



Schedule

8th Annual NBC² BIOMAN Conference July 15-18, 2013

Montgomery County Community College, Blue Bell, PA

Sunday, July 14, 2013

6:00 – 7:30 PM *Welcome Reception*

Normandy Farm Hotel, Orchard Room
1401 Morris Rd, Blue Bell, PA 19422

Introductions, brief overview of conference and guide to local area. Hors d'oeuvres will be served.

Monday, July 15, 2013

8:30 – 9:00 AM *Continental Breakfast and Networking*
CH 144/148

9:00 – 10:00 AM *Keynote Speaker*
CH 144/148

“Advanced Therapy Medicinal Products: Challenges and Opportunities Beyond Traditional Pharmaceuticals”

Michele Myers, Ph.D., Director, Drug Substances Biopharmaceutical Center of Excellence, GlaxoSmithKline

[“Advanced Therapy Medicinal Products: Challenges and Opportunities Beyond Traditional Pharmaceuticals”](#)

10:00 – 10:15 AM *Break*

10:15 AM – Noon *Panel Discussions or Hands-On Workshop*

Panel Discussion: Funding Your Project

ATC 216

Duncan McBride, Division of Undergraduate Education, National Science Foundation

Jim Hewlett, Coordinator of Biotechnology, Professor of Biology, Co-Principal Investigator
NBC2, Finger Lakes Community College, Canandaigua, NY

Sonia Wallman, Ph.D., Executive Director and Principal Investigator of the NBC2

OR

Panel Discussion: Education—Active learning, regulation, and certification ATC 316

Lara Dowland, Ph.D., Professor of Biotechnology, Chair, Biotechnology/Biomanufacturing Program, Mt. Wachusett Community College, Devens, MA

Sengyong Lee, Ph.D., Biotechnology Program Chair, Midwest Hub Director NBC2, Ivy Tech Community College, Bloomington, IN

Linda Reh fuss, Ph.D., Assistant Professor of Biotechnology and Biology, Co-Principal Investigator of NBC2, Bucks County Community College, Newtown, PA

Maggie Bryans, Ph.D., Assistant Professor of Biotechnology, Co-Principal Investigator NBC2, Montgomery County Community College, Blue Bell, PA

Panelists will discuss educational materials pertaining to biotechnology, biomanufacturing, medical device manufacturing and regulatory affairs. Panelists not only will discuss available resources for these subject areas, such as textbooks and laboratory manuals, but also modes of delivery, such as virtual laboratory exercises and online training modules. Panelists will discuss best practices in these areas.

[Panel Discussion: Education—Active learning, regulation, and certification](#)

OR

Hands-On Workshop: Quality Control of Compost TEAs ATC 233

Judith Fitzpatrick, Ph.D., Lecturer of Biology, Bergen Community College, Paramus, New Jersey

The value of compost lies in the microorganisms and organisms that convert the decomposing matter to usable carbon and nitrogen forms. There is a rapidly growing group of United States landscape architects, landscapers, farmers and amateur horticulturists who are extracting the organisms from compost and using this mixture (called Compost Extract or Compost TEA depending on how it is made) in lieu of both chemical fertilizers and chemical pesticides. The results of this practice can be amazing in terms of plant growth and health and of course in the ability to raise foods and maintain landscapes organically. In addition the ability to spray on the fertilizer/pesticide instead of using solid compost makes the process much more efficient and flexible. In this workshop we will briefly introduce you to the soil microbiota and its relationship to plants, discuss the practice of using compost teas or extracts and examine the microorganisms in a compost and soil sample using various treatments that release the microbes from soil components. You will also have the opportunity to estimate the number of organisms in a soil sample using the patented Soil Biometer™ Kit developed with a NSF ATE grant at Bergen Community College.

[Hands-On Workshop: Quality Control of Compost TEAs](#)

Noon – 1:00 PM LUNCH
CH 144/148

1:30 – 4:30 PM Hands-On Workshops

Hands-On Workshop A, Beginner Track

E. coli—Taq Polymerase Core Production System: PCR Cloning

SC 307

Tom Burkett, Ph.D., Professor of Biotechnology, Director, Biotechnology & Biomanufacturing, Co-Principal Investigator NBC2, The Community College of Baltimore County, Catonsville, MD
Tim Kull, Laboratory Assistant, Department of Biotechnology, Montgomery County Community College, Blue Bell, PA

*In this first of three sessions we will go through the process of isolating genomic DNA from *Thermus aquaticus* and PCR amplify the *Poll* gene (Taq polymerase) for subsequent ligation and transformation. We'll discuss where to obtain materials, and ways that the exercises can be expanded upon or contracted to fit the needs of your students and setting. We will also begin shake flask cultures for expression and isolation of Taq polymerase.*

[E. coli—Taq Polymerase Core Production System: PCR Cloning](#)

OR

Hands-On Workshop B, Intermediate Track

Microalgae to Oil: Scale Up Microalgae

ATC 233

Rhykka Connelly, Ph.D., Research Scientist, UT Algae Program, Austin, TX
Patricia Phelps, Ph.D., Professor of Biology, Austin Community College, Austin, TX
Sonia Wallman, Ph.D., Executive Director and Co-Principal Investigator NBC2

Microalgae to Oil: Microalgae are of increasing interest – they are being utilized for biofuels production, for nutraceuticals production and for the production of biopharmaceuticals. This year's BIOMAN will feature a three afternoon intensive hands-on workshop on growing microalgae to make algal oil biodiesel.

[Microalgae to Oil: Scale Up Microalgae](#)

OR

Hands-On Workshop C, Advanced Track Stem Cells

ATC 227

Bill Woodruff, Dept. Head, Biotechnology, Southern Hub Director NBC2, Alamance Community College, Graham, NC

Maggie Bryans, Ph.D., Assistant Professor of Biotechnology, Co-Principal Investigator NBC2, Montgomery County Community College, Blue Bell, PA

Pluripotent embryonic stem cells have the potential to become any cell type in the mature organism. One of the main research areas in stem cells has been, and continues to be, the understanding of the many elements that go into directing the differentiation of stem cells to meet the needs of a viable individual. In this session we will explore some of the various mechanism that determine the final outcome of cell and tissue development as we direct the differentiation of ESC into neurons and other cell types. Recommend past experience with cell culture preferable, or microbial aseptic techniques.

[Stem Cells](#)

Tuesday, July 16, 2013

8:30 – 9:00 AM *Continental Breakfast and Networking*
CH 144/148

9:00 – 10:00 AM *Keynote Speaker*
CH 144/148

“Industry and Education, Meeting Each Other’s Needs”

Rick Smith, AVP Strategic Programs Industrial Operations, Sanofi Pasteur US

[“Industry and Education, Meeting Each Other’s Needs”](#)

10:00 AM – 1:00 PM **VENDOR SHOW**-Biomanufacturing Equipment and Supplies Vendors

LUNCH CH 144/148

11:45 AM – 12:30 PM *Lecture*

“Plants for Better Health: Plant Biotechnology for the Generation of New Vaccines and Therapeutics”

Jukka Kervinen, Fraunhofer USA Center for Molecular Biology, Newark, DE

[Plants for Better Health: Plant Biotechnology for the Generation of New Vaccines and Therapeutics”](#)

12:30 – 1:00 PM *Vendor Show Drawing*

1:30 – 4:30 PM *Hands-On Workshops*

Hands-On Workshop A, Beginner Track

E. coli—Taq Polymerase Core Production System: Expression/Purification

SC 307

Tom Burkett, Ph.D., Professor of Biotechnology, Director, Biotechnology & Biomanufacturing, Co-Principal Investigator NBC2, The Community College of Baltimore County, Catonsville, MD
Tim Kull, Laboratory Assistant, Department of Biotechnology, Montgomery County Community College, Blue Bell, PA

In the second of three sessions we will focus on expression/ purification of the Taq polymerase protein as well as continue with our cloning of the gene. We will go through a simplified purification process and discuss and demonstrate alternative purification methods and quality issues particular to Taq polymerase.

OR

Hands-On Workshop B, Intermediate Track

Microalgae to Oil: Algal Oil Extraction; Algal Oil to Biodiesel Conversion

ATC 233

Rhykka Connelly, Ph.D., Research Scientist, UT Algae Program, Austin, TX
Patricia Phelps, Ph.D., Professor of Biology, Austin Community College, Austin, TX
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OR

Hands-On Workshop C, Advanced Track

Stem Cells

ATC 227

Bill Woodruff, Dept. Head, Biotechnology, Southern Hub Director NBC2, Alamance Community College, Graham, NC
Maggie Bryans, Ph.D., Assistant Professor of Biotechnology, Co-Principal Investigator NBC2, Montgomery County Community College, Blue Bell, PA

Mesenchymal stem cells (MSC) are multipotent stromal cells that can differentiate into a variety of cell types. Adipose tissue is a good source of these cells with 500 times more MSC per gram than bone marrow. These stem cells are fairly easy to extract; starting with rabbit adipose tissue participants will isolate MSC through a process involving tissue digestion by collagenase followed by differential centrifugation. Methods for differentiating the isolated mesenchymal stem cells into various cell types will be discussed.

6:00 PM *Event Reception and Dinner*
Valley Green Inn

****Please note: Buses will depart from Normandy Farm promptly at 6:00 PM**

Wednesday, July 17, 2013

8:30 – 9:00 AM *Continental Breakfast and Networking*
CH 144/148

9:00 AM – Noon *Hands-On Workshops*

Hands-On Workshop: QC Microbiology **SC 305**

John Hasyn, Microbiology Instructor, Montgomery County Community College, Blue Bell, PA

Maggie Bryans, Ph.D., Assistant Professor of Biotechnology, Co-Principal Investigator NBC2, Montgomery County Community College, Blue Bell, PA

Sheila Byrne, Grant Assistant, Department of Biotechnology, Montgomery County Community College, Blue Bell, PA

Linda Reh fuss Ph.D., Assistant Professor of Biotechnology and Biology, Co-Principal Investigator of NBC2, Bucks County Community College, Newtown, PA

Microbiological control is a key issue in pharmaceutical manufacturing. This workshop is designed to introduce you to experiments and techniques used in the industry to prevent microbial contamination of products. In this hands-on workshop participants will perform three microbiology experiments. The Limulus Amebocyte Lysate (LAL) gel clot assay will be used to measure endotoxin levels in cell culture samples, the Gram stain will be used to identify Gram positive and negative bacteria, and finally the colorimetric API assay will be used to identify bacterial strains. Participants will also learn how to conduct microbial air monitoring using equipment commonly used in Microbiological Control laboratories such as an Air Sampler and Particle Counter.

OR

Hands-On Workshop: Cellulosic Biofuels

ATC 227

Kellie Aitchison, Instructor of Biology, curriculum writer for biofuels introductory classes, Finger Lakes Community College, Canandaigua, NY

Heather Bock, Senior Laboratory Technician, CCURI, Finger Lakes Community College, Canandaigua, NY

Jim Hewlett, Coordinator of Biotechnology, Professor of Biology, Co-Principal Investigator NBC2, Finger Lakes Community College, Canandaigua, NY

The efficient hydrolysis of cellulosic material is one of the major roadblocks on the path to commercializing cellulosic biofuel production. Another difficulty is identifying microorganisms to digest the unique sugars produced by this hydrolysis. You will work to design an experiment that compares corn starch hydrolysis and cellulosic hydrolysis as well as a comparison of different yeast strains in fermentation. This is a pilot version of the lab!

OR

Hands-On Workshop: ELISA and Molecular Biology

ATC 233

Lori Dodson, Ph.D., Dual Credit Biotechnology, North Montco Technical Career Center, Lansdale, PA

This workshop will focus on applications of immunology and molecular biology. After an introductory overview of the immune system and antigen-antibody interactions, the use of antibodies as ‘magic bullets’ will be highlighted. Participants will perform an Enzyme-Linked Immunosorbent Assay (ELISA), a technique for detecting proteins, diagnosing disease, tracking pathogenic agents, identifying GMOs, and tracing food allergens. Participants will also experience the convenience of the E-Gel electrophoresis system as an alternative to traditional agarose gels. Teaching strategies reflecting budgetary constraints and curriculum flexibility will be addressed. Take-home materials will be available.

[Hands-On Workshop: ELISA and Molecular Biology](#)

Noon – 1:00 PM

LUNCH

CH 144/148

1:00 – 5:00 PM **FIELD EXPERIENCE**

Janssen—Biotechnology Center

OR

Merck—Pilot Plant

OR

GlaxoSmithKline— Process development and clinical scale production

*****Please note: A dress code of closed-toe shoes and pants will be strictly enforced on all tours. Participants must also bring photo ID, such as a driver's license or passport.***

Thursday, July 18, 2013

8:30 – 9:00 AM *Continental Breakfast and Networking*
CH 144/148

9:00 – 10:00 AM *Keynote Speaker*
CH 144/148

“Points to Consider in Single Use Technology Design and Implementation”

Mark A. Petrich, Associate Director, Component Engineering, Merck & Co., Inc.

10:00 – 10:15 AM *Break*

10:15 AM – Noon *Interactive Sessions*

[“Points to Consider in Single Use Technology Design and Implementation”](#)

Interactive Session: Quality Assurance

ATC 224

Cynthia H. Sarnoski, Ph.D., Sr. Vice President Global Compliance and Quality Systems Pfizer – Retired

This session will explore the role and responsibilities of Quality Assurance throughout the biopharmaceutical manufacturing process and product life cycle. The requirements for the manufacture of safe and effective products will be discussed. Case studies of recent product issues will examine compliance with Good Manufacturing Practices through inspection observations (FDA 483's), recalls and other FDA information accessible through the FDA website.

[Interactive Session: Quality Assurance](#)

OR

Interactive Session: Drug Discovery and Drug Life Cycles

ATC 216

Bob Rehfuss, Adjunct Professor, Bucks County Community College and Gwynedd Mercy College

Research based pharmaceutical companies employ a well-established process for each step in the discovery, development and marketing of new drugs. Although companies individually modify the discovery process to provide themselves with a competitive advantage, there are common principles that underlie this process and are used at every company. Surprisingly, even these core elements are rarely discussed outside of the industry. In this workshop we will explore the discovery process further through the use of an interactive, clicker based drug discovery scenario which will leave the participant with a greater understanding of how the industry discovers drugs and decides whether to initiate clinical trials.

Noon – 1:00 PM LUNCH

CH 144/148

1:30 – 4:30 PM Hands-On Workshops

Hands-On Workshop A, Beginner Track

***E. coli*—Taq Polymerase Core Production System: Purification and QC**

Biochemistry

SC 307

Tom Burkett, Ph.D., Professor of Biotechnology, Director, Biotechnology & Biomanufacturing, Co-Principal Investigator NBC2, The Community College of Baltimore County, Catonsville, MD

Tim Kull, Laboratory Assistant, Department of Biotechnology, Montgomery County Community College, Blue Bell, PA

In our final session we will focus on assessing the quality of our Taq product using SDS-PAGE, Western analysis, and activity assays. In addition, we will look at the quality control documentation typically found in a production environment and how that documentation leads to a quality product.

OR

Hands-On Workshop B, Intermediate Track

Microalgae to Oil: QC Analysis of Algal Oil and Biodiesel

ATC 233

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OR

Hands-On Workshop C, Advanced Track

Stem Cells

ATC 227

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Maggie Bryans, Ph.D., Assistant Professor of Biotechnology, Co-Principal Investigator NBC2, Montgomery County Community College, Blue Bell, PA

Workshop participants will analyze and compare cells that were directed to differentiate by the addition of retinoic acid and those that spontaneously differentiated due to the removal of leukemia Inhibitory factor. Newly isolated mesenchymal stem cells will be viewed and methods to propagate, differentiate and freeze will be discussed.



Montgomery County
Community College



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