Lake Farm Circle
Winston-Salem, NC 27101
Cell: (484) 364-1166 * E-mail: peter.seoane@gmail.com

Qualifications:

Thirty years of results oriented experience with increasing responsibility in chemical research; pharmaceutical research and development, ranging from early discovery to product approval and launch; intellectual property protection and business development. Demonstrated ability to define research and development objectives consistent with medical and business needs and implement effective development programs. Skilled in managing projects and people in a multi-disciplinary and culturally diverse environment. Facilitator of communication across disciplines, with a focus on consensus building and problem solving. An ability to "make things work". Particular expertise in:

Strategic planning	Team-building
Turning strategic vision into action and results	Leadership of global multidisciplinary teams
Identification, definition and resolution of critical issues	Program management
Management through influence	Managing Internal and External Partners
Creation and execution of timely, cost effective development plans	
Transition management (Discovery to Development; Development to Commercialization)	

Professional Experience:

Pharmaceutical Consultant **2007 to Present**

Consultant: Pain Insights **2009 to 2010**
As part of due diligence assignments for Pain Insights clients, prepare reports reviewing non-clinical, clinical and CMC development plans and regulatory strategy; perform risk assessment relative to timing of approval and prospective claims.

Consultant: King Pharmaceuticals, Inc., Bridgewater, NJ **2007 to 2009**
Responsible for providing strategic counsel and project management expertise from late stage development through market preparation and launch for the Neuroscience Marketing Group. Support provided for Remoxy, Acurox and other portfolio products.

Eagle Vision Pharmaceutical Corp., Exton, PA **1998 to 2010**

Vice President of Research and Development **1999 to 2010**
Responsible for planning, implementing and reporting discovery, preclinical development, clinical development, pharmaceutical development and manufacturing activities; protection of intellectual property; business development activities and provision of contracted consulting services for a two man virtual company. Wrote protocols for, contracted and managed CROs and reported activities in chemistry, preclinical biology, toxicology, drug metabolism, formulation development, product manufacture and stability testing, pre-clinical imaging, Phase I and Phase II clinical trials. Recruited clinical investigators, negotiated contracts and budgets, initiated and monitored clinical sites. Prepared submissions and directly interacted with regulatory bodies including institutional review boards and FDA. Primary contact for patent agent / attorney, venture capital firms and industry based business development groups. Wrote patents, private placement and information memoranda and negotiated term sheets. Achievements include advancing SeeMore™, Eagle's proprietary imaging agent for cardiac magnetic resonance imaging, to Phase II clinical trials utilizing an innovative and cost effective development plan and establishing programs for imaging of focal and diffuse liver disease and cancer.

Director of Research **1998 - 1999**
Responsible for preclinical research; chemistry, pharmaceutical development and manufacturing related research and development; protection of intellectual property. Efforts led to patents on which SeeMore™ is based.

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Professional Experience:

- Centocor, Inc., Malvern, PA** 1997
Sr. Program Manager, Oncology Business Unit
Development expert in core business unit consisting of a medical, marketing and development representative. The business unit was responsible for the management of the corporate oncology portfolio from discovery through commercialization. Key contact for Panorex (licensed to Glaxo). Major programs included antibodies for prostate cancer, genetic vaccines and antibody cocktails for cancer.
- Eastman Kodak Co, subsidiaries and successors (Eastman Pharmaceuticals, Sterling Drug, Sterling Winthrop and Nycomed, Inc.)** 1986-1997
- Nycomed Inc, Wayne, PA** 1994-1997
Project Director
Established the global strategy for new development candidates, from discovery to launch; directed the design and implementation of development plans consistent with the global strategy, and provided leadership to and managed multi-disciplinary project teams responsible for product development from the bench to product launch in a matrix management environment. Core team members represented preclinical biology, medicinal chemistry, chemical development, pharmaceutical sciences, analytical sciences, toxicology, drug metabolism, medical, biostatistics, QA / regulatory affairs, strategic marketing and legal / patents. Led US development of Teslascan through phase III clinical trials, NDA submission and filing. Member of the Teslascan launch team, assisted with the preparation of technical training documentation for the sales force. Led the global development team for Clariscan to IND. Extended teams ranged from 100 to 200 members. Also responsible for creating and maintaining resourced project plans and other critical project documentation. Key project contact for executive management team.
- Sterling Winthrop Inc, Collegeville, PA** 1987-1994
Manager, Diagnostic Imaging 1992-1994
Directed project teams responsible for developing novel diagnostic imaging agents for indications including peripheral and coronary angiography, lymphography, tumor imaging, perfusion imaging and targeted, organ specific imaging, in both discovery and development across all imaging modalities; designed and implemented development plans through NDA submission, provided problem-solving consultation to functional departments, supported the management of the diagnostic imaging portfolio.
- Manager, Research Project Planning/Management and Academic Affairs** 1991-1992
Responsible for the management of the transition of late stage discovery projects to development across all therapeutic categories, and for contract negotiation and management of discovery based external collaborations.
- Senior Research Investigator, Medicinal Chemistry** 1989-1991
Research Investigator, Medicinal Chemistry 1987-1989
Research Scientist, Eastman Kodak Company 1986-1987
- Chemistry Instructor, Kutztown State College, Kutztown, PA** 1982-1983
Teacher, East Juniata Jr. Sr. High School, Mifflintown, PA 1976-1979

Education and Training:

- Post-Doctoral Study, Synthetic Organic Chemistry, University of Wisconsin, Madison 1984-1986
Ph.D., Organic Chemistry, Lehigh University 1984
M.S., Chemistry, Lehigh University 1982
B.S., Biology, Kutztown State College 1980
B.S., Secondary Education, Kutztown State College 1976
Tufts Center for the Study of Drug Development's "Postgraduate Course in Clinical Pharmacology, Drug Development and Regulation."
Center for Creative Leadership: Leadership Development Program

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Professional Memberships / Activities / Certifications:

Member: Radiological Society of North America
International Society of Magnetic Resonance Imaging in Medicine
Society for Cardiovascular Magnetic Resonance

Course Moderator: "Professional Seminar in Pharmaceutical Management", Distance Learning, Lehigh University
PA State Certification to Teach General Science, Environmental Science, Biology and Chemistry

Grants:

1999-2000 'Magnetic thallium' for MRI of ischemic heart disease, SBIR Phase I, Co-P.I.
2000-2001 EVP-ABD: An improved liver specific agent for MRI, SBIR Phase I, Co-P.I.
2001-2003 Magnetic thallium for MRI of ischemic heart disease, SBIR Phase II, Co-P.I.
2002-2004 EVP-ABD for MRI of Liver Disease, SBIR Phase II, Co-PI
2006-2007 EVP-ABD for Magnetic Resonance Imaging of Diffuse Liver Disease, SBIR Phase I, PI

Publications and Presentations:

Zuo CS, Seoane P, Thomsen M, Gillis T, Meloni E, Harnish PP, Renshaw PF. EVP-ABD-Enhanced MRI to Evaluate Diffuse Liver Disease in a Rat Model. *J Magnetic Resonance Imaging* 27: 1317-21, **2008**.

Storey P, Chen Q, Li W, Seoane PR, Harnish PP, Fogelson L, Harris KR, Prasad, PV. Magnetic Resonance Imaging of Myocardial Infarction Using a Manganese-Based Contrast Agent (EVP 1001-1): Preliminary Results in a Dog Model. *Journal of Magnetic Resonance Imaging* 23: 228-234, **2006**.

Seoane, Peter R; Harnish, Phillip P. Cardiovascular Safety of EVP 1001-1 (SeeMore™), an Intracellular Agent for Magnetic Resonance Imaging of the Ischemic Heart. *Journal of Cardiovascular Magnetic Resonance* 8: 117-118, **2006**

Zuo CS, Seoane P, Hu J, Harnish P, Rofsky NM. MR Imaging of the Stomach: Potential Use for Mangafodipir Trisodium—A Study in Swine. *Radiology* 232:160-3, **2004**.

Storey P, Danias PG, Post M, Li W, Seoane PR, Harnish PP, Edelman RR, Prasad PV. Preliminary evaluation of EVP 1001-1: a new cardiac-specific magnetic resonance contrast agent with kinetics suitable for steady-state imaging of the ischemic heart. *Invest Radiol.* **2003** Oct; 38(10): 642-52.

Storey P, Chen O, Fogelson L, Harris K, Ghazala FR, Li W, Seoane P, Harnish P, Prasad PV. Preliminary investigation of myocardial infarction imaging using a manganese-based agent EVP 1001-1. *ISMRM* **2003**.

Zuo CS, Seoane P, Lanigan T, Harnish P, Prasad PV, Storey P, Li W, Rofsky NM; T1 Efficacy of EVP-ABD: A Potential Contrast Agent that Provides both Vascular and Tissue Enhancement for Hepatic Imaging. Abstract #2587 *ISMRM* **2002**.

Zuo CS, Seoane PR, Lanigan T, Harnish, PP, Prasad, PV, Storey P, Li W, Rofsky NM; "EVP-ABD: A Potential MR Contrast Agent for Hepatic Imaging." *Journal of Magnetic Resonance Imaging* 16:668-675, **2002**

Zuo CS, Seoane PR, Lanigan T, Harnish PP, Rofsky NM; "Evaluation of EVP-ABD For MR Liver Imaging In Animals." Abstract #1182 Proceedings; *RSNA* **2001**.

Prasad PV, Danias P, Storey P, Post M, Li W, Seoane PR, Harnish PP, Edelman RR; "EVP 1001-1 Allows for a New Paradigm in Cardiac MR Perfusion Imaging." Abstract # 512, Proceedings; *ISMRM* **2001**

Storey P, Li W, Seoane PR, Harnish PP, Prasad PV; "Preliminary Evaluation of EVP-ABD as a Liver Contrast Agent Exhibiting Both a Vascular and a Tissue Phase." Abstract # 704 Proceedings; *ISMRM* **2001**

Publications and Presentations:

- Danias PG, Prasad PV, Storey P, Post M, Li W, Seoane PR, Harnish PP, Edelman RR; "Magnetic Resonance Myocardial Perfusion Imaging in Animals Using a Novel Intracellular Mn-Based Contrast Agent." Abstract. AHA **2000**
- Prasad PV, Post M, Storey P, Li W, Seoane PR, Harnish PP, Edelman RR; "Preliminary Evaluation of EVP 1001-1: A New Cardiac Specific MR Contrast Agent with Optimal Kinetics for Evaluation of the Ischemic Heart." Abstract # 1593, Proceedings; ISMRM **2000**
- Seoane PR, Prasad PV, Edelman RR, Harnish PP; "EVP 1001-1: A New Cardiac Specific MR Contrast Agent with Optimal Kinetics for Evaluation of the Ischemic Heart." Abstract # 2047, Proceedings; ISMRM **2000**
- D. G. Sawutz, J. M. Salvino, R. E. Dolle, P. R. Seoane, S. G. Farmer; "Pharmacology and Structure Activity Relationships of the Non-peptide Bradykinin Receptor Antagonist WIN 64338." Canadian Journal of Physiology and Pharmacology, **1995**, 73, 805-811
- D. Hoyer, M. M. A. Awad, J. M. Salvino, P. R. Seoane, R. E. Dolle, W. T. Houck, D. G. Sawutz; "ACE Inhibitors as a Template for the Design of Bradykinin B₂ Receptor Antagonists." Bioorganic and Medicinal Chemistry Letters, **1995**, 5, 367-370
- B. D. Douty, J. M. Salvino, P. R. Seoane, R. E. Dolle; "Synthesis of Non-peptide Bradykinin B₂ Receptor Antagonists." Bioorganic and Medicinal Chemistry Letters, **1995**, 5, 363-366
- J. M. Salvino, P. R. Seoane, B. D. Douty, M. M. A. Awad, D. Hoyer, T. M. Ross, R. E. Dolle, W. T. Houck, D. M. Faunce, D. G. Sawutz; "Structure Activity Relationships of Non-peptide Bradykinin B₂ Receptor Antagonists." Bioorganic and Medicinal Chemistry Letters, **1995**, 5, 357-362
- D. Regoli, F. Gobeil, Q. T. Nguyen, D. Jukic, P. R. Seoane, J. M. Salvino, D. G. Sawutz; "Bradykinin Receptor Types and B₂ Subtypes." Life Sciences **1994**, 55, 735-749
- F. Marceau, L. Levesque, G. Drapeau, F. Roiux, J. M. Salvino, H. R. Wolfe, P. R. Seoane, D. G. Sawutz; "Effects of Peptide and Non-peptide Antagonists of the Bradykinin B₂ Receptors on the Vasoconstrictor Action of Bradykinin." Journal of Pharmacology and Experimental Therapeutics, **1994**, 269, 1136-1143
- D. G. Sawutz, J. M. Salvino, R. E. Dolle, F. Casiano, S. J. Ward, W. T. Houck, D. M. Faunce, B. D. Douty, E. Baizman, M. M. A. Awad, F. Marceau, P. R. Seoane; "The Non-peptide WIN 64338 is a Bradykinin B₂ Receptor Antagonist." Proceedings of the National Academy of Sciences of the United States of America, **1994**, 91, 4693-4697
- D. G. Sawutz, J. M. Salvino, P. R. Seoane, B. D. Douty, W. T. Houck, M. A. Bobko, M. S. Doleman, R. E. Dolle, H. R. Wolfe; "Synthesis, Characterization and Conformational Analysis of the D-L-Tic-7 Stereoisomers of the Bradykinin Receptor Antagonist D-Arg-0(Hyp-3, Thi-5, D-Tic-7, Oic-8)Bradykinin." Biochemistry, **1994**, 33, 2373-2379
- M. M. A. Awad, R. E. Dolle, D. M. Faunce, W. T. Houck, D. Hoyer, J. M. Salvino, D. G. Sawutz, P. R. Seoane; "ACE Inhibitors as a Template for the Design of Bradykinin B₂ Receptor Inhibitors". 206th ACS National Meeting, Chicago, Ill, **1993**, Abstr. MEDI 210
- J. M. Salvino, P. R. Seoane, B. D. Douty, M. M. A. Awad, R. E. Dolle, W. T. Houck, D. M. Faunce, D. G. Sawutz; "Design of Potent Non-peptide Competitive Antagonists of the Human Bradykinin B₂ Receptor." 206th ACS National Meeting, Chicago, Ill, **1993**, Abstr. MEDI 209

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Publications and Presentations:

J. M. Salvino, P. R. Seoane, B. D. Douty, M. M. A. Awad, R. E. Dolle, W. T. Houck, D. M. Faunce, D. G. Sawutz; "Design of Potent Non-peptide Competitive Antagonists of the Human Bradykinin B2 Receptor." *J. Med. Chem.* **1993**, *36*, 2583-2584

B. M. Trost, P. R. Seoane, Serge Mignani, Murat Acemoglu; "A Stereocontrolled Cyclopentenone Synthesis via Cycloaddition." *J. Am. Chem. Soc.* **1989**, *111*, 7487

B. M. Trost, P. R. Seoane; "[6+3] Cycloaddition to Nine-Membered Ring Carbocycles". *J. Am. Chem. Soc.* **1987**, *109*, 615-617

Seoane, Peter R.; "Applications of the Salicylidene-Thiolactone Rearrangement: Pseudo-Cannabinoid Development". Ph.D. Dissertation; Lehigh University, Bethlehem, PA **1986**

N.D. Heindel, J.G. Emrich, D. V. Woo, F. Kaltovitch, P. R. Seoane, S. Senderhoff, K. Garnes, S. Landvatter; "Synthesis and Evaluation of Radiopharmaceuticals for Melanoma Delineation." 189th A.C.S. National Meeting, Miami Beach, FL Apr. 28-May 3, **1985** ABSTR. NUCL 127

P.R. Seoane, N.D. Heindel; "Tetrahydrothieno[3,2-c][1]benzopyrans: A New Class of Cannabinoids." 18th Middle Atlantic Regional Meeting, A.C.S., Newark, NJ May 21-23, **1984** ABSTR. MEDI 206

P.R. Seoane, N.D. Heindel, G.A. Miller; "Synthesis of Sulfur Containing Tetrahydrocannabinol Analogs: 4,4-Dimethyl-7-alkyl-9-hydroxy-2,3,3a,9b-tetrahydrothienol[3,2-c][1]benzopyrans." 17th Middle Atlantic Regional Meeting, A.C.S., White Haven, PA Apr. 6-8, **1983** ABSTR. ORGN 328

Patents:

Phillip P. Harnish, P. R. Seoane, Adele R. Vessey; "Manganese Compositions and Methods for MRI".

State	Patent Number	Date Issued
United States	05980863	11/09/1999
New Zealand	511592	01/07/2003
Australia	754294	02/27/2003
South Korea	10-0692720	03/02/2007
EU	1126785	06/24/2009
Norway	327611	08/31/2009
Mexico	74765	10/09/2009
India	240947	06/10/2010
Japan, Canada	pending	

Peter R. Seoane, Joseph M. Salvino, Brent D. Douty, Mohamed M. A. Awad, Roland E. Dolle, David G. Sawutz, David M. Faunce, Wayne T. Houck; "Non-peptide Bradykinin Antagonists." United States Patent Number 05510380, Issued 04-23-1996

Peter R. Seoane, Joseph M. Salvino, Brent D. Douty, Mohamed M. A. Awad, Roland E. Dolle, David G. Sawutz, David M. Faunce, Wayne T. Houck; "Non-peptide Bradykinin Antagonists." United States Patent Number 05578601, Issued 11-26-1996

John W. Harder, Peter R. Seoane, Michael P. Youngblood; "Photographic Elements Containing Removable Filter Dye." United States Patent Number 05158865. Issued 10-27-1992

John W. Harder, Peter R. Seoane, Michael P. Youngblood; "Photographic Elements Containing Removable Filter Dye." European Patent Specification Number 91121795, European Publication Number 00492442/EP B1, Issued 04-08-1998