- Led internal Operations, Technical and Process Development teams through commissioning and qualification of an oil refinery, fermentation harvest recovery, two spray dryers and two extraction plant applying IQ, OQ, and PQ protocol. Developed innovative SA-88 application (DeltaV DCS) for Fermentation Harvest/Spray Drying process presented in Oct 2005 at the Emerson Global Conference as an innovative controls solution utilizing bus architecture.

01/2001 - 05/2003, AG PROCESSING, Saint Joseph, MO
Project Manager
(Ag Processing Inc is the world's largest cooperative soybean processor and a leading vegetable oil refiner in the United States. AGP is owned by local Midwestern and regional cooperatives representing farmers from 16 states throughout the nation)

- Responsible for managing all capital projects, generating budgets, bidding, contracting and supervising contractors for a 3.3million pound/day oil refinery.
- Process optimization and variable cost reduction

01/1999- 01/2001, CENTRAL SOYA, Ft. Wayne, IN
Corporate Engineer, Chemurgy Group

(The businesses of Central Soya Company, Inc. were primarily related to the production of food for human consumption. The process begins with the procurement of raw agricultural products and involves oilseed processing, vegetable oil refining and the manufacture of soy protein and lecithin.)

Designed, scoped and commissioned $5 million semi-works plant.

- Coordinated with research, production, and development teams for pilot studies and special product, toll processing events

12/1996 – 01/1999, ADM, Decatur, IL
Production Supervisor
(ADM is a world leading manufacturer of biodiesel, ethanol, soybean oil and meal, corn sweeteners, flour and other value-added food and feed ingredients).

- P&L responsibility for a $20 million state-of-the-art, ultra filtration extraction/packaging plant with 8 union operators
- Implemented a quality control program with modern analytical techniques to establish process optimization guidelines

EDUCATION

BS Chemical Engineering	University of Tulsa, Tulsa, OK
MBA	Indiana University, Ft Wayne, IN
Registered Engineer	(EI #11136)

Felipe Arana
561 Eccles Avenue
S. San Francisco, CA 94080
650-780-4777
farana@solazyme.com

PROFESSIONAL EXPERIENCE

Felipe Arana is Solazyme's Director of Downstream Process development. Prior to joining Solazyme, Mr. Arana held several positions while at Lloreda S. A, a major producer of fats and oils in Cali, Colombia, South America. Among his other duties, he served as Chemical Plant Engineer and managed over 100 employees including shift engineers, section supervisors and operators. As a Project engineer, he was intimately involved in process and equipment design, construction, commissioning and qualification phases for several oilseed and vegetable oil manufacturing plants. Mr. Arana has planned, directed and controlled multi-million dollar technical projects in multiple large scale production facilities. Throughout his career, Mr. Arana has demonstrated the ability to complete complex projects on time and within budget while managing multiple contractors including consultants, engineering and construction firms. During his career in process development, Mr Arana has:

- Pioneered the application of existing oilseed technologies to microalgal oil extraction and recovery
- Reduced capital investment by $2.0 million for palm oil physical refining and fractionation plants through creative and low cost modifications to existing equipment, software and processes
- Planned, directed and controlled technical projects worth in excess of $50 million at five production facilities
- Provided technical training and support to more than 200 engineers, supervisors and operators.
- Completed process and equipment design, construction, commissioning and qualification phases for several oilseed and vegetable oil manufacturing plants including :
    - A 500 ton per day soybean and cottonseed pressing, solvent extraction and lecithin plant
    - Two 500 ton per day vegetable oil refineries (caustic refining, acid degumming, deodorization, physical refining, hydrogenation, winterization and fractionation)
    - A 1000 ton per day oil bottling line
    - A 250 ton per day margarine packaging line
- Designed, built and installed solvent extraction, bleaching, deodorization, interesterification and fractionation equipment for pilot plant capable of processing 50 to 400 lbs/batch

- Responsible for developing a technically and economically viable downstream process to produce bio-fuel, food and feed, nutraceuticals and oleochemicals from micro-algae
- Plan, direct and control activities to accomplish downstream production objectives
- Designs and supervises on-site and off-site pilot testing of unit operations, including feed preparation, pressing, solvent extraction and other downstream processes (membrane separation, evaporation, drying, oil refining)
- Coordinates external consultants, equipment manufacturers and engineering firms
- Lead engineer for this start-up company developing new technologies in the dry-grind ethanol industry
- Scaled-up an innovative patented process from laboratory to semi-works scale (grams to kilograms and multi-ton quantities) for a health-specific corn oil and an industrial protein from corn
- Supervised on-site and off-site pilot testing for recovery and downstream unit operations
- Designed an industrial process in consultation with major engineering companies; calculated material and energy balances, supervised PFD, P&ID and construction drawings, equipment specification, construction.
- Optimized extraction and recovery of protein from whole corn for the biodegradable polymer market by ethanol extraction and membrane technology
- Conducted membrane screening and pilot plant testing to optimize process parameters in the downstream purification of 1,3-propanediol (3G), a biodegradable plastic precursor resulting in a commercial scale process employed by DuPont and Tate and Lyle for the manufacture of 1, 3 propanediol.

EDUCATION

B.S., Chemical Engineering, Universidad del Vale, Cali, Colombia — October 1989
M.S., Food Science and Technology, TEXAS A&M UNIVERSITY — May 2004

Harrison F. Dillon

561 Eccles Avenue
South San Francisco, CA 94040
650-780-4777
hdillon@solazyme.com

Dynamic leader with a diverse background building a pioneering biotechnology company in the energy sector, securing funding, presenting corporate achievements to the media and scientific community, leading a scientific organization, attracting and recruiting the scientific advisory board and board of directors, developing and managing corporate intellectual property portfolio. Demonstrated success recruiting, motivating, coaching, and developing cross functional teams that deliver unparalleled results.

WORK EXPERIENCE

Solazyme Inc., President, CTO and Co-Founder, South San Francisco, CA 9/03-Present

- Created the core concepts and initial intellectual property for founding Solazyme
- Led the organization through growth from 2 founders through ~50 employees
- Collaborated with CEO and business team to secure $75M in funding through Series C
- Responsibility for building, leading, and managing the scientific infrastructure for the organization
- Joint responsibility with CEO/Co-Founder for growing the business and technology portfolio and managing strategic direction of company
- Manage the legal affairs of the company
- Develop intellectual property, manage IP portfolio, create and lead IP organization
- Inventor of numerous patent applications and one issued patent owned by the company
- Collaborate with CEO and business leads to develop strategic alliances, partnerships, and joint ventures on a global scale aimed at the commercialization of Solazyme's product offering
- Develop an action/accountability plan in order to meet timelines, exceed expectations, and position Solazyme as the only company in the world with our product offering
- Publicize and promote Solazyme's accomplishments through accepting and conducting interviews for TV, radio, magazines, and other media vehicles
- Recruited scientific and business advisory boards

Townsend and Townsend and Crew, Associate and Patent Agent, Palo Alto, CA 6/02-6/04

- Draft opinion letters, patent applications, and Office Action responses for biotechnology inventions
- Perform due diligence on pending patent applications for venture capital clients
- Perform freedom-to-operate opinions and information for biotechnology clients

Research Triangle Institute, Consultant, Research Triangle Park, NC 9/01-05/02

- Perform patentability and commercialization assessments on biotechnology innovations developed by RTI clients
- Prepare marketability and IP assessments for in-house RTI technology

Parsons Behle and Latimer, Summer Associate, Salt Lake City, UT, 5/02-9/02

- Draft Office Action responses and trade secret transactional agreements
- Review and amend patent license agreements
- Research On Sale Bar and Markman issues for patent infringement lawsuit

Office of Technology Transfer, University of Utah Research Foundation, Patent and Licensing Agent, **Salt Lake City, UT, 11/98-8/00**

- Manage the Foundation's biotechnology portfolio of active licenses, invention disclosures and patents
- Review and amend biotechnology patent applications and Office Actions
- Draft, negotiate, and close patent licenses on patents covering technology such as: Cardiac arrhythmia-associated SNPs for pharmacogenetics; Neurotransmitter receptor genes; Cardiac ion channel genes for drug discovery; Bacterial protein x-ray structure data for antibiotic design; Pathogen gene sequences for microarray diagnostics

Emory University Department of Microbiology and Immunology, Laboratory Technician, Atlanta, GA, 12/91-5/93

- Clone bacterial virulence genes
- Perform research for and draft manuscript for publication on *Streptococcus* bacterial virulence genes

EDUCATION

Duke University School of Law, Durham, NC, J.D., 2003

University of Utah, Salt Lake City, UT, Ph.D., Genetics, 1998

Emory University, Atlanta, GA, B.S., Biology, 1993

PROFESSIONAL CERTIFICATIONS

Member of United States Patent Bar, Registration No. 45,661
Member of California Bar Association

SELECTED PUBLICATIONS – PATENTS

- USE OF CELLULOSIC MATERIALS FROM CULTIVATION OF MICROORGANISMS, US Patent App. Publication Number 20090011480, RENEWABLE DIESEL AND JET FUEL FROM MICROBIAL SOURCES, US Patent App. Publication Number 20090047721, Donald E. Trimbur, Chung-Soon Im, Harrison F. Dillon, Anthony G. Day, Scott Franklin and Anna Coragliotti, June 2, 2008.

- RENEWABLE DIESEL AND JET FUEL FROM MICROBIAL SOURCES, US Patent App. Publication Number 20090047721, Donald E. Trimbur, Chung-Soon Im, Harrison F. Dillon, Anthony G. Day, Scott Franklin and Anna Coragliotti, June 2, 2008.

- SUCROSE FEEDSTOCK UTILIZATION FOR OIL-BASED FUEL MANUFACTURING, US Patent App. Publication Number 20090035842, Donald E. Trimbur, Chung-Soon Im, Harrison F. Dillon, Anthony G. Day, Scott Franklin and Anna Coragliotti, June 2, 2008.

- GLYCEROL FEEDSTOCK UTILIZATION FOR OIL-BASED FUEL MANUFACTURING, US Patent App. Publication Number 20090004715, Donald E. Trimbur, Chung-Soon Im, Harrison F. Dillon, Anthony G. Day, Scott Franklin and Anna Coragliotti, June 2, 2008.

- LIPID PATHWAY MODIFICATION IN OIL-BEARING MICROORGANISMS, US Patent App. Publication Number 20090061493, Donald E. Trimbur, Chung-Soon Im, Harrison F. Dillon, Anthony G. Day, Scott Franklin and Anna Coragliotti, June 2, 2008.

ARTHUR GROSSMAN
Chief of Genetics, Solazyme, Inc., 561 Eccles Avenue, S. San Francisco, CA 94080,
agrossman@solazyme.com

Professional Experience:

Present Position:	Staff Member (Since 1982)	Professor by courtesy
	Carnegie Institution of Washington	Department of Biology
	Department of Plant Biology	Stanford University
	260 Panama Street	Herrin Hall
	Stanford, California, 94305	Stanford, California 94305
	Telephone: (650) 325-1521	
Past Position:	Assist. Professor by courtesy, 1982-1989, Dept of Biology, Stanford University	
	Assoc. Professor by courtesy, 1989-2000, Dept of Biology, Stanford University	

Education and Research Experience:

Postdoctoral Fellow. 1978-1982. The Rockefeller University, Department of Cell Biology. Research: Uptake of Polypeptides into chloroplasts (Nam-Hai Chua, Advisor).

Ph.D. 1978. Indiana University, Department of Biological Sciences. Dissertation: Characterization of Photosynthetic Mutants in *Chlamydomonas reinhardtii* (Robert Togasaki, Advisor)

B.S. with Honors. 1973. Brooklyn College, New York. Major in Biology.

Honors, Services and Fellowships (since 2000):

2009 Gilbert Morgan Smith Medal
2007 Editorial Board Eukaryotic Cell
2005 Editorial Board Annu Rev Genet
2004 Geographical represented for the International Society of Photosynthesis Research (elected position)
2002 Darbaker Prize for work on microalgae (Botanical Society of America)
2001 Recipient of Lady Davis Fellowship
2000-2008 Editorial Board, Current Genetics
2000-2003 Scientific Advisory Board for the Wallenberg Consortium North
2000 Advisory Committee, Arizona State University Consortium to establish a NSF funded Biotechnology Center
2000-2004 Editorial Board, Plant and Cell Physiology
2000 Organizer of Symposium 'The Dynamics and Evolution of Light Harvesting Complexes (to honor Elizabeth Gantt)

1982-2002 Numerous ad hoc reviews for NSF and USDA, and some for NIH and DOE (as well as for a number of international agencies). I have also done numerous reviews for a variety of journals including Science, Nature, PNAS, The Plant Cell, EMBO Journal, The Plant Journal, Molecular Microbiology, Plant Physiology and Journal of Bacteriology.

Present Graduate Students:

Wirulda Pootakham. Acclimation of Chlamydomomas to sulfur deprivation.
Kate Rose Mackey. Photosynthesis and nutrient deprivation responses in marnine cyanobacteria.
Blaise Hamel. Photosynthesis at high temperatures.
Michelle Davision. Diversity of cyanobacteria in the hot springs.

Present Postdoctoral Fellows/Research Associates:

Claudia Catalanotti. Anoxic control of metabolism in Chlamydomonas reinhardtii.

David Gonzalez-Ballester. The acclimation of photosynthetic organisms to sulfur deprivation.
Wenqiang Yang. Anoxia and hydrogen production.
David Dewez. Understanding photosynthetic function through integration of informatic and experimental approaches.
Mark Heinnickel. Spectroscopic and fluorescence analysis of photosynthetic function.
Rosario Gomez. The physiology of the hot springs.

Academic/Industrial Affiliations:
EU consortium on 'Towards a better sunlight to biomass conversion efficiency' (Advisory Board)
Joint project with Martek Biosciences Corporation in Columbia, MD. Molecular manipulation of chromophytic algae to facilitate production of metabolites and specific lipids (1993-2000).
Consultant for Exelixis Pharmaceuticals.
Chief of Genetics, Solazyme.

Selected Publications

1. Dubini, A. Mus, F., Seibert, M., Grossman, A.R., Posewitz, M.C. (2009) Flexibility in anaerobic metabolism is revealed in a mutant of *Chlamydomonas reinhardtii* Lacking hydrogenase activity. J Biol Chem. **284**: 7201-13.
2. Huang, B., Wu, H., Bhaya, D., Grossman, A.R., Zare, R.N. (2007) Counting low-copy-number proteins in a single cell. Science. **315**: 81-84.
3. Ryu, W.Y, Huang, Z., Park, Z.S., Moseley, J., Grossman, A.R., Fasching, R.J., Prinz, F.B. (2008) Open Micro-fluidic System for *in situ* Electrochemical Atomic Force Microscopy Analysis of a Single Cell to Measure Photosynthetic Electron Transport. Lab on a Chip. **8**: 1460-1467.
4. Cardol. P., Bailleul, B., Derelle, E., Béal, D., Rappaport, F., Breyton, C., Bailey, S., Wollman, F.-A., Grossman, A.R., Moreau, H., Finazzi, G. (2008) A novel adaptation of photosynthesis in the marine, picoeukaryote *Ostreococcus* sp. Proc Natl Acad Sci USA. **105**: 7881-6.
5. Steunou, A.S., Jensen, S., Bhaya, D., Ward, D.M., Brecht, E, Grossman, A.R., Kühl, M. (2008) Energetic Considerations for Expression and Activity of the Nitrogenase in Hot Spring Microbial Mats. ISME J. **2**: 364-78.
6. Merchant, S., Prochnik, S. and the Chlamydomonas Genome Project Team (Rokhsar and Grossman, Corresponding authors) (2007) *Chlamydomonas reinhardtii* genome reveals evolutionary insights into critical animal- and plant-associated functions. Science. **318**: 245-250.
7. Bhaya, D. Khuri, N., Grossman, A.R., Cohan, F., Alexander, Simpson, C., Steunou, A., Bateson, M., Melendrez, M., Hamamura, N., Rhee, S., Ward, D., Miller, S., Heidelberg, J. (2007) Genomic, metagenomic and functional analyses of cyanobacteria from hot-spring microbial mats reveal unexpected diversity in nutrient utilization strategies. ISME J. **1**: 703-13.
8. Mus, F., Dubini, A., Seibert, M., Posewitz, M.C., Grossman, A.R. (2007) Anaerobic adaptation in *Chlamydomonas reinhardtii*: Anoxic gene expression, hydrogenase induction and metabolic pathways. J Biol Chem. **282**: 25475-25486.
9. Steunou, A.S., Bhaya, D., Bateson, M., Melendrez, M., Ward, D., Brecht, E., Peters, J.W., Kühl, K, Grossman, A.R. (2006) In Situ Analysis of Nitrogen Fixation and Metabolic Switching in Unicellular Thermophilic Cyanobacteria in Hot Spring Microbial Mat. Proc Natl Acad Sci USA. **103**: 2398-403.
10. Zaslavskaia, L., J. C. Lippmeier, C. Shih, A. R. Grossman and K. E. Apt (2001) Trophic conversion of an obligate photoautotrophic alga through metabolic engineering. Science **292**: 2073-2075.

PETER J. LICARI

561 Eccles Avenue
S. San Francisco, CA 94080
plicari@solazyme.com

SUMMARY

Progressive biotechnology industry professional with extensive general management experience in global operational and executive management roles. Capable of assembling and managing multidisciplinary teams able to communicate effectively, resolve problems, and meet objectives.

EXPERIENCE

Solazyme Inc., South San Francisco, CA — October 2008 – Present
Senior Vice President, Research and Development
Responsible for directing Molecular Biology, Discovery, Strain Development, and Analytical Chemistry activities.

Kosan Biosciences Inc., Hayward, CA — 1998 – 2008
Director, Process Sciences, August 1998 to Senior Vice President, Manufacturing and Operations, September 2008

Member of the executive management team responsible for strategy development, prioritization of projects within Kosan's portfolio, realignment of organization to reduce burn, and relationship development with organizations outside of Kosan. Responsible for directing Process Development, Manufacturing, Quality Assurance, Quality Control, Facilities, and EH&S departments. Accountable for managing the development of the preclinical and clinical candidate pipeline, including all manufacturing and compliance aspects.

- Instituted development and manufacturing groups to support in-house production of drug compounds. Internal manufacturing routinely allowed Kosan to enter Phase 1 clinical trials 8-12 months faster than outsourcing.
- Established fermentation and purification development as a competitive advantage for Kosan. Developed and managed interdisciplinary teams capable of routinely improving fermentation titers from <10 mg/L to 500-1000 mg/L. Routinely reduced cost of goods 20-500 fold with processes that were successfully scaled to the 3,000-10,000 L fermentation scale.
- Implemented Quality Control and Quality Assurance groups and systems to assure compliance with cGMPs and GLPs. Successfully completed six audits from US and European partner audits.
- Created and optimized manufacturing and distribution strategies for APIs and drug products to support preclinical and clinical programs. Established and managed all outsourced manufacturing and development contracts, including activities in India, Taiwan, Italy, Denmark, Czech Republic, Germany, and US.
- Incorporated standardized documentation process for development, manufacturing and compliance purposes that also serves to retain institutional knowledge. Wrote CMC regulatory filings, including 8 INDs, associated annual reports, amendments, and responses to inquiries in US, Canada, Europe, Russia, and Australia.

Massachusetts Biologics Laboratories, Boston, MA — 1996 – 1998
Director, Vaccine Manufacturing and Development: Responsible for the manufacture and development of licensed and investigational vaccines, including diptheria, tetanus, acellular pertussis and *Haemophilus influenzae* type b-tetanus conjugated vaccines. Accountable for manufacturing facility and supply chain management.

- Ensured that the production of vaccines was in accordance with cGMPs relating to the production of human biologics.
- Communicated and interacted with the FDA on matters relevant to vaccine production, including audits, ELA, PLA, and INDs.
- Led the development of manufacturing scale fermentation, purification, and formulation processes for acellular pertussis, *H. influenzae* type b-tetanus conjugate, and hemolytic uremic syndrome vaccines.

BASF Bioresearch Corporation, Worcester, MA 1993 – 1996

Senior Scientist: Supervisor of the fermentation process development group, responsible for the production of proteins from animal cell, yeast, and bacterial cultures. Accountable for developing scalable processes and the successful transfer of these processes to the manufacturing plant.

- Served as project leader for an anti-TNF human monoclonal antibody project (Humira®). Coordinated Fermentation Development, Purification Development, Manufacturing, Quality Control, and Quality Assurance groups for the development and manufacture of clinical material.
- Coordinated and supervised an interdisciplinary team responsible for the transfection and amplification of human monoclonal antibodies produced in CHO and NS/0 cell lines. Developed and optimized a CHO batch and successfully scaled this process to the 1000 L manufacturing scale.
- Developed a high density *Hansenula polymorpha* fermentation for the production of hirudin at the 20 L scale and successfully scaled this process to 3000 L. Responsible for the fermentation and recovery of this product.

Merck Research Labs, Merck & Co., Inc., 1992 – 1993

Engineering Associate: Involved in the development of a perfusion based process for attenuated hepatitis A virus production used to produce Vaqta®.

- Investigated attachment kinetics and planting uniformity of cells as well as factors that influence these properties in novel perfusion bioreactors.

SELECTED PUBLICATIONS

Buchanan G., Regentin R., Piagentini M., Rascher A., McDaniel R., Galazzo J., Licari P. Production of 8-demethyl-geldanamycin and 4,5-epoxy-8-demethyl-geldanamycin from a recombinant strain of *Streptomyces hygroscopicus. J. Nat. Prod.* 2005. 68(4): 607-610.

Frykman S.A., Tsuruta H., Licari P., "Assessment of fed-batch, semi-continuous, and continuous Epothilone D production processes." *Biotechnol Prog*. 2005. 21(4):1102-1108.

Desai R.P., Rodriguez E., Galazzo J.L., Licari P., "Improved bioconversion of 15-fluoro-6-deoxyerythronolide B to 15-fluoro-erythromycin A by overexpression of the eryK gene in *Saccharopolyspora erythraea*." *Biotechnol Prog*. 2004 Nov-Dec; 20(6):1660-5.

EDUCATION

California Institute of Technology, Pasadena, CA

Ph.D., Chemical Engineering, Minor in Biology, 1992, Advisor: James E. Bailey

Tufts University, Medford, MA

M.S., Chemical Engineering, 1988. Advisor: Randal Swartz

B.S., Chemical Engineering, Second Major in Applied Physics, Summa Cum Laude, 1987

Pepperdine University, Malibu, CA,

M.B.A., 2005

Anthony Day, Ph.D.

Solazyme Inc., 561 Eccles Ave., South San Francisco, CA 94080

SUMMARY

A senior industrial biotechnologist with expertise in the design, and implementation of directed research programs. Demonstrated ability to lead multi-functional, multi-site research programs and identify and manage fruitful external relationships and collaborations. Over 20 years of biotechnology experience, project/functional leadership, technical-business development experience.

PROFESSIONAL EXPERIENCE

Solazyme Inc. **2006 - 2009**

VP of R & D

ADDAC Pharma Consultancy LLC, San Francisco, California **2005**

Founder and Principal

GENENCOR INTERNATIONAL, Palo Alto, California **1993 - 2005**

Director of Research

- Carried out due diligence on anti-inflammatory drug candidate, promoted in-licensing, and then led the project team that advanced it from research into pre-clinical development
- Managed a high performance team of 20 employees

Head of Structural Biology

- Led protease inhibitor program for the discovery of new therapeutics. This was a key program involving 25 employees at both the U.S. and European research sites
- Led the fungal anti-infective therapeutic discovery program, Genencor's first pharma program. This involved planning, initiating, and managing the program. Twenty employees reported to the project

Senior Scientist

- Chartered to form and lead Genencor's bioinformatics group. This involved hiring, software purchases, and promotion of the group's services within the company. The group is now an essential component of R&D
- Led a multi-site cellulase engineering project which led to patents being filed and a successful multi-million dollar product launch
- Led a short-term "hit and run" project to solve an urgent protein expression problem

Scientist

- Invented a new, genetically engineered amylase which is now a multi-million dollar product

CAMBRIDGE PROTEIN SCIENCE, Cambridge, England **1999 - 2000**

General Manager and Head of Research

- Co-founded a biotechnology company to commercialize novel protein expression technology

developed by a Nobel laureate and refolding technology developed at Cambridge University in the UK

- Conceived business model, wrote the business plan,and negotiated IP in-licensing and business contracts
- Signed term sheet for $5 million in venture capital from a consortium of three European venture companies.

EDUCATION

Post Doctoral Fellow **1989 - 1993**
University of Cambridge, England.
Supervisor: Professor Alan R. Fersht, FRS

Ph.D. **1989**
Imperial College of Science, Technology and Medicine, University of London, England.
Supervisor: Dr. C. P. Lichtenstein

M.Sc.
1985

University of British Columbia, Canada.
Supervisor: Dr. S. G. Withers

B.Sc. (Hons) **1981**
Portsmouth Polytechnic, England.
Chemistry

SELECTED PATENTS AND PUBLICATIONS

1. D. Trimbur, CS. Im, H. Dillon, Harrison, A. Day, S. Franklin, A. Coragliotti. PRODUCTION OF OIL IN MICROORGANISMS PCT/US2008/065563 (WO2008/151149)
2. D. Trimbur, CS. Im, H. Dillon, Harrison, A. Day, S. Franklin, A. Coragliotti. USE OF CELLULOSIC MATERIALS FOR CULTIVATION OF MICROORGANISMS 12/131,783 (US20090011480)
3. D. Trimbur, CS. Im, H. Dillon, Harrison, A. Day, S. Franklin, A. Coragliotti. RENEWABLE DIESEL AND JET FUEL FROM MICROBIAL SOURCES 12/131,773 (US20090047721)
4. D. Trimbur, CS. Im, H. Dillon, Harrison, A. Day, S. Franklin, A. Coragliotti. SUCROSE FEEDSTOCK UTILIZATION FOR OIL-BASED FUEL MANUFACTURING 12/131,793 (US20090035842)
5. D. Trimbur, CS. Im, H. Dillon, Harrison, A. Day, S. Franklin, A. Coragliotti. LIPID PATHWAY MODIFICATION IN OIL-BEARING MICROORGANISMS 12/131,804 (US20090061493)
6. Y. Mao, C. Lai, G. Vogtentanz, B. Schmidt, A. G. Day, J. Miller, D. Brandon, & D.Chen; Monoclonal Antibodies Against Soybean Bowman Birk Inhibitor Recognize The Protease Reactive Loops; Protein J; **24**, 275-282, (2005).
7. C. Eggers, I. Murray, V. Delmar, A.G.Day, & C. S. Craik; The periplasmic serine protease inhibitor ecotin protects bacteria against neutrophil elastase; Biochem J.; **379**, 107-18 (2004).
8. M. Sandgren, P. Gualfetti, A. Shaw, L. Gross, M. Saldajeno, A. G. Day, T. A. Jones, & C. Mitchinson; Comparison of Homologous Family 12 Glucosyl Hydrolases and Recruited Substitutions Important for Stability; Protein Science; **12**,848-60 (2003).
9. A. Shaw, R. Bott, C. Vonrhein, G. Bricogne, S. Power, A. G. Day; A Novel Combination Of Two Classic Catalytic Schemes; J. Mol. Biol.; **320**, 303-9 (2002).
10. Shaw, A R. Bott, & A. G. Day; Protein Engineering of alpha-Amylase for Low pH Performance; Curr. Opin. Biotechnol.; **10**, 349-52 (1999).

Scott Franklin
561 Eccles Avenue
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sfranklin@solazyme.com

Scott Franklin, Ph.D. is Solazyme's Senior Director of Discovery and Molecular Biology. Prior to joining Solazyme, Dr. Franklin was a founder, V.P. of Technology Development, Board of Directors and Scientific Advisory Board member at Rincon Pharmaceuticals, Inc. where he played a critical role in helping to raise over $5 million in venture and angel capital to launch the company. During his tenure at the company he led a team that was the first in the field to undertake detailed characterization of recombinant proteins expressed in algal chloroplasts while developing new vectors and strategies for implementing high throughput screens. In the process they developed methods for strain improvement as it relates to recombinant protein productivity and expression. Dr Franklin played a key role in developing intellectual property for the company, securing Phase I SBIR funding relating to expression of mAbs in algal chloroplasts while managing over twelve research alliances with industry partners such as Biogen-Idec, Insmed, and Shire Pharmaceuticals as well as academic partners including The Scripps Research Institute, University of Erlangen, and the University of Alberta. Prior to co-founding Rincon Pharmaceuticals, Dr. Franklin also served as Director of Molecular Biology at Cyanotech Corporation, Kailua-Kona, HI. Where he directed work aimed at adding value to existing product lines through the application of molecular genetic approaches.
Throughout his career Dr. Franklin has played a key role at small start-up companies and been on the cutting edge of technologies that seek to exploit microalgae as bio-production platforms. Dr Franklin brings a unique breadth of experience spanning a range of disciplines from building molecular genetic capabilities *de novo* to working in large scale (600,000 L) photo bioreactor systems. For example during this time he has:

- Demonstrated for the first time expression, assembly and activity with a variety of complex monoclonal antibodies in algal chloroplasts.
- Developed new vectors and selection strategies to allow for expression of multiple genes in algal chloroplast genomes.
- Developed novel vectors for use in high throughput screens designed to identify strains and regulatory elements capable of supporting increased recombinant protein productivity.
- Led team that developed chloroplast transformation vectors, selection strategies and protocols resulting in increases in transformation efficiencies by three log orders.
- Developed tools to discriminate between various cyanobacterial isolates of commercial interest.
- Led teams that scaled cyanobacterial isolates from laboratory to commercial production scale (600,000 L).
- Led teams that developed cultivation and media optimization regimes for new cyanobacterial isolates and scaled to 30,000 L.
- Secured funding from National Institutes of Health (NIH) and National Oceanic and Atmospheric Administration (NOAA) around recombinant protein expression in algae.
- Repeatedly built and led molecular biology teams *de novo*

PhD. University of Texas, Austin.
Austin, TX 1985-1991. Demonstrated the feasibility of using nonsense suppression in plants to modify amino acid sequences of proteins as part of Ph.D. dissertation.
B.S. University of California at Davis
Davis, CA 1982 – 1985

Select Publications:

1. Barnes, D., Franklin, S., Schultz, J., Henry, R., Coragliotti, A. and Mayfield, S. **Contribution of 5' and 3' untranslated regions of plastid mRNAs to the expression of *Chlamydomonas reinhardtii* chloroplast genes.** *Mol. Gen. Genomics*. 2005, 274:625-636.
2. Franklin, S.E. and Mayfield, S.P. **Recent developments in the production of human therapeutic proteins in eukaryotic algae.** *Expert Opin. Biol. Ther*. 2005, **5**:225-235.
3. Mayfield, S.P. and Franklin, S: **Expression of human antibodies in eukaryotic micro-algae.** *Vaccine*. 2005. 23: 1828-1832
4. Franklin, S.E. and Mayfield, S.P. **Prospects for molecular farming in the green alga *Chlamydomonas reinhardtii*.** *Curr. Opin. Plant Biol*. 2004, **7**:159-165.
5. Mayfield, S., Franklin, S.E., and Lerner, R. (2003) **Expression and assembly of a fully active antibody in algae**. Proc. Natl. Acad. Sci. USA 100: 438-442.
6. Franklin, S.E. Ngo, B., Efuet, E. and Mayfield, S.P. (2001) **Development of a GFP reporter gene for *Chlamydomonas reinhardtii* chloroplasts**. *The Plant Journal* 30: 733-744.
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Jonathan S. Wolfson
(650) 780-4779 • jwolfson@solazyme.com

EXPERIENCE

SOLAZYME, INC. - South San Francisco, CA — November 2003 – Present
Chief Executive Officer and Co-Founder
Solazyme is a biotechnology company specializing in the optimization of microalgae for production of biofuels, human/animal nutrition, chemicals and health and wellness materials.

- Responsible for overall corporate strategy and execution.
- Manage all business functions and commercialization
- Built a world class executive team and advisory board required to lead the company past proof of concept to large scale production and commercialization.
- Leading all efforts to establish critical strategic business partnerships; from developing a strategy, to attracting and securing partners, to managing and expanding existing relationships.
- Repeated demonstration of ability to optimize overall capital and cash flow efficiency - - successfully raised approximately $75 million to date with combination of equity, debt and government grants.

7TH ONLINE, INC. - New York, NY — November 2002 – November 2003
Vice President of Finance and Business Development
7thOnline is a venture backed provider of supply chain software targeted to the global retail industry. Applications include collaborative assortment and financial planning and order management technology.

- Ran corporate finance, including modeling, cash/debt management, and capital raising
  - Perform detailed financial and valuation analyses for pricing, business forecasting, project costing/financing, project appraisal, capital raising, and potential acquisitions
  - Build, maintain and update corporate and project level financial models
  - Manage external audit
- Managed financing round including the creation and delivery of roadshow financing presentations, due diligence reviews, preparation of documentation through successful closure.
- Together with Sales, responsible for developing, preparing and delivering sales collateral and presentations to generate sales bookings and revenue for the company by developing, pursuing and closing sales opportunities. During first nine months of employment, oversaw approximately 300% increase in annualized revenues.
- Responsible for identifying and building crucial strategic business partnerships; from developing a strategy, to attracting and securing partners, to managing and expanding existing relationships.

HUNTER COLLEGE (CITY UNIVERSITY OF NEW YORK) *- New York, NY* — *Fall 2001 – Fall 2003*
Adjunct Assistant Professor of Economics (Part Time – Evenings)

- Taught undergraduate classes each semester including lecturing, preparation of lesson plans exams and projects.
- Developed and administered novel standalone corporate malfeasance curriculum as part of advanced accounting and corporate governance course.

INVESTORTREE, INC. *- New York, NY* — *December 1999 – November 2002*
Co-President
InvestorTree was a financial software and services firm specializing in the installation and customization of lead generation (CRM) software and service tools to the financial advisory community.

- Ran strategy and business development team focusing on planning, project management, channel management, account management, and strategic alliances with direct responsibility for the negotiation and closure of agreements.
    - Partnerships created include: Fidelity Investments, AXA/Equitable, Raymond James, Fiserv/DATAlynx, Morningstar/Marketwatch and others
- Responsible for corporate finance function, including modeling, cash and debt management, and capital raising
    - Performed detailed financial and valuation analyses for pricing, business forecasting, project costing/financing, project appraisal, capital raising, and potential acquisitions
    - Built, maintained and updated corporate and project level financial models
    - Managed fundraising including roadshow and investor relations through closure
- Co-inventor of InvestorTree's analytical applications (Patent Application Serial No. 09/668,828)
- Ran technical and sales level marketing function including education on integration with ERP and CRM solutions and upgrading of software to provide additional CRM services.

POSITIONS HELD DURING GRADUATE SCHOOL:

MORGAN STANLEY *- New York, NY*

Summer Associate in Investment Banking Division

- Developed comprehensive financial model and prepared internal commitment documents and external board materials for $4 billion buy-side M & A assignment.
- Analyzed industry and company specific data and prepared quantitative and written summaries for management buyout of an airline.
- Prepared valuation and pitch materials for telecommunications IPO resulting in new business.

FRIED, FRANK, HARRIS, SHRIVER & JACOBSON *- New York, NY*

Summer Associate

- Member of deal team for Forstmann Little & Co. $1.4 billion LBO of Community Health Systems, Inc. and represented Merrill Lynch in IPO of Jack Nicklaus' Golden Bear Golf.

TRIARC COMPANIES, INC. - New York, NY

Associate (Full (Summer) and Part Time (Academic Years))

- Financial Analyst and legal coordinator on major corporate restructuring that included sale of Graniteville, Inc., IPO of National Propane Partners, LLP, and acquisition of Mistic Beverage.

DNA – PEOPLE'S LEGAL SERVICES *- Tuba City, AZ*

Case Handler with special admission to Navajo Bar (Full Time)

- Practiced employment, family, and disability advocacy law as legal aid case handler for indigent Navajos and Hopis on the Navajo reservation.

EDUCATION

NEW YORK UNIVERSITY: Leonard N. Stern School of Business - New York, NY — December 1999

Masters in Business Administration - Emphasis in Finance

NEW YORK UNIVERSITY: NYU School of Law - New York, NY — December 1999

Juris Doctor

EMORY UNIVERSITY - Atlanta, GA — May 1993

Bachelor of Arts, Political Science

- Deans List all Semesters
- Pi Sigma Alpha National Political Science Honors Society

Tyler W. Painter

561 Eccles Avenue, S. San Francisco, CA 94080 tpainter@solazyme.com

Accomplished finance executive with industry experience spanning operations in the U.S., Europe and Asia and across private, public and Fortune 500 companies. Proven ability to quickly analyze key business drivers and develop strategies to increase shareholder value.

HIGHLIGHTS

- Extensive capital structuring experience raising over $500 million in equity and debt in both private and public markets
- Corporate officer of $1B public software company with direct responsibility for managing corporate assets in excess of $200 million
- 10+ years leading Investor Relations strategies and managing Wall Street relationships
- Winner of 2006 Pinnacle Award for Risk Management from the Association of Financial Professionals for creating industry leading approach to global treasury and finance operations that enhanced internal controls and resulted in over $500K of annual savings
- Successfully implemented SOX 404 compliance across multiple finance departments, creating and implementing procedures that were highlighted as industry best practice

PROFESSIONAL EXPERIENCE

SOLAZYME • South San Francisco, CA — Oct 2007 - Present

Leader in Algal Biotechnology creating sustainable solutions for Renewable Fuels, Chemicals and Nutritional markets

Chief Financial Officer

- Responsible for managing capital structure to support rapid growth of company managed series C fundraising process resulting in equity raise in excess of $50 million
- Managing allocation of resources and cash burn against budgets and strategic initiatives
- Leading all administrative functions for company including operations, human resources and IT
- Enhancing existing procedures and processes to ensure compliance with all regulatory requirements including GAAP, SEC, government project accounting and project financing.

PMC-SIERRA • Vancouver, British Columbia, Canada — May 2007 – Oct 2007

Leading provider of broadband communications and storage semiconductors

Interim Vice President Finance & Corporate Controller

- Recruited for international assignment as key finance executive of $2 billion company.
- Accountable for strategic planning and leadership of global accounting organization, day-to-day operations management and SEC reporting.
- Recruited, developed and managed team of 40+ finance professionals, managers and support staff.
- Championed initiative to review and update accounting policies in order to ensure compliance with GAAP guidelines.

WIND RIVER SYSTEMS, INC. • Alameda, CA **Jan 2001 – April 2007**

Global leader in Device Software

Vice President Finance, Investor Relations & Corporate Treasurer • 2005 – 2007
Corporate Treasurer and Senior Director Investor Relations & Tax • 2003 - 2005
Director Investor Relations • 2001 - 2003

Investor Relations Achievements
Maximize shareholder value through actively managing Wall Street communications and relationships.

- Awarded 2007 Top 5 Best Corporate Governance Practices in the U.S by IR Global Rankings, a comprehensive ranking system for Corporate Governance and Earnings Release & Disclosures.
- Increased average holding period of top 35 institutional investors from 1 year to over 18 months.
- Managed financial disclosures and ensured compliance with Reg FD.

Corporate Treasury Achievements
Centralized treasury function to minimize risk, improve cash flow and maximize return on assets.

- Delivered returns that exceeded benchmarks in 16 out of 18 quarters for $200M+ portfolio
- Raised $150 million through subordinated convertible debt offering, secured various lines of credit totaling $60 million and managed global capital requirements for entities in 18 countries
- Consolidated banking systems to one global platform and reduced operating costs by 15%.
- Improved cash flow forecasting and reversed negative cash flow to positive $55 million annually.

CARSDIRECT • Culver City, CA ***1999 - 2001***
#1 online car buying resource (as rated by Forbes, Time and Yahoo!)

Director Finance and Investor Relations

Key member of start-up management team that grew company revenues to $160M in 2 years. Charged with developing corporate financial model and managing private fundraising.

- Developed annual operating budgets, monthly financial reporting of actuals vs. forecast and identified opportunities to improve performance against targets.
- Secured $300 million in equity funding from leading private investors.
- Managed S-1 filing process with investment banks, legal counsel and auditors.
- Acted as primary contact for investors to answer financial and strategic due diligence inquiries.

GAP, INC. • San Francisco, CA **1993 - 1999**
Fortune 200 Specialty apparel retailer
Senior Manager Investor Relations • 1998 - 1999
Senior Analyst / Manager – Investor Relations & International Finance • 1995-1998
Staff Accountant – Product Cost Management • 1993-1995

EDUCATION

B.S., Business Administration / Finance Management
California Polytechnic University • San Luis Obispo, CA

PROFESSIONAL AFFILIATIONS

National Investor Relations Institute
Association of Financial Professionals

TROY J. CAMPIONE, PhD. Senior V.P. Business Development, Solazyme, Inc.
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Differentiating Strengths and Unique Qualifications

- **Stellar track record of monetizing technology across diverse industries and geographies built on rare combination of extensive business, technology and leadership experience**
- **High energy, passionate, ultra-creative optimist, strategist and visionary**
- **Consummate relationship builder and dealmaker**

TECHNICAL EXPERTISE Chemicals, energy/fuels (alternative/"green-tech"), catalysis, polymers, materials science

Professional Experience

SYMYX TECHNOLOGIES, INC. - SANTA CLARA, CA **2000 – OCT 2006**

Symyx is a $120+ million dollar, 400+ employee high tech company providing high throughput research and informatics technologies globally to the chemical, energy, polymer, pharmaceutical and electronics industries.

General Manager and Vice President (2004-Oct. 2006)
Collaborative Research, Strategic Alliances and Materials Licensing
($45M budget, 120 member scientific organization, P/L responsibility, leadership team)

Vice President- Business Development (2000-2004)
Alliances, Sales and Marketing

Grew the business by >25%/yr to $65M/yr @40% gross margin (2003-06) and attractive royalty upside by developing and executing on innovative business strategies and tactics and leading the organization to success
Leveraged Symyx's strong technology position to develop and successfully negotiate over $400M (million dollars) of new research services, products and licensing revenue

- $225+M, 5 year landmark alliance with ExxonMobil (2002)
- $120+M, 5 year alliance with The Dow Chemical Company (2004)
- $14M, 5 year collaboration with Univation Technologies (2003)
- $10M, 3 year collaboration with Innovene (formerly BP) (2003)
- $10+M, 4 year collaboration with Celanese (2001)
- $8+M collaboration with BP (2004)
- Plus several multi-million dollar research deals with Honda, ExxonMobil, Dow, JSR, and (2) undisclosed companies resulting in multiple commercial successes (through mid-2006)
- JSR – electronic applications – LFRP polymers (2)
- Dow Chemical – elastomeric and blocky polymers (2)
- Celanese – catalyst for vinyl acetate production (1)

EXXONMOBIL CHEMICAL - HOUSTON AND BAYTOWN, TX **1991 - 2000**

Worldwide Basic Chemicals Technology Manager (1997-2000)
($20M budget, 45 researchers, 27 labs and pilot plants) ***and***

Site Operations Manager ($7M/yr, 27 person organization)

Led research and development activities for advanced catalyst and process technologies in support of 4 billion dollars/yr of light olefins production

- Managed multi-site R&D activities, most notably resulting in the advancement of breakthrough technologies in catalytic cracking and gas conversion
- Effectively orchestrated worldwide collaborative research activities with five institutes and private industry to deliver enhanced technology options
- Revamped global intellectual property and licensing strategy and aligned with business objectives resulting in stronger IP protection and lower costs

Effectively managed the safety, health, environmental, site services and operations of a 450 person R&D and Engineering complex

Intermediates Business Manager (1996-1997)
($600 M/yr business segment)

Delivered continued success and growth of the Vinyl Intermediates leadership business by championing strategic initiatives and delivering on earnings growth, operating targets and competitive positioning

- Evolved a compelling vision and strategic business agenda, translated into aggressive measurable goals and led a cross-functional business team to achieve growth and cost reduction targets
  - Aligned marketing, manufacturing and technology organizations to deliver on plans
  - Achieved $15M earnings growth and 5% cost reduction
  - Stewarded a $20M investment plan delivering 30% ROCE
- Negotiated complex feedstock, toll processing, IP license and new product development deals worth >$90M
- Improved and unified worldwide experience curves and competitive analysis methodology to strengthen ECC's strategic investment rationale

Multi-site Headquarters Safety Chairman *(15 member committee, 900 people)*

Department Head - Polymer Science Materials Characterization (1994-1996)
($8M budget, 34 researchers, 13 labs)- Lab operations, tech service

Senior Section Supervisor - Polymers Pilot Plants (1993-1994)
($12M operating budget, 37 scientists/engineers, 24 hour shift operation)
Semi-commercial development and scale-up activities

Strategic Business and Investment Planner - Intermediates (1991-1993)
(Prioritized, championed and secured the appropriation of $280M of capital investments including (2) major chemical plant expansions)

EXXON CHEMICAL COMPANY - BATON ROUGE, LA **1985 - 1991**

Technical Section Supervisor - Performance Products (1989-1991)
($2.5M budget, 12 engineers; also ***Investment Planner*** *($14M/yr))*
Plant operations and design; capital investment champion and steward

Senior Research Engineer - Intermediates Technology (1988-1989)
Research and development, modeling

Research Engineer - Intermediates Technology (1985-1988)
(3 patents for catalyst and process innovation)

EDUCATION

PhD Chemical Engineering, 1985 - University of Texas at Austin, 4.0 GPA
ME Chemical Engineering, 1982 - Tulane University, 4.0 GPA
BS Chemical Engineering, 1982 - Tulane University, cum laude
plus extensive executive business education at The Wharton School of Business, Cal Tech, University of Wisconsin Business School, and ExxonMobil

OTHER

Board of Editors - Industrial Research Institute
University of Texas at Austin – Department of Chemical Engineering – Advisory Committee
Numerous publications, articles and conference presentations

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EDUCATION

University of California at Berkeley
May 1995 *Master of Business Administration,* Walter A. Haas School of Business
May 1995 *Master of Public Health,* School of Public Health

Stanford University
June 1987 *Master of Science,* Department of Biology

University of Santa Clara
June 1985 *Bachelor of Science,* Department of Biology

EXPERIENCE

2005 – 2006 **FOCUS Biology, Inc.,** San Jose, CA
Business Development / Product Management
Founded start-up bioinformatics company developing machine learning algorithms for the analysis of genetic data. Raised initial start-up funds, and developed marketing and business plan. Signed agreements with beta partners, TGen, CHORI, and Celera Diagnostics. Created web-site, trade show booth, scientific posters and hand out materials generating a hundreds of leads. Led product development for use cases and feature priority developed through customer input.

2005 **Velocity11,** Menlo Park, CA
Consultant
Created business development plans for automation and software products slated for development.

1997 – 2005 **GE Healthcare/Amersham Biosciences/Molecular Dynamics,** Sunnyvale, CA
Business Development Manager
Global Sales Manager, Informatics
Responsible for sale and partner development for the discoveryHub Data Integration Technology and Scierra Laboratory Workflow Systems. Managed informatics sales specialists and worldwide regional sales organizations. Managed collaborative efforts for large custom software installations.
Marketing/Product Manager, Bioinformatics
Developed marketing plans, materials, and managed the product launch of the Scierra product line. Responsible for commercial relationships and product development of Amersham's strategic software
initiative, focusing on Laboratory Workflow Systems. Managed the sub-contracting partner, Cimarron Software, and various Amersham business units in Sweden, United Kingdom, Germany, Japan and United States. Provided support for Amersham's equity investment in Cimarron Software.

Gene Expression Product and Applications Manager
Lead the specification and development of the GenIII microarray platform, including software development and collaborations. Implemented the Microarray Technology Access Program (MTAP) which generated over $25 million in revenue and placed Molecular Dynamics as a leader in the area of spotted Gene Expression Microarrrays. Developed and managed a new team of scientists to liaison between Molecular Dynamics, Amersham and our MTAP Partners.

1995 – 1997 **Sangamo BioSciences, Inc.** Richmond, CA

Director of Business Development and Operations
First full time employee of biotechnology start-up developing the ZFP DNA binding technology. Responsible for the development, award, and execution of over $4.6 million in grant funding. Developed business plan for potential investors. Instituted research agreements with government and academic institutions. Negotiated lease agreements for research facilities and had responsibility for most business functions including marketing, personnel, intellectual property and accounting.

1989 – 1992 **Applied Biosystems Inc.** Foster City, CA

Field Sales Representative, New Jersey/New York

Generated over $8 million dollars in yearly sales. Led region in sales each year in the field.
Award for most DNA Sequencers sales, FY1992. Determined with R&D and customers solutions to technical problems encountered with dye-terminator sequencing.

Jeffrev L. Haney

REDACTED
EXEMPTION 6

PROFESSIONAL EXPERIENCE

CHEROKEE PHARMACEUTICALS, Riverside, PA **2008 - 2009**
Manufacturer of pharmaceutical and specialty chemicals

Director, Fermentation Services **2007 - Present**

- Responsible for all aspects of developing and managing the new *"Fermentation Contract Manufacturing Business"* for Cherokee Pharmaceuticals.
- Write and/or review Confidentiality Agreements for potential new customers.
- Follow up on initial contacts from potential customers to evaluate potential fit for the facility, including technical discussion and site visits.
- Write and/or review Pilot Manufacturing Agreements for the evaluation of products for potential new customers.
- Develop cost models for evaluation of economic feasibility, and also in support of negotiating cost for pilot and supply agreements.
- Recruit and develop a technical and operating staff to operate the new fermentation business.
- Direct all aspects of the manufacturing business, including assisting in technical coverage for new product demonstrations. To date six new product candidates have been evaluated at the production scale. Products categories' include biofuels, biopesticides, food products, and neutraceuticals.
- Interface with the VP of New Business Development for Cherokee Pharmaceuticals on all new potential customers.
- Develop financial operating plan (budget) for the new business and manage to that plan.

MERCK & CO., INC., Danville, PA **1979 - 2008**
Manufacturer of pharmaceuticals

Director of Manufacturing - Factory 6, 61, & 7 **2002 - 2007**

- Directed all aspect of the Active Pharmaceutical Ingredients (API) manufacturing for the Danville facility. Active ingredients produced at the site included antibiotics and animal health produces.
- Prepared and management a multi-million dollar budget for the manufacturing operation.
- Responsible for the Manufacturing Technical Support organization which assisted the Factories with day-to-day troubleshooting and process improvements.
- Managed a staff of approximately 150 individuals, 35 salaried and 115 hourly.
- Responsible for insure compliance in cGMP, Safety, and Environmental.
- Responsible for driving the employee involvement efforts within the manufacturing area. This effort included but was not limited to self-managed teams, operator driven process improvement efforts, and operator performed maintenance.
- Member of the Danville Plant Staff, Quality Council, Employee Involvement Steering Committee, Labor Contract Negotiating Team, Plant Staffing Committee, and other groups responsible for managing the Danville Plant.

Area Head - Factory 1 & 2 **1989 – 2002**

- Directed the fermentation and recovery operations in Factory 1 and 2 at the Danville facility, which was responsible for the production of biologics, food ingredients, animal health products, and other industrial fermentation products. Managed a staff of approximately 85 individuals, 17 salaried and 68 hourly.
- Prepared and management a multi-million dollar budget for the Factory 1 & 2 manufacturing operation.
- Served as the Plant Lead for the design, construction, and demonstration of the Xanthan Gum Process at the Danville facility. Upon completion of Phase II of this project, Danville was the second largest producer of Xanthan Gum for our customer in the world.
- Instituted a stand-alone quality system for the Xanthan Gum operation as part of the efforts to streamline operations and reduce costs. As part of this quality effort the Factory 1 & 2 area became the only area on the Danville site that received certification for ISO 9000, Kosher, HACCAP, and American Institute of Baking.
- Responsible for regulatory compliance, including cGMP's, Safety, and Environmental.
- Co-Chaired the Design Team that developed and eventually implemented the "First Self-Managed Work Teams" at the Danville Facility.

Department Head – Factory 1 & 2 **1986 - 1989**

- Directed the fermentation and recovery operations in Factory 1 and 2 at the Danville facility, which was responsible for the production of avermectin and asparaginase. Managed a staff of approximately 32 individuals, 9 salaried and 23 hourly.
- Prepared and management a multi-million dollar budget for the Factory 1 & 2 manufacturing operation.
- Responsible for process improvement efforts, achieving profit plan and yield targets for area.
- Responsible for regulatory compliance, including GMP's, and Safety and Environmental.

Senior Staff Microbiologist **1985 - 1986**

- Managed the Biotechnology Pilot Plant, comprised of 5L to 4000L scale fermentation vessels.
- Managed the performance of 5 hourly technicians.
- Responsible for scale-up of new processes, use testing of new raw materials, and general process improvements in support of manufacturing operations.

EDUCATION

Master of Science, Microbiology, University of Arkansas, Fayetteville, AR, 1979
Thesis: *"Effects of Trace Elements on the Growth and Metabolism of Rhizopus nigricans"*

Bachelor of Science, Biology/Chemistry, Arkansas Tech University, Russellville, AR, 1977

Gregory A. Spancake

REDACTED
EXEMPTION 6

PROFESSIONAL EXPERIENCE

CHEROKEE PHARMACEUTICALS, Riverside, PA **2008 - 2009**
Manufacturer of pharmaceutical and specialty chemicals

Department Head, Fermentation Services

- Manage the Technical Support Dept. which is responsible for providing technical support for the Fermentation Services contract manufacturing operation. Interact with the customers technical experts for technology transfer, develop process fits for the facility and provide support for process introductions.
- Review processes from potential new customers to determine if they are suitable opportunities for our business.
- Chair the Institutional Biosafety Committee to ensure facility compliance with NIH guidelines regarding recombinant organisms.

MERCK & CO., INC., Danville, PA **1996 - 2008**
Manufacturer of pharmaceuticals
Department Head, Factory 1 & 2 **2000 – 2005**

- Managed the fermentation and isolation facility responsible for production of asparaginase and xanthan gum.
- Responsible for process improvement efforts, achieving profit plan and yield targets for area and the implementation of a high performance work system.
- Responsible for regulatory compliance, including GMP's, ISO, Kosher, Safety and environmental.
- Shut down the xanthan gum process at the end of the contract and helped transition the facility to contract manufacturing.

Department Head, Factory 1 **1996 - 2000**

- Managed the F1 fermentation facility responsible for production of avermectin, asparaginase and xanthan gum.
- Responsible for process improvement efforts, achieving profit plan and yield targets for area and the implementation of a high performance work system.
- Responsible for regulatory compliance, including GMP's, ISO, Kosher, Safety and environmental.

GENENCOR INTERNATIONAL, INC., Rochester, NY **1991 - 1995**
Manufacturer of industrial enzymes and specialty chemicals

Manager, Microbiology

- Managed the Culture Collection which resulted in safekeeping of important company strains, generation of validated seed stocks for production processes, and ISO 9002 Certification.
- Provided technical support for Manufacturing Operations resulting in smooth introduction of new processes.
- Chaired the Institutional Biosafety Committee to ensure facility compliance with NY State and NIH guidelines regarding recombinant organisms.

- Managed strain and process development efforts for several industrial enzymes resulting in significant yield improvement.

EASTMAN KODAK CO., Bioproducts Div., Rochester, N.Y. **1988 – 1991**
Manufacturer of industrial enzymes, diagnostic enzymes and specialty chemicals

Laboratory Supervisor
- Managed Operations Microbiology and Analytical as part of plant management team. Labs provided necessary testing and monitoring of fermentations performed in Operations and performed development work in support of Bioproducts R&D activities.
- Provided technical leadership, personnel development and managed operating budget.
- Served as the Bioproduct Divisions Biosafety Officer and a member of the Eastman Kodak's Institutional Biosafety Committee.
- Managed the microbial assets of the division and served as microbiology consultant for the Biomanufacturing Program resulting in successful completion of numerous manufacturing contracts.
- Served as a member of the Contamination Control Task Force which investigated and solved contamination problems in the Operations Department.

MERCK & CO., INC., Danville, PA **1985 - 1988**
Manufacturer of pharmaceuticals

Senior Staff Microbiologist
- Managed culture development programs for the production of riboflavin, avermectin, cephalosporin C, and L-dopa, that improved productivity through the use of UV and chemical mutation.
- Developed culture storage procedures for new strains resulting in improved culture stability.

EDUCATION

Ph.D., Microbiology, Syracuse University, Syracuse, NY, 1985

B.S., Biology/Chemistry, University of Miami, Coral Gables, Fl, 1975

Additional training:

Fermentation Technology at Massachusetts Institute of Technology

John E. Cuzens

Senior Vice President, Chief Technology Officer, BlueFire Ethanol, Inc.

Education and Training:

University of California Berkeley, Bachelor of Science in Chemical Engineering.
College of Marin, Associate of Science in Physical Sciences

State of California, Registered Professional Mechanical Engineer, 1980, License No. 20891.
State of California, Contractors "A" License Responsible Managing Employee for ARK Energy, Inc. No.A700016

Past Member - American Institute of Chemical Engineers.

Selected Patents/Applications - 8 x "Method of Producing Sugars using Strong Acid Hydrolysis of Cellulosic and Hemicellulosic Materials" U.S.#5,562,777, 5,580,389, "Conversion of Glucose to Levulinic Acid" and other patents pending.

Technical Papers Presented and Published - "Sugar Cane Bagasse Conversion to Ethanol", World Renewable Energy Congress, Denver 1996. "Continuous Chromatographic Separation", National Renewable Energy Conference, Colorado Springs 1997, "Fuel-Flexible, Fuel Processors" ESD Conference, Los Angeles 1998, "Fuel Cells for Modern Buildings" Fuel Cell 98, Palm Springs.

Professional Experience:

BlueFire Ethanol, Inc, Irvine, Ca 2006 to present
Senior Vice President, Chief Technology Officer

Wahlco, Inc., Santa Ana, Ca. 2004- 2006
Director of Projects; Supervised Project Managers, Project Engineers and a scheduling group managing projects, mostly Utility or Engineer/Procure/Construction company clients. Process development and implementation of new urea to ammonia technology for the safe production of ammonia gas for Selective Catalytic Reduction environmental systems.

Applied Utility Systems, Inc., Irvine, Ca. 2001 – 2004
Manager of Operations, Manager of Project Management; Worked in a matrixed organization as the lead on development, design, fabrication and construction projects related to refinery

utility and chemical process industries. Responsible for customer satisfaction and maintenance of project deliverables quality. Completed $15MM SCR retrofit of 2 x FT4 30 MWe gas turbines on schedule and to satisfaction of customer while maintaining highest gross margin in company history.

Hydrogen Burner Technology, Inc., Long Beach, Ca. 1997-2001
Director of Manufacturing, Director of Engineering; Supervised engineering, manufacturing and project management personnel in this technology development company. Responsible for managing the fourteen ongoing contracts worth approximately $7 mm for clients such as the U.S. DOE, Los Alamos National Laboratory and several private companies. Helped double project backlog through responsive customer

service by exploiting compatible opportunities. Co-patent applicant for a process patent covering the integration of a fuel-flexible, fuel processor subsystem.

ARKENOL, Inc., Laguna Hills, Ca. 1991-1997
Director Engineering & Technology; Supervised the development and implementation of the ARKENOL "Acid Hydrolysis of Cellulosic Materials to Fermentable Sugars" technology. Supervised activities of employed and subcontract engineers & scientists in developing improvements and add-on technologies to further enhance the commercialization of the technology. Supporting company growth by making technical presentations, writing technical articles, networking and formulating technical proposals.

ARK Energy, Inc. (ARK), 1991-1997
Vice President Sacramento Power Inc., Senior Program Manager; Led Sacramento Ethanol and Power Cogeneration (SEPCO) project, a 149 mW gas fired combined cycle power plant and a 12.5 mm gal. per year cellulose to ethanol process plant. Sucesses included execution of Development Agreement and contracts with the Sacramento Municipal Utility District Financing Authority. Leader for CEQA, EIR permit activities at the CEC, for the AFC process. Lead technical coordinator for preliminary design for permitting and development of EPC contracts. Responsible for coordination of Political interface, and regulatory agencies. Project proponent speaker before community groups and public workshops. Responsible for schedule and budget performance compliance. Responsible Managing Engineer on ARK Energy, Inc. corporate State of California Contractors License for construction law and trade practice.

Senior Program Manager providing development assistance for potential projects in Brazil, Holland, Philippines, Indonesia, Italy, Australia, Hawaii, Texas and Minnesota. Potential projects included gas to coal fired 25-850 MW power plants with & without acid hydrolysis cogeneration thermal hosts. Biomass fired 2-50 MW utility plants for combined steam and power. Supported included cycle analysis, permit evaluation, technical communications, schedule and budget development.