

Sheila Podell, Ph.D.

SUMMARY

Programming skills (Professional Certificate in Bioinformatics)

- Perl, CGI, SQL, and Java in a Unix environment
- Web interfaces for relational databases
- Biological database design and implementation

Biology skills (Ph.D. in cell biology)

- 15 years wet-lab experience in biochemical assay development (including microarrays), protein chemistry, cell and molecular biology.
- Proficiency using common bioinformatic tools and databases

PROFESSIONAL EXPERIENCE

SCRIPPS INSTITUTION OF OCEANOGRAPHY

December 2004 - present

Research Programmer

- Analyze, design, implement and troubleshoot custom programs to automate microbial and eukaryotic genome annotation and analysis.
- Provide scientific liaison and training for wet-lab experimental biologists seeking to integrate genomic data and computational software tools into their research

SAN DIEGO SUPERCOMPUTER CENTER

2003-2004

Programmer/Analyst, Computational Biology Laboratory

- Developed and tested machine learning algorithms to predict post-translational protein modification sites from amino acid sequence data.
- Wrote programs to automate collection, preparation, and classification of sequence data used as input for machine learning algorithms and cross-validation studies.
- Developed web interfaces and automated parsers/loaders for relational database records.
- Curated and annotated biological database entries.

GENICON SCIENCES CORPORATION, SAN DIEGO, CA

Feb-Oct 2001

Associate Director, Product Development

- Managed development of *in vitro* toolkit products for quantitative, high throughput screening of nucleic acids on custom-spotted microarrays.
- Supervised development of laboratory techniques, reagents, and analysis procedures to improve reproducibility of microarray assays on glass surfaces.
- Designed and analyzed performance evaluation studies comparing Genicon's proprietary RLS technology (resonance light scattering from nanometer-sized gold particles) to competitive fluorescent detection techniques.

Sheila Podell, Ph.D.

- Planned development strategies, tasks, milestones, and timelines. Recruited and supervised laboratory personnel; coordinated timing of joint interdepartmental activities; presented project updates to senior management.

MOLECULAR BIOSYSTEMS INC., SAN DIEGO, CA

1991-2000

Scientist, Senior Scientist, Staff Scientist - Developed injectable, gas-filled protein microspheres and iodinated lipid emulsion contrast agents, used for medical diagnostic imaging with ultrasound and computed tomography.

- **Assay Development.** Directed development of analytical methods to test product performance, composition and stability, using HPLC, GC, particle size distribution, and differential scanning calorimetry, as well as spectrophotometric, fluorimetric, microscopic, and electrophoretic techniques.
- **Project Management.** Recruited and led teams that developed specifications, formulations, laboratory test methods, analytical software, and bench-scale manufacturing processes. Determined, prioritized, and assigned tasks for groups of 5-12 people, while managing timelines, budgets, and resource allocations. Conducted project meetings and corporate updates.
- **Regulatory Affairs.** Proposed product specifications and responded to scientific questions on chemistry, manufacturing, and controls from domestic and international regulatory agency reviewers. Assembled scientific data and successfully resolved controversial issues via direct verbal and written communications.
- **Technology Transfer.** Managed technology transition from research laboratories to manufacturing and quality control groups, both internally and with pharmaceutical partners. Planned and conducted personnel training programs and product equivalency studies. Wrote and reviewed SOP's, validation protocols, and internal development reports.

SYNGENE INC., SAN DIEGO, CA

1988-1990

Research Scientist - Responsible for testing feasibility and optimizing performance of DNA and RNA detection products, used in clinical diagnosis of infectious agents, as well as forensic identification and paternity testing.

- Developed novel methods to automate sample preparation, and to quantify hybridization efficiency of enzyme-coupled DNA sandwich probes.
- Created a kit of molecular weight standards utilizing alkaline phosphatase-conjugated DNA labeling, licensed to Promega Biotech.

Sheila Podell, Ph.D.

EDUCATION

UNIVERSITY OF CALIFORNIA, SAN DIEGO (EXTENSION) 2002 - 2004

Professional Certificate in Bioinformatics. 51 units of courses, including:

- Programming in Perl, Java, C/C++, and SQL
- Object Oriented Design and Analysis
- Biological Database Design
- Data Mining Methods and Techniques
- Bioinformatics Tools and Algorithms

THE SALK INSTITUTE, SAN DIEGO, CA 1985-1988

Postdoctoral Fellow (American Cancer Society Fellowship)

- Prepared and screened plasmid and phage libraries from embryonic tissues and cultured cell lines.
- Isolated and sequenced cDNA clones of the c-ros and c-yes tyrosine protein kinases.
- Performed computer analysis of DNA sequence homologies.

UNIVERSITY OF CALIFORNIA, SAN DIEGO 1978-1984

Ph.D. in Cell Biology

- Identified and purified receptor glycoproteins from the sea urchin sperm plasma membrane.
- Discovered the role of these proteins in ion flux regulation and signal transduction during fertilization, using antisera, lectins and ionophores as physiological probes.
- Developed original assay systems to quantify antibody-cell surface binding and binding of sperm membrane receptors to their activating ligands.

UNIVERSITY OF CALIFORNIA, SANTA BARBARA 1974-1978

B.A. (highest honors) in Biology

Sheila Podell, Ph.D.

PATENTS

US 5,855,865. January 5, 1999. K.J. Lambert, S.B. Podell, E.G. Jablonski, C. Hulle, K. Hamilton, R. Lohrmann. "Method for making encapsulated gas microspheres from heat denatured protein in the absence of oxygen gas."

PUBLICATIONS

1. Podell S, Gaasterland T, and Allen EE (2008). A database of phylogenetically atypical genes in archaeal and bacterial genomes, identified using the DarkHorse algorithm. *BMC Bioinformatics* 9:419.
2. Dick GJ, Podell S, Johnson HA, Rivera-Espinoza Y, Bernier-Latmani R, McCarthy JK, Torpey JW, Clement BG, Gaasterland T, Tebo BM (2008). Genomic Insights into Mn(II) Oxidation by the Marine Alphaproteobacterium *Aurantimonas* sp. Strain SI85-9A1. *Appl Environ Microbiol.* 74(9):2646-58.
3. Robidart JC, Bench SR, Feldman RA, Novoradovsky A, Podell SB, Gaasterland T, Allen EA, Felbeck H (2007). Metabolic Versatility of the *Riftia pachytila* Endosymbiont Revealed Through Metagenomics. *Environmental Microbiology* 10:727-737.
4. Chen DE, Podell S, Sauer J-D, Swanson MS, Saier MH (2007). The Phagosomal Nutrient Transporter (Pht) Family.. *Microbiology* 154:42-53
5. Palenik B, Grimwood J, Aerts A, Rouze P, Salamov A, Putnam N, Dupont C, Jorgensen R, Derelle E, Rombauts S, Zhou K, Otiillar R, Merchant SS, Podell S, Gaasterland T, Napoli C, Gendler K, Manuell A, Tai V, Vallon O, Piganeau G, Jancek S, Heijde M, Jabbari K, Bowler C, Lohr M, Robbens S, Werner G, Dubchak I, Pazour GJ, Ren Q, Paulsen I, Delwiche C, Schmutz J, Rokhsar D, Van de Peer Y, Moreau H, Grigoriev IV (2007). The tiny eukaryote *Ostreococcus* provides genomic insights into the paradox of plankton speciation. *Proc Natl Acad Sci U S A.* 2007 Apr 25.
6. Li X, Wang XJ, Tannenhauser J, Podell S, Mukherjee P, Hertel M, Biane J, Masuda S, Nottebohm F, Gaasterland T (2007) . Genomic resources for songbird research and their use in characterizing gene expression during brain development. *Proc Natl Acad Sci USA.* 2007 Apr 17;104(16):6834-9.
7. Podell, S. and Gaasterland (2007). DarkHorse: A method for genome-wide prediction of horizontal gene transfer *Genome Biology* 8(2):R16.
8. Barabote, R.D., Tamang, D.G, Abewardena, S.N, Fallah, N.S., Fu, J.Y.C, Mirhosseini, P., Pezeshk, R., Podell, S., Salampessy, M.L., Thever, M.D., and Saier, M.H. (2006). Extra Domains in Secondary Transport Carriers. *Biochim. Biophys. Acta* 1758: 1558-1579.
9. Podell, S. and Gribskov, M. (2004). Predicting N-terminal Myristoylation Sites in Plants. *BMC Genomics* 5:37.

Sheila Podell, Ph.D.

10. Podell, S., Burrascano, C., Gaal, M., Golec, B., Maniquis, J. and Mehlhaff, P. (1999). Physical and biochemical stability of Optison[®], an injectable ultrasound contrast agent. *Biotechnology and Applied Biochemistry* **30**: 213-223.
11. Podell, S., Golec, B., and Lohrmann, R. Measuring the effects of diagnostic ultrasound on contrast agents. 1999 IEEE Ultrasonics Symposium Proceedings, vol. 2, 1749-1754.
12. Miller, J., Tiemann, K., Podell, S., Doerr Stevens, J., Kuvelas, T., Greener, Y., Killam, A., Goenechea, J., and Dittrich, H. (1999). In vitro, animal, and human characterization of Optison[®] infusions for myocardial contrast echocardiography. *J. Am. Soc. Echocardi.* **12**: 1027-1034.
13. Clay, C., Wagner, W., Golec, B., Podell, S., Fenyus, M., Weller, W., Lohrmann, R., and Villanueva, F. (1999). New insights into mechanisms of albumin microbubble adhesion to coronary endothelium using chemically modified microbubbles. *J. Amer. Coll. Cardiology* **33**: 407A.
14. Jablonski, E.G., Dittrich, H.C., Bartlett, J.M., and Podell, S.B. (1998). Ultrasound contrast agents: the advantage of albumin microsphere technology. *Review of Progress in Quantitative Nondestructive Evaluation* **17**: 15-22.
15. Podell, S., Maske, W., Ibanez, E., and Jablonski, E. (1991). Comparison of solution hybridization efficiencies using alkaline phosphatase-labeled and ³²P-labeled oligodeoxynucleotide probes. *Molecular and Cellular Probes* **5**: 117-124.
16. Zheng, X., Podell, S.B., Sefton, B.M., and Kaplan, P.L. (1989). The sequence of chicken *c-yes* and *p61^{c-yes}*. *Oncogene* **4**: 99-104.
17. Podell, S.B. and Sefton, B.M. (1987). Chicken proto-oncogene *c-ros* cDNA clones: identification of a *c-ros* RNA transcript and deduction of the amino acid sequence of the carboxyl terminus of the *c-ros* product. *Oncogene* **2**: 9-14.
18. Podell, S.B. and Vacquier, V.D. (1985). Purification of the M_r 80,000 and M_r 210,000 proteins of the sea urchin sperm plasma membrane: evidence that the M_r 210,000 protein interacts with egg jelly. *J. Biol. Chem.* **260**: 2715-2718.
19. Podell, S.B. and Vacquier, V.D. (1984). Wheat germ agglutinin blocks the acrosome reaction in *S. purpuratus* sperm by binding a 210,000 dalton membrane protein. *J. Cell Biol.* **99**: 1598-1604.
20. Podell, S.B. and Vacquier, V.D. (1984). Inhibition of the sea urchin sperm acrosome reaction by antibodies directed against two sperm membrane proteins: characterization and mechanism of action. *Experimental Cell Research* **155**: 467-476.
21. Podell, S.B., Moy, G.W., and Vacquier, V.D. (1984). Isolation and characterization of a plasma membrane fraction from sea urchin sperm exhibiting species specific recognition of the egg surface. *Biochimica et Biophysica ACTA* **778**: 25-37.