PUJA AGARWAL BILLIS, M.S.

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EXPERIENCED CELLULAR & MOLECULAR BIOLOGY SCIENTIST

Pharmaceutical R&D molecular and cell biology scientist possessing extensive experience in drug discovery. A quick learner, adaptable, and efficient in managing multiple projects within tight timelines. Excellent at working independently and within a team. Effective verbal and written communication skills. Expertise in:

- Cell-based & biochemical *in-vitro* assay development.
- Molecular, cellular biology, biochemical and tissue culture skills.

OTHER EXPERIENCE

AP BIOLOGY PART-TIMETUTOR WITH THE LEARNING CONSULTANTS GROUP **PRESENT**
SUBSTITUTE TEACHER WITH WATERFORD PUBLIC SCHOOLS **PRESENT**
GRADUATE OF PLATFORM TO EMPLOYMENT **2015**
VOLUNTEER AT WATERFORD PUBLIC SCHOOL ORCHESTRA PROGRAM **2009-PRESENT**

- Write grant applications for orchestra program funding
- Volunteer in fund-raising events
- Chaperon school trips, workshops, other events

VOLUNTEER AT ST. SOPHIA GREEK ORTHODOX CHURCH **2005-PRESENT**

- Teacher and Assistant Teacher
- Volunteer in fundraising events

PROFESSIONAL EXPERIENCE

PFIZER INC, Groton, CT **2013-2014**
Scientist (through Artech), Compound Safety Prediction

- Developed and implemented low to medium throughput cellular *in-vitro* High content imaging assays (alternate to FACS) on the Cellomics Arrayscan to identify mechanisms of toxicity
  - An oxidative stress assay helped the chemists to identify compounds that could lead to hemodynamic liabilities (using endothelial cells).
  - Mitochondrial membrane potential assay helped to reduce compound attrition caused by mitochondrial impairment (using multiple cell types, including epithelial cells).
- Supported the CNS and Rare Disease therapeutic areas by developing imaging assays to identify mitochondrial dysfunction in disease models (using multiple cell types, including fibroblasts).
- Supported the oncology therapeutic area by characterizing multiple cell lines using imaging, SDS-PAGE and Western blotting (including fibroblasts) to check key points in signal transduction pathway of cellular metabolism.
- Used cell viability assay to compare and interpret results.
- Performed data analysis, interpreted results, incorporated relevant literature in experimental design and presentations to drive group discussions and to move projects

forward, presented to lab meetings, project team meetings, departmental meeting, and poster session.

Aetna, Hartford, CT **2010-2012**
Group Life Insurance Analyst

- Reviewed and processed Group life insurance and other types of life insurance claims according to policy contract language.
- Communicated with plan sponsors and beneficiaries via telephone and in writing.

PFIZER INC, Groton, CT **2003 – 2009**
Scientist, Exploratory Safety Differentiation

- Developed and implemented cell based imaging assays to identify mechanisms of toxicity, including drug-induced liver injury. This enabled the chemists to select safer compounds and reduce toxicity induced compound attrition.
    - Transferred Human hepatocyte Injury Assay Technology (HIAT) to a new platform in Groton, automated and decreased data processing time and utilized the assay in primary cryopreserved hepatocytes for screening, participated in data interpretation and assay education to global project teams via teleconferences. Evaluated primary human hepatocyte lots for imaging quality criteria to make purchasing decisions.
- Developed imaging assays to identify biomarkers and mechanisms of cell dysfunction for several therapeutic areas – neuroscience, cardiovascular medicine, antibacterials.
- Studied mitochondrial biogenesis by determining and comparing mitochondrial and nuclear DNA copy number via multiplexed quantitative PCR using robotic ABI PCR system.
- Collaborated with several cross-site therapeutic areas, and global teams, drug safety for assay development, assay implementation, data generation.
- Performed live cell imaging of neurons using Zeiss LSM 7000 confocal microscope on live neurons in a collaborative effort for a mitochondrial trafficking proof of concept study in support of Neuroscience Research Unit.
- Presented data and project summaries at numerous internal meetings
- Evaluated multiple imaging systems and helped with purchase decisions.

PFIZER, Groton, CT

- **Scientist**, Bioprocess Research & Development **2002 - 2003**
- Established the first RNA laboratory in Bioprocess R&D, working independently. In a quality control effort, isolated RNA and performing transcriptional analysis of mAb expressing cell lines.
- Developed clonal NSO cells that express specific monoclonal antibodies from a pre-ACF-adapted non-clonal pool in a GLP-like laboratory. Supported other mAb projects in Bioprocess R&D by performing sandwich ELISA assays.
- Led efforts to analyze effects of intergenic transcriptional terminator on transcription of heavy and light chains in a specific mAb double gene constructs by Q-RT-PCR (in parallel with protein fraction quantitation by others).
- Collaborated externally, including all laboratory molecular biology support work in-house (growth curves and time-points on multiple cell lines, RNA and protein extract preparation, quantitation and quality check), documentation, and communication.

ADDITIONAL WORK EXPERIENCE

BRISTOL-MYERS SQUIBB, Wallingford, CT

- **Associate Research Scientist II,** Neuroscience Drug Discovery (1998-2002)
- **Associate Research Scientist I**, Neuroscience Drug Discovery (1995-1998)

UNIVERSITY OF CONNECTICUT HEALTH CENTER, Farmington, CT

- **Research Assistant II, III (1989-1995)**

SKILLS

- In-vitro assays – developing, troubleshooting and implementing plate-based assays
- High Content Imaging (Cellomics Arrayscan) - developing and implementing live-cell and fixed-cell based assays.
- Protein Biochemistry – SDS-PAGE, Western blots, ELISA, immunocytochemistry, immunohistochemistry, whole cell & membrane binding Assays
- Molecular Biology – cloning (and sub-cloning), bacterial transformation, nucleic acid isolation, restriction digestion, PCR, RT-PCR, Q-real time PCR, Northern & Southern blots, cell transfections.
- Cell Culture – maintenance of primary cells, and stable cell lines
- Mentoring and training of lab technicians, research assistants and incoming new post-doctoral fellows, Ph.D. graduate students and summer medical students.
- Computer Skills – Microsoft word, Excel, Powerpoint, Graphpad Prism, Softmax Pro.

EDUCATION

- MS, Cell Biology, GPA 3.7, University of Connecticut, Storrs, CT
  Thesis: The regulation and role of SF-1 in ovarian cell proliferation in vivo.
- BS, Biological Science/Pre-Med, Boston College, Chestnut Hill, MA
- AA, Liberal Arts, Hartford College for Women, Hartford, CT
  Dean's List, Hartford College for Women
  National Dean's List

CONTINUING PROFESSIONAL DEVELOPMENT

- Microscopy course (Zeiss, 2010)
- Human embryonic stem cell culture training course (UCHC Stem Cell Institute, 2009)
- Cellomics High content screening 101 (Cellomics, 2005)

AWARDS

- Pfizer Invidividual Performance Awards (2004, 2006, 2007) for individual performance and teamwork.
- Pfizer Above & Beyond award (2003) - for generating CYP 3A4 data to help identify lead candidate for a particular therapeutic area.

PUBLICATIONS, POSTERS & PRESENTATIONS (most recent)

- **Billis, P.**, Will, Y., and Nadanaciva, S. High content imaging assays for identifying compounds that generate superoxide and impair mitochondrial membrane potential in adherent eukaryotic cells. Current Protocols in Toxicology. 2014; 59..25.1.1-25

- Dykens, J. D., Marroquin, L. D., Nadanaciva, S.N., Jamieson, J., **Billis, P. A**, and Will, Y. Biguanide-induced mitochondrial dysfunction yields increased lactate production and cytotoxicity of aerobically poised HepG2 cells and human hepatocytes in vitro. Toxicol. & Appl. Pharmacology. 2008, 233..203-210.

- Three posters at Pfizer Internal Symposium (2013)

    - High Content Screening Assays for identifying Compounds that Generate Superoxide and Impair Mitochondrial Membrane Potential
    - Understanding Mitochondrial Biology in Parkinson's Disease-Linked G2019S Mutation in LRRK2
    - The Role of Mitochondria in Cancer Cell Biology

- Society of Toxicology (2008, 2013) - posters on High Content Imaging assay development to detect hepatotoxicity by reactive oxygen species (2008, 2013)

- Presentation at Pfizer at SOT (2008) **Billis, P. A**. "Reactive Oxygen Species (ROS) – A Contributor To Hepatotoxicity And Its Detection Using High Content Screening"