Michael Pierce, Ph.D.
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Career History

RUTGERS UNIVERSITY, New Brunswick, NJ 2009 - present

Laboratory Support Specialist
Technical specialist responsible for management, maintenance and instruction for equipment of Rutgers University's SEBS Core Facility including a Zeiss LSM710 confocal microscope, Applied Biosystems StepOnePlus qRT-PCR instrument, Accuri C6 Flow Cytometer and BioTek Synergy 4 plate reader. Oversee Core Facility daily operations including billing, budgeting and new equipment evaluation.
Additional responsibilities include management of the laboratory of Nilgun Tumer, Ph.D., mentoring undergraduate and graduate students as well as post-doctoral research fellows. Additional key functions include assay development and research on the ribosome inactivating protein, ricin, using the yeast model system in an effort to develop small molecule inhibitors against its action.

- Successfully developed a quantitative reverse transcriptase real time PCR assay to detect and quantitate ribosome depurination by RIPs using the model system *Saccharomyces cervisiae*.
- Authored and submitted a manuscript for peer review and publication within one year from date of hire. Currently developing a manuscript for submission.
- Provided mentoring and training to laboratory personnel in molecular techniques and yeast genetics and manipulation.
- Designed a popular "hands on" short course on theory, experimental design and instrument operation for qRT-PCR.
- Developed and taught a 400-level graduate/undergraduate course "Advanced Technologies in Biosciences".
- Provide training for Core Facility users in confocal microscopy (Zeiss LSM710), qRT-PCR (Applied Biosystems StepOnePlus), flow cytometry (Accuri C6 Flow Cytometer) and fluorescence/luminescence plate reader (BioTek Synergy).
- Aid in the design, execution and trouble shooting of experiments designed for the above equipment for Core Facility and served as an onsite resource.
- Maintain and service all equipment of the Core Facility either directly or through establishment of service agreements.

GE HEALTHCARE, Piscataway, NJ 2005 - 2009

Scientist
Product development scientist responsible for bringing technology from the research stage to a marketable consumer product for use in life science research. Facilitate custom development and manufacturing programs for customers interested in thermal stable product lines.

- Successfully brought to market a thermal stable hot start PCR reagent achieving sales of >$90k within the first year.
- Designed an easy-to-use dialysis protocol for manufacturing of a lyophilized product line that would have otherwise been cancelled.
- Trained development and manufacturing scientists in differential scanning calorimetry (DSC), Karl Fischer Coulometry, formulation and lyophilization optimization.

- Redesigned quantitative PCR (qPCR) final quality control (FQC) assay that increased manufacturing personnel efficiency by cutting analysis time by >50%.
- Demonstrated feasibility of reagent stabilization by lyophilization for customer-defined reagents generating revenues of $40k for each study. Estimated sales forecast for custom work by 2010 is >$4M.
- Streamlined lyophilization recipes thereby reducing manufacturing lyophilization equipment downtime by >50%.
- Provided a lead role for design of experiment (DOE) study aimed to derive a common formulation for lyophilized product lines thereby minimizing time requirements for custom reagent development.
- Recipient of the GE Landsteiner Award for generating repeat business through successful communication of technical information to upper level customer executives.
- Contributed knowledge, ideas and data for patent application, Preparation of Glassified Biological Reagents. U.S. Serial No. 60/887,364.

BIOARRAY SOLUTIONS (NOW PART OF IMMUCOR), Warren, NJ 2003 - 2005

Scientist
Assay and product development scientist responsible for the design of diagnostic assays aimed at identifying single nucleotide polymorphisms (SNPs) for minor blood groups using a proprietary BeadChip format.

- Successfully developed and launched the HEA BeadChip Kit under tight timeline.
- Resolved issues for inconsistent amplification of multiplex PCR amplicons, which was necessary for blood group allele discrimination and essential in the success of the HEA BeadChip Kit launch.

PRINCETON UNIVERSITY, DEPARTMENT OF MOLECULAR BIOLOGY, Princeton, NJ 2002 - 2003

Post-doctoral Fellow for James Broach, Ph.D.
Carried out basic research activities on Ras2-and Gpa2-mediated signal transduction pathway required for glucose sensing in the yeast, *Saccharomyces cerevisiae*.

- Used microarray analysis and in vivo reporter assays to identify a novel glucose-dependent transcriptional repression mechanism resulting in co-authorship of the findings in a peer-reviewed publication.
- Provided mentoring and training of graduate and undergraduate students in plasmid design and construction, reporter assay development and site-directed mutagenesis.

RUTGERS UNIVERSITY, THE WAKSMAN INSTITUTE, New Brunswick, NJ 1997 - 2002

Graduate Student for Andrew K. Vershon, Ph.D.
Developed an original body of work characterizing DNA-binding proteins involved in transcriptional regulation and expression of meiotic genes in *Saccharomyces cerevisiae*.

- Recipient of the Joanna Busch Fellowship Award, 1998.
- Recipient of the Michael Benedict Fellowship Award for 2 consecutive years, 1999-2001.
- Successfully expressed and purified two proteins for use in gel-shift/EMSA assays and crystallographic studies. Defined the respective nucleotide requirements of each protein for DNA binding. Used ChIP to demonstrate differential acetylation states of histones associated with specific promoters. Presented a novel model of site competition as a means of transcriptional

regulation. This work lead to co-authorship of three peer-reviewed publications.
- Utilized genetic screens, site-directed mutagenesis and immunoprecipitation techniques to identify and characterize co-factors that interact with specific DNA-binding proteins. This work resulted in co-authorship of two peer-reviewed publications.
- Demonstrated a command of the field of meiotic-specific transcriptional regulation by co-authoring a review article.
- Provided experimental and technical ideas that furthered the knowledge of cell cycle-dependent checkpoints, which garnered co-authorship on a peer-reviewed publication.

THOMAS JEFFERSON UNIVERSITY, DEPARTMENT OF BIOCHEMISTRY & MOLECULAR PHARMACOLOGY, Philadelphia, PA 1994 - 1997

Research Technician
Carried out basic research focused on the study of a developmentally regulated MAP kinase. Responsible for general duties for proper laboratory function, such as ordering supplies, reagent preparation and ensuring that all radioactive chemicals were properly accounted for and secured.

- Initiated and participated in genetic analysis of proteins having roles in meiosis and spore morphogenesis. The result of these studies is co-authorship of two peer-reviewed publications.
- Designed and executed a promoter deletion analysis to characterize the transcriptional regulation of a meiosis-specific MAP kinase resulting in co-authorship of a peer-reviewed publication.

Education
Ph.D., Rutgers University, New Brunswick, NJ, Microbiology and Molecular Genetics, 1997-2002.
B.S., Moravian College, Bethlehem, PA, Biology, 1989-1993.

Professional Development
Biacore T200 Fundamentals Training. GE Healtcare, 2011.
Essential Skills for First-Time Managers. Fred Pryor Seminars, 2008.
Lyophilization Technology, Theory and Practice of Freeze Drying. The Center for Professional Advancement, 2007.
Basic Project Management Theory and Practice. Project Assistants, 2006.
Six Sigma Green Belt Training. GE Healthcare, 2005.
Advanced Design of Experiments. GE Healthcare, 2005.
Microsoft Excel, Word, PowerPoint, Lotus Notes, DNA-Star, DNA Strider, Minitab, Design of Experiment, eNPI, MyWorkshop

Publications
Pierce, M., Vengsarkar, D., and Tumer, N.E. 2016. Catalytic activity and disruption of Ire1p oligomerization by ricin is important for ricin dependent inhibition of the unfolded protein response (UPR) in the yeast Saccharomyces cerevisiae (manuscript in preparation)

Pierce, M., Kahn, J. N., Chiou, J., and Tumer, N. E. 2011. Development of a quantitative RT-PCR assay to examine the kinetics of ribosome depurination by ribosome inactivating proteins using *Saccharomyces cerevisiae* as a model. *RNA* **17**, 201–210.

Wang, Y., Pierce, M., Schneper, L., Guldal, G., Zhang, X., Tavazoie, S., and Broach, J.R., 2004. Ras and Gpa2 mediate one branch of a redundant glucose signaling pathway in yeast. *PloS.* **2**: 0610-0622.

Pierce, M., Benjamin, K., Montano, S., Georgiadis, M., Winter, E., Vershon, A.K. 2003. Sum1 and Ndt80 proteins compete for binding to middle sporulation element sequences that control meiotic gene expression. *Mol Cell. Biol.* **23**: 4814-4825.

McCord, R., Pierce, M., Xie, J., Wontakal, S., Mickel, C., and Vershon, A.K., 2003. Rfm1, a novel tethering factor required to recruit the Hst1 histone deacetylase for repression of middle sporulation genes. *Mol Cell. Biol.* **23**: 2009-2016.

Montano, S.P., Cote, M., Fingerman, I., Pierce, M.,Vershon, A.K., and Georgiadis, M. 2002. The crystal structure of a novel DNA-binding domain from Ndt80, a transcriptional activator required for meiosis in yeast. *PNAS.* **99**: 14041-14046.

Montano, S.P., Pierce, M., Cote, M., Vershon, A.K., and Georgiadis, M. 2002. Crystallographic studies of a novel DNA-binding domain from the yeast transcriptional activator Ndt80. *Acta Cryst.* D**58**: 2127-2130.

Lindgren, A., Bungard, D., Pierce, M., Xie, J., Vershon, A.K., and Winter, E. 2000. The pachytene checkpoint in *Saccharomyces cerevisiae* requires the Sum1 transcriptional repressor. *EMBO J.* **19**: 6489-6497.

Andrew K. Vershon and Michael Pierce 2000. Transcriptional regulation of meiosis in yeast. *Curr. Op. Cell Biol*.**12**: 334-339.

Xie, J., Pierce, M., Gailus-Durner, V., Wagner, M., Winter, E. and Vershon, A.K. 1999. *SUM1* and *HST1* repress middle sporulation-specific gene expression during mitosis in *Saccharomyces*. *EMBO J.* **18**: 6448-6454.

Wagner, M., Briza, P., Pierce, M., and Winter, E. 1999. Distinct steps in yeast spore morphogenesis requires distinct *SMK1* MAP kinase thresholds. *Genetics*. **151**: 1327-1340.

Pierce, M., Wagner, M., Xie, J., Gailus-Durner, V., Vershon, A.K. and Winter, E. 1998. Transcriptional regulation of the *SMK1* MAP kinase gene during meiotic development in *Saccharomyces cerevisiae. Mol Cell. Biol.* **18**: 5970-5980.

Wagner, M., Pierce, M., and Winter, E. 1997. The CDK-activating kinase*CAK1* can dosage suppress sporulation defects of *smk1* MAP kinase mutants and is required for spore wall morphogenesis in *Saccharomyces cerevisiae. EMBO J.* **16**: 1305-1317.

Patents

Ponaka, R., Farchaus III, J.W. and Pierce, M.D. 2014. Preparation of Glassified Biological Reagents. U.S. Patent No. 8,900,525.