

# PAUL J. HIPPENMEYER Ph.D., M.B.A.

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## Summary

Life Science professional with deep experience in licensing/business development of academic technologies, pharmaceutical R & D leadership, and graduate level teaching. Licensing and business development with a focus on biomedical innovations. Cradle-to-Grave management of IP with strong interactions with special programs to advance technologies. Successful licensing to established companies and start-ups. Experienced researcher with 20+ years of operational experience in pharmaceutical and biotech industries. Leadership positions in biotech technology development, oncology, virology and autoimmune disease drug discovery. Led all aspects of new biotech start-up from initiation through identification of lead therapeutic monoclonal antibody. Nominated and accepted into Monsanto/Searle/Pharmacia Fellow Program for exceptional achievements. Entrepreneur, cofounder ADSAT Therapeutics and Managing Member of Synthetic Vector Designs, LLC.

## Professional Experience

### **Managing Member and Operations**

Synthetic Vector Designs, LLC, St. Louis MO 2022-  
Applying patent pending gene transfer technology to many fields of synthetic biology

### **Cofounder and CEO**

ADSAT Therapeutics LLC, Columbia, MO 2022-  
Developing biopharmaceutical for induction of tolerance in Type 1 Diabetes. Licensing technology from the University of Missouri-Columbia.

### **Business Development Director**

Washington University, St. Louis, MO 2016-2020  
Evaluation, valuation, marketing and out-licensing of University IP with particular focus on the biomedical fields including therapeutics, diagnostics, biomarkers and devices.

### **Business Development Manger**

Washington University, St. Louis, MO 2015-2016

### **Sr. Licensing and Business Development Associate**

University of Missouri-Columbia, 2009-2015

### **Consultant**

Hippenmeyer Advisors 2008-  
St. Louis, MO  
Providing technology development and commercialization analysis to clients in patent law, investor and small companies in the life science area.

### **Director of Research**

Keel Pharmaceuticals, Inc., Cambridge, MA 2005-2008

Directed start-up biopharmaceutical company's staff of six scientists resulting in identification and characterization of lead monoclonal antibody for autoimmune disease treatment. Established laboratory operations and used focused, coordinated activities among lab staff, collaborators, consultants, advisors and vendors to achieve goals on time with minimal overhead.

**Vice President and Cofounder** 2003-2005  
 BiosyntheCore, LLC, St. Louis, MO  
 Responsible for all aspects of starting a new company including strategy, financial planning, technology transfer, presentations to investors.

**Fellow and Senior Research Advisor** 2000-2003  
 Pharmacia (Pfizer), St. Louis, MO  
 Leader in identification and successful validation of new oncology antibody targets. Directed molecular and cellular biology activities for several oncology projects achieving rapid generation of key reagents. Coordinated evaluation of oncology licensing opportunities resulting in data-driven decisions for investment.

**Monsanto/G.D. Searle,** 1984-2000  
 Science Fellow, group leader; project leader for international collaboration with a Japanese pharma company. Drug discovery experience in oncology and antiviral drug development. Technical leader in design and implementation of new mammalian expression system.

**Research Assistant** 1977-1979  
 St. Louis University, St. Louis, MO

- General biochemistry support.

### Education

M.B.A.	U. of Missouri-St. Louis	Business Administration	2006
Ph.D.	St. Louis University	Cell and Molecular Biology	1984
B.S.	Creighton University	Biology	1977

### Awards

Monsanto Corporate Research Achievement Award	1990, 1993
Samuel Roberts Nobel Foundation Predoctoral Fellowship	1982-1984

### Patents

US 5,972,666 and family (Viral Vaccine)  
 US 6,635,478; EP93870043.2 and family (Recombinant Protein Production)  
 2 Application Families Pending (cancer target and cancer vaccine)

### Professional Societies

Licensing Executive Society (LES)	2012-2019
Association of University Technology Managers (AUTM)	2009-2020

Beta Gamma Sigma Business Honor Society	2006-present
AAAS	1983-present
International Society for Antiviral Research	1992-1999
American Society for Microbiology	1991-2001

### **Invited Speaker**

Fail Better: Career Paths Panel, WUSTL Grad and Postdocs	2019
Venture Café-St. Louis, panelist	2018
“The Business of Genomic Medicine”	
Coulter Boot Camp, University of Missouri, Columbia	2017-2022
Center for Sustainable Materials Chemistry (panelist, webinar)	2016
St. Louis University, Dept of Microbiology	2014
AUTM Annual Meeting (invited)	2014
Future Pharma Congress (panelist)	2006
Mammalian and Plant Expression Systems:	1997
Improving Therapeutic Protein Production	
Washington, D. C.	
Transient Gene Expression in Animal Cells	1997
Jersey, UK	
Glaxo Research Institute	1994
University of Missouri, Columbia	1992
Department of Biochemistry	

### **Teaching Experience**

Adjunct Instructor, Trulaske College of Business, University of Missouri-Columbia	
Course Director: MGMT8540 Entrepreneurial Ventures	2013
Course Director: MGMT8200 Commercialization of Life Science Tech	2015-present
Guest Lecturer	
BIO2020	
Washington University, St. Louis, MO	2016-2017
Student Angel Capital Program –Trulaske College of Business	
University of Missouri-Columbia	2011-2013
Law 5641 Intellectual Property Licensing - School of Law	
University of Missouri-Columbia	2011
Impact of Biotechnology on Healthcare and Agriculture	1996-1998
Washington University, St. Louis, MO	
Introduction to Cell and Tissue Culture Techniques (Bio430)	1993-2003
Washington University, St. Louis, MO	
Course Director	1998-2003

### **External Activities**

AUTM Licensing Survey Committee	2010-2015
Assistant Vice President-AUTM	2012-2015
Advisor: St. Louis Community College Biotechnology Program	2000-2005
St. Louis University Institutional Biosafety Committee	1994-2005

### Trainees

Neetu Shah (Independent study, MS)	2002
Sean Merlin (postdoc)	1992-1994

### Ad Hoc Reviewer

Molecular and Cellular Biology  
United States-Israel Binational Agricultural  
Research and Development Fund  
Washington University Grants for internal funding  
MD Anderson Grants for internal funding

### Peer Reviewed Publications

Crowley, K. S., Phillion, D. P., Woodward, S. S., Schweitzer, B. A., Singh, M., Shabany, H., Burnette, B., **Hippenmeyer, P.**, Heitmeier, M. and Bashkin, J. K. (2003) "Controlling the Intracellular Localization of Fluorescent Polyamide Analogs In Cultured Cells." *Bioorganic & Medicinal Chemistry Letters*, 13:1565-1570.

Wittwer, A. J., Funckes-Shippy, C. L. and **Hippenmeyer, P. J.** (2002) "Native and Processed Forms of the Human Cytomegalovirus Protease have Different Activities in Purified Enzyme and Cell-based Assays." *Antiviral Research*, 55: 291-306.

**Hippenmeyer, P. J.**, Ruminski, P. G., Rico, J. G., Lu, H. S., and Griggs, D. A. (2002) "Adenovirus Inhibition by Peptidomimetic Integrin Antagonists." *Antiviral Research* 55:169-178.

Abood, N. A., Schretzman, L. A., Flynn, D. A., Houseman, K. A., Wittwer, A. J., **Hippenmeyer, P. J.** and Holwerda, B. C. (1997) "Inhibition of Human Cytomegalovirus Protease by Benzoxazinones and Evidence of Antiviral Activity in Cell Culture." *Bioorganic and Medicinal Chemistry Letters* 17:2105-2108.

Flynn, D. L., Becker, D. P., Dilworth, V. M., Highkin, M. K., **Hippenmeyer, P. J.**, Houseman, K. A., Levine, L. M., Li, M., Moorman, A. E., Rankin, A., Toth, M. V., Villamil, C. I., Wittwer, A. J. and Holwerda, B. C. (1997) "Herpesvirus Protease: Mechanistic Studies and Discovery of Inhibitors of the Human Cytomegalovirus Protease." *Drug Design and Discovery* 15:3-15.

**Hippenmeyer, P. J.**, Rankin, A. M., Luckow, V. L. and Neises, G. (1997) "Protease-deficient Herpes Simplex Virus Protects Mice from Lethal Herpes Infection." *Journal of Virology* 71:988-995.

**Hippenmeyer, P. J.** and Dilworth, V. (1996) "A Rapid Assay for Determination of Antiviral Activity against Human Cytomegalovirus." *Antiviral Research* 32:35-42.

**Hippenmeyer, P. J.**, Rankin, A. M., Reitz, B. A., McWilliams, D. R., Brightwell, B. B., Wolfe, R. A. and Warren, T. G. (1995) "Endogenous and Exogenous Pituitary-Specific Promoters are Differentially Regulated." *Molecular and Cellular Endocrinology* 107:155-164.

Warren, T. G., **Hippenmeyer, P. J.**, Meyer, D. M., Reitz, B. A., Rowold, Jr., E. and Carron, C. P. (1994) "High Level Expression of Biologically Active, Soluble Forms of ICAM-1 in a Novel Mammalian-Cell Expression System." *Protein Expression and Purification* 5:498-508.

Wu, Y., Whitman, I., Molmenti, E., Moore, K., **Hippenmeyer, P.** and Perlmutter, D. H. (1994) "A Lag in Intracellular Degradation of Mutant alpha-1-Antitrypsin Correlates with Liver Disease Phenotype in Homozygous PiZZ alpha-1-Antitrypsin Deficiency." *Proc. Natl. Acad. Sci. USA* 91:9014-9018.

**Hippenmeyer, P. J.** and Highkin, M. K. (1993) "High Level, Stable Production of Recombinant Proteins in Mammalian Cell Culture using Herpesvirus Promoters and the VP16 Transactivator." *Bio/Technology* 11:1037-1041. (now *Nature Biotechnology*)

Wun, T. C., Kretzmer, K. K., Palmier, M. O., Day, K. C., Huang, M. D., Welsch, D. J., Lewis, C., Wolfe, R. A., Zobel, J. F., Lange, G. W., Frasier, R. B., Bild, G. S., Peel, M. A., Shell, R. E., Horn, N. A., Junger, K. D., Foy, B. A., Gustafson, M. E., Leimgruber, R. M., Novotny, W. F., Broze, G. J., Pyla, Y. E., **Hippenmeyer, P. J.** and Warren, T. G. (1992) "Comparison of Recombinant Tissue Factor Pathway Inhibitors Expressed in Human SK Hepatoma, Mouse C127, Baby Hamster Kidney and Chinese Hamster Ovary Cells." *Thrombosis and Haemostasis* 68:54-59.

Mumm, S. R., **Hippenmeyer, P. J.** and Grandgenett, D. P. (1992) "Characterization of a Stable Eukaryotic Cell Line Expressing the Rous Sarcoma Virus Integrase." *Virology* 189, 500-510.

Highkin, M. K., Krivi, G. G. and **Hippenmeyer, P. J.** (1991) "Characterization and Comparison of Avian and Murine Helper Cell Lines for Production of Replication-Defective Retroviruses for Avian Transformation." *Poultry Science* 70, 970-981.

**Hippenmeyer, P. J.** and Krivi, G. G. (1991) "Gene Expression from Heterologous Promoters in a Replication-Defective Avian Retrovirus Vector in Quail Cells." *Poultry Science* 70, 982-992.

**Hippenmeyer, P. J.**, Krivi, G. G. and Highkin, M. K. (1989) "Transfer and Expression of the Bacterial NPT-II Gene in Chick Embryos using a Schmidt-Ruppin Retrovirus Vector." *Nucleic Acids Research* 16, 7619-7632.

Grandgenett, D. P., Quinn, T., **Hippenmeyer, P. J.** and Oroszlan, S. (1985) "Structural Characterization of the Avian Retrovirus Reverse Transcriptase and Endonuclease Domains." *Journal of Biological Chemistry* 260, 8243-8249.

**Hippenmeyer, P. J.** and Grandgenett, D. P. (1985) "Mutants of the Avian Retrovirus Reverse Transcriptase Gene are Nondefective in Early Replication Events." *Journal of Biological Chemistry* 260, 8250-8256.

Knaus, R. J., **Hippenmeyer, P. J.**, Misra, T. K., Grandgenett, D. P, Muller, U. R. and Fitch, W. M. (1984) "Avian Retrovirus pp32 Binding Protein. II. Preferential Binding to the Viral Promoter Region of Long Terminal Repeat DNA." *Biochemistry* 23, 350-359.

**Hippenmeyer, P. J.** and Grandgenett, D. P. (1984) "Requirement of the Avian Retrovirus pp32 DNA Binding Protein Domain for Replication." *Virology* 137, 358-370.

Grandgenett, D. P., Knaus, R. J. and **Hippenmeyer, P. J.** (1983) "Antibodies Against a Synthetic Peptide of the Avian Retrovirus pp32 Protein and the  $\beta$  DNA Polymerase Subunit." *Virology* 130, 257-262.

Dus, K. M., Litchfield, W. J., **Hippenmeyer, P. J.**, Obidoa, O., Spitzberg, V. and Jeffcoate, C. R. (1980) "Comparative Immunochemical Studies of Cytochrome P450<sub>CAM</sub> of *Pseudomonas putida* and of Cytochrome P-450<sub>SCC</sub> of Bovine Adrenocortical Mitochondria." *European Journal of Biochemistry* 111, 307-314.

### Invited Reviews and Trade Publications

*AUTM U.S. Annual Licensing Activity Survey: FY2010, FY2011, FY2012, FY2013, FY2014, Summaries:*

*A Survey Summary of Technology Licensing (and Related) Activity for U.S. Academic and Nonprofit Institutions and Technology Investment Firms*, edited by **Paul Hippenmeyer, Ph.D., M.B.A.** et al

Shieh, H., Stallings, W., Wittwer, A., **Hippenmeyer, P.**, Kurumbail, R. and Holwerda, B. (1997) "Crystal structures of human cytomegalovirus protease delineate a new target for antiherpes drug design." *International Antiviral News* 5:71-73.

**Hippenmeyer, P. J.** and Pegg, L. E. (1995) "Enhancing expression of recombinant proteins in mammalian cells using the herpesvirus VP16 transactivator." *Current Opinion in Biotechnology* 6:548-552.

### External Abstracts

**Hippenmeyer, P. J.** (1997) "High Level Stable or Transient Recombinant Protein Production using the BHK/VP16 Cell Line." *Mammalian and Plant-Based Expression Systems: Applications in Recombinant Therapeutic Protein Production*. IBC Conference, Washington, D. C.

**Hippenmeyer, P. J.**, Pegg, L. E., Munie, G. E. And Zurfluh, L. L. (1997) "Enhancing Recombinant Protein Expression in Mammalian Cells Using the VP16 transactivator." *Transient Gene Expression in Animal Cells*. Jersey, U. K.

Rankin, A., Luckow, V., Nieves, G. and **Hippenmeyer, P.** (1996) "Assemblin-Defective Herpes Simplex Virus is Avirulent and Induces Immunity *In Vivo*." *The 20th International Herpesvirus Workshop*, DeKalb, IL.

Flynn, D. L., Becker, D. P., **Hippenmeyer, P.**, Hockerman, S., Houseman, K., Moormann, A., Rankin, A., Williams, K., Wittwer, A., Zablocki, J., Wiegand, R. and Holwerda, B., (1996) "Selective Inhibitors of the Herpesvirus Serine Protease Assemblin" 210th National American Chemical Society Meeting, New Orleans, LA.

Mumm, S. R., **Hippenmeyer, P. J.** and Grandgenett, D. P. (1991) "Stable Eukaryotic Cell Line Expressing the Rous Sarcoma Virus Integrase." RNA Tumor Virus Meeting, Cold Spring Harbor, New York.

Mumm, S. R., **Hippenmeyer, P. J.** and Grandgenett, D. P. (1991) "Stable Eukaryotic Cell Line Expressing the Retroviral Integrase: Potential in vivo Integration System." Miami Winter Symposium, Miami, FL.

**Hippenmeyer, P. J.** and Highkin, M. K. (1989) "Modification and Characterization of Helper Cell Lines for Production of Replication-Defective Avian Retroviruses: A Comparison with a Murine Amphotropic Helper Cell Line." Second Symposium on Genetic Engineering of Animals, Ithaca, NY. Published in the Journal of Reproduction and Fertility, Supplement 41, 1990.

**Hippenmeyer, P. J.** (1988) "Relative Expression Levels of CAT in Avian Fibroblasts under Transient and Stable Conditions." J. Cell Biochem. Supplement 12B, Alan R. Liss, Inc. New York.

**Hippenmeyer, P. J.** and Highkin, M. K. (1987) "Transfer and Expression of the Bacterial NPT-II Gene in Chick Embryos using a Retrovirus Vector." RNA Tumor Virus Meeting, Cold Spring Harbor, New York.

**Hippenmeyer, P. J.** and Highkin, M. K. (1986) "Construction and Analysis of a Retroviral Vector Capable of Transmitting G418R to Avian Cells." FASEB Meeting, St. Louis, MO.

**Hippenmeyer, P. J.**, Quinn, T. and Grandgenett, D. P. (1985) "Structure-Function Relationships of the Avian Retrovirus Reverse Transcriptase and Endonuclease Domains." RNA Tumor Virus Meeting, Cold Spring Harbor, New York.

**Hippenmeyer, P. J.** and Grandgenett, D. P. (1984) "NH<sub>2</sub>-terminal and Mutational Analysis of the Rous Sarcoma Virus pp32." RNA Tumor Virus Meeting, Cold Spring Harbor, New York.

**Hippenmeyer, P. J.** and Grandgenett, D. P. (1983) "In Vitro Mutagenesis of the Rous Sarcoma Virus pp32 Region." RNA Tumor Virus Meeting, Cold Spring Harbor, New York.

Grandgenett, D., P., Knaus, R. J. and **Hippenmeyer, P. J.** (1983) "Interaction of Avian Retrovirus pp32 Protein with Viral Long Terminal Repeat DNA." UCLA Symposia on Mechanisms of DNA Replication and Recombination, Keystone, CO.

Parsons, V., Golomb, M., Misra, T., **Hippenmeyer, P.** and Grandgenett, D. (1982) "Selective Binding of the Avian Retrovirus pp32 Protein to Cloned Retroviral DNA." RNA Tumor Virus Meeting, Cold Spring Harbor, New York.

**Hippenmeyer, P. J.**, Bumpus, J. A. and Dus, K. M. (1979) "Immunochemical comparison of Four Adrenocortical Steroid Metabolizing P-450 Hemoproteins." 15th Midwest Regional Meeting of the ACS, St. Louis, MO.

Bumpus, J. A., **Hippenmeyer, P. J.** and Dus, K. M. (1979) "Photoaffinity Labeling of Steroid Metabolizing P-450 Heme Proteins of Bovine Adrenal Cortex." *Ibid.*

Dus, K. M., Swanson, R. A., Bumpus, J. A. and **Hippenmeyer, P. J.** (1979) "Synthesis of Photoaffinity Labels and their Application to the Study of P-450 Heme proteins Differing in Steroid Regiospecificity." Joint 177th ACS/39th CSJ National Meeting, Honolulu, Hawaii.

Dus, K. M., **Hippenmeyer, P. J.** and Bumpus, J. A. (1979) "P-450 Heme proteins-- Radioimmunoassays and Identification of Common Antigenic Determinants." *Ibid*

Bumpus, J. A., Dus, K. M., Swanson, R. A. and **Hippenmeyer, P. J.** (1978) "Electrophoretic Resolution of P-450 Heme proteins from Bovine Adrenocortical Mitochondria and Microsomes." 176th American Chemical Society National Meeting, Miami, FL.