

Michael A. Hanson

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Education

Ph.D. in Chemical & Biochemical Engineering (expected 8/07)

University of Maryland, Baltimore County (UMBC)

GPA: 3.71/4.00

B.S. in Chemical Engineering

5/02

Option in Bioprocessing

The Pennsylvania State University (PSU)

GPA: 3.62/4.00

Research Experience

Graduate Research Project: High-Throughput Bioreactor (HTBR) Validation and Use in Monoclonal Antibody Comparability Studies Utilizing Global Gene Expression Data

6/03 – present

Key aspects:

- hybridoma cell culture in t-flask, spinner, bench-top and disposable bag bioreactors
- HTBR and optical sensor development/validation
- DNA microarray global gene expression analysis
- monoclonal antibody (IgG₃) characterization
- collaboration with FDA to study cell culture process changes

PSU ChE Coursework

- **The Bioprocessing Cluster (Spring 2002):** engineering program emphasizing hands-on laboratory skills, report writing, and group work while integrating remaining 5 ChE courses
 - produced recombinant enzyme in *E. coli*
 - purified using centrifugation, filtration, and HPLC
 - characterized by electrophoresis and various assays
- **Honors ChE Laboratory on Protein Purification (Fall 2001):** purified aspartic protease while utilizing HPLC, membrane filtration (stirred cell, TFF), electrophoresis, protein assays, and lyophilization

Center for Bioprocessing Research (PSU)

1/01 – 9/01

Laboratory Technician

- microbial and yeast fermentation (shake flask to 300 liters)
- primary recovery by continuous-flow centrifugation
- wrote and revised SOPs and experimental protocols
- troubleshoot and repaired various equipment
- maintained facility (inventory, ordering supplies, etc.)

Honors & Awards	<p>Department of Chemical and Biochemical Engineering Graduate Student Outstanding Service Award (2006)</p> <p>Parenteral Drug Association (PDA) Journal of Science & Technology Pre-doctoral Fellowships (2005 – 2006, 2006 – 2007)</p> <p>Graduate Student Association (GSA) Senator of the Year (2005 – 2006)</p>
Graduate Research Related Publications & Presentations	<p>Research Papers</p> <p>Hanson MA, Ge X, Kostov Y, Brorson KA, Moreira AR, Rao G. 2006. Comparisons of optical pH and Dissolved Oxygen sensors with traditional electrochemical probes during mammalian cell culture. <i>Biotechnol Bioeng</i> (accepted).</p> <p>Ge X, Hanson MA, Shen H, Kostov Y, Brorson KA, Frey DD, Moreira AR, Rao G. 2006. Validation of an optical sensor-based high-throughput bioreactor system for mammalian cell culture. <i>J Biotechnol</i> 122:293-306.</p> <p>Oral Presentations (as presenter)</p> <ul style="list-style-type: none"> • PDA Emerging Technology Meeting, San Diego, CA (2007) • American Chemical Society (ACS) National Meeting, San Francisco, CA (2006) • PDA National Meeting, Anaheim, CA (April 2006) • Ph.D. proposal defense (December 2005) • Laboratory of Cell Biology, FDA (November 2005) • UMB/UMBC Graduate Research Conference (GRC, 2005) -1st place award winner in session • GRC (2004) <p>Poster Presentations (as presenter)</p> <ul style="list-style-type: none"> • ACS National Meeting, Anaheim, CA (2005) • Mid-Atlantic Biochemical Engineering Consortium (MABEC, 2004) • FDA Science Forum, Washington D.C. (2005) • ACS National Meeting, San Diego, CA (2004) • FDA Science Forum, Washington D.C. (2004)
Selected Responsibilities & Activities	<p>UMBC Teaching Responsibilities</p> <ul style="list-style-type: none"> • Biochemical Engineering Laboratory (Spring 2006) <ul style="list-style-type: none"> ○ taught ELISA for MAb quantification ○ graded lab reports

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- Unit Operations Laboratory (Fall 2002, 2003)
 - responsible for teaching 3 experiments within the lab
 - graded pre-lab write-ups
 - wrote and administered pre-lab quizzes
 - Introduction to Material Science (Spring 2003)
 - attended lectures
 - graded homework and exams
 - held office hours

Graduate Student Government 9/04 – 9/06

- Represented department as senator
- GRC (2006) planning committee
- Senate Organizational Committee (2006)
- Attended 2-day Leadership Retreat as invited senator
- GRC (2005) Judging Coordinator

SYNBIOLOGY—An Analysis of Synthetic Biology Research in Europe and North America 6/05 – 9/06

- report revising/writing
- interviewing of key researchers

FDA Bioprocessing Journal Club 9/04 – present

- presented 1 to 2 peer-reviewed journal articles per year
- attended monthly meetings where articles relevant to biopharmaceutical industry were presented

MABEC Planning Committee (2004)

- UMBC liaison for contact with 18 other schools
- responsible for nametag production

Kokikai Aikido (Japanese Martial Art) 8/99 – present

- have trained regularly since Fall 1999
- instructor as of March 2006

Relevant Coursework

UMBC

- Biochemical Engineering (graduate level)
 - Biochemistry
 - Eukaryotic Genetics and Molecular Biology
 - Biopharmaceutical Regulatory Engineering Program
 - Regulatory Issues in Biotech
 - Good Manufacturing Practices for Bioprocesses
 - Quality Control and Quality Assurance for Biotech Products
 - Design, Construction, and Validation of GMP Facilities
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PSU

- Biochemical Engineering
- Cell Biology
- Bioprocess Design
- Technical Writing

**Workshops
Attended**

UMBC President's Retreat (2006)—1 of 5 invited graduate students. Participated with faculty and upper-administration in discussions on a variety of topics from research budgets to building campus community.

SYNBIOLOGY—An Analysis of Synthetic Biology Research in Europe and North America, Brussels, Belgium (January 2006)

Follow-on Biologics Workshop—Scientific Issues in Assessing the Similarity of Follow-on Protein Products, Brooklyn, NY (December 2005)

Microarrays in Transcriptional Profiling, FDA/Johns Hopkins University (JHU)/PhRMA Workshop, JHU Montgomery County Campus (July 2005)

FDA/DIA Scientific Workshop on Follow-on Protein Pharmaceuticals, Arlington, VA (February 2005)

Scientific Considerations Related to Developing Follow-on Protein Products, University of Maryland, Shady Grove (September 2004)

Workshop in Drug Delivery, Cornell University (October 2003)
