

## MARYLAND CHEMIST AWARD



**Dr. Angela Wilks**

Department of Pharmaceutical Sciences  
University of Maryland Baltimore

**“Turning Bloodsucking Bacteria Anemic:  
An Innovative Antibacterial Strategy”**

Wednesday, December 10<sup>th</sup>

6:00-9:00 pm

Notre Dame of Maryland University  
Baltimore, MD

**2013 Section Officers:**

*Chair 2014* – James A. Saunders, Retired, [jsaunders@towson.edu](mailto:jsaunders@towson.edu)

*Vice-chair (chair 2015)* – Sandra Young, Army Research Lab, [sandra.young@us.army.mil](mailto:sandra.young@us.army.mil)

*Chair-elect (chair 2016)* – vacant

*Immediate-Past Chair (chair 2013)* – Sara Narayan, Stevenson University, [snarayan@stevenson.edu](mailto:snarayan@stevenson.edu)

*Secretary* – Louise Hellwig, Morgan State University, [louise.hellwig@morgan.edu](mailto:louise.hellwig@morgan.edu)

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**Councilors:**

2014–2016 Merle I. Eiss, Retired, [meiss32@aol.com](mailto:meiss32@aol.com)

2014–2016 Paul Smith, University of Maryland, Baltimore County, [pjsmith@umbc.edu](mailto:pjsmith@umbc.edu)

2012–2014 Stephanie J. Watson, N.I.S.T., [stephanie.watson@nist.gov](mailto:stephanie.watson@nist.gov)

2012–2014 Dana Ferraris, Johns Hopkins University, [dferrar2@jhmi.edu](mailto:dferrar2@jhmi.edu)

2012–2014 Jan Kolakowski, US Army Edgewood Chemical Biological Center, [jan.e.kolakowski.civ@mail.mil](mailto:jan.e.kolakowski.civ@mail.mil)

**Alternate Councilors:**

2014–2016 Charles Chen, Johns Hopkins University, [Chenchar22@gmail.com](mailto:Chenchar22@gmail.com)

2014–2016 Kelly M. Elkins, Towson University, [kmelkins@towson.edu](mailto:kmelkins@towson.edu)

2012–2014 Sandra Young, Army Research Lab, [sandra.young@us.army.mil](mailto:sandra.young@us.army.mil)

2012–2014 Takashi Tsukamoto, Johns Hopkins University, [ttsukamoto@jhmi.edu](mailto:ttsukamoto@jhmi.edu)

2012–2014 Charles M. Zapf, McCormick & Company, Inc., [Mike\\_Zapf@mccormick.com](mailto:Mike_Zapf@mccormick.com)

**2013 Members-at-large:**

Robert Clapper, Shimadzu,

George Farrant, Retired, [gfarrant@yahoo.com](mailto:gfarrant@yahoo.com)

Suzanne Procell, Army Research Laboratory, [suzanne.procell@us.army.mil](mailto:suzanne.procell@us.army.mil)

Beatrice Salazar, Baltimore County Public Schools, [papa51196@verizon.net](mailto:papa51196@verizon.net)

Angela Sherman, Notre Dame of Maryland University, [asherman@ndm.edu](mailto:asherman@ndm.edu)

**Award Committee Chairs:**

*Student Awards* – George Farrant, Retired, [gfarrant@yahoo.com](mailto:gfarrant@yahoo.com)

*Remsen Award* – Dana Ferraris, Johns Hopkins University, [dferrar2@jhmi.edu](mailto:dferrar2@jhmi.edu)

*Braude Award* – Louise Hellwig, Morgan State University, [louise.hellwig@morgan.edu](mailto:louise.hellwig@morgan.edu)

*Maryland Chemist Award* – Angela Sherman, Notre Dame of Maryland University, [asherman@ndm.edu](mailto:asherman@ndm.edu)

**Maryland Section on the Web:**

[maryland.sites.acs.org](http://maryland.sites.acs.org)

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**Contact us at:**

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# MARYLAND CHEMIST AWARD DINNER

## Turning Bloodsucking Bacteria Anemic: An Innovative Antibacterial Strategy

~ Dr. Angela Wilks ~

Department of Pharmaceutical Sciences

University of Maryland Baltimore

Wednesday, December 10, 6:00 – 9:00 pm

**Knott Science Center**  
**Knott Auditorium**  
**Note Dame of Maryland University**  
4701 N Charles St.  
Baltimore, MD 21212

6:00 – 6:45 pm	Registration / Networking
6:45-7:45 pm	Presentation
7:45-8:45 pm	Reception
Price	\$20 for members/nonmembers, \$10 for students
RSVP (by December 8 <sup>th</sup> )	<a href="mailto:contact-us@mdchem.org">contact-us@mdchem.org</a>

### Directions to Notre Dame of Maryland University:

#### From the north:

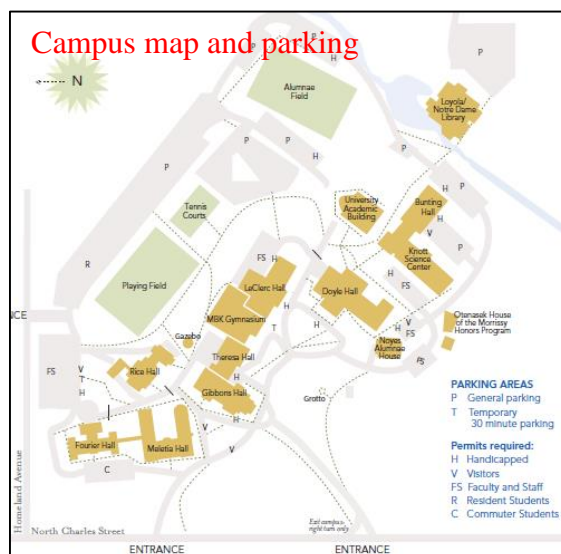
- Take the Baltimore Beltway (I-695) to North Charles Street (exit 25).
- Drive 4.6 miles south on Charles Street
- The University entrance is on the left, immediately past Homeland Avenue but before Cold Spring Lane.

#### From the Inner Harbor

- Take I-83 north 4.4 miles to Cold Spring Lane East (exit 9A).
- Drive 1.3 miles on W. Cold Spring Lane
- Turn left onto North Charles Street. The University entrance is .4 miles on the right.

[Click here for detailed directions.](#)

Click on campus map for details and parking information.



## Abstract

The ability of iron to readily shift between the ferrous (Fe(II)) and ferric (Fe(III)) oxidation states has provided Nature a mechanism to drive a wide range of essential life processes including, dioxygen transport, energy transducing pathways, and nitrogen and hydrogen fixation. However, despite its abundance and versatility in Nature bioavailability of iron is extremely low. The fine balance of maintaining adequate iron levels while preventing the deleterious effects of excess iron has led to the evolution of sophisticated cellular mechanisms to obtain, store and regulate iron across all life forms. Within the context of infectious disease pathogens must acquire iron from the host by stripping it from high affinity iron binding proteins such as transferrin and ferritin, or, alternatively from the acquisition and degradation of heme. The opportunistic pathogen *P. aeruginosa* in chronic infection adapts to utilize heme and ferrous iron as the primary source of iron at the expense of iron-siderophore systems.

Our research seeks to gain a fundamental structural and mechanistic understanding of heme coordination, transport and utilization by bacterial pathogens through a systems biology approach employing bacterial genetics, metabolomics, biochemical and biophysical approaches. Structural and mechanistic characterization of the *P. aeruginosa* heme uptake proteins and their contributions to heme and iron homeostasis will be presented. The release of iron by oxidative cleavage of heme to biliverdin by heme oxygenase (HemO) is required to drive the metabolic flux of heme into the cell and as such represents a novel therapeutic target for future antibacterial drug development. The concept of “metabolic competence” as an antimicrobial strategy will be presented along with preliminary data on “hit to lead” inhibitors of HemO as novel antibacterials.

## Speaker Biography

Angela Wilks, PhD  
Professor & Vice Chair of Research  
Department of Pharmaceutical Sciences  
School of Pharmacy  
University of Maryland, Baltimore

Angela Wilks received her BSc degree in Biochemistry from the University of Lancaster, England. She received her PhD in Biochemistry from the University of Leeds, where she worked on the mechanism of heme degradation with Professor Stanley B. Brown. After a post-doctoral appointment with Professor Paul Ortiz de Montellano at the University of California, San Francisco, she joined the faculty at the University of Maryland as an Assistant Professor in 1998 and has risen through the ranks to Full Professor.

Her research interests focus around mechanisms by which bacterial pathogens acquire and utilize heme as an iron source, and their relationship to pathogenesis and virulence. Professor Wilks research is multi-disciplinary employing bacterial genetics, metabolomics, biochemical and biophysical approaches to understand the molecular mechanisms by which pathogenic bacteria acquire heme. These studies have led to the structural characterization of several proteins involved in heme utilization and to the rational design of novel antimicrobial agents.

## 2014 Maryland Section Event Schedule

Event	Date	Location
Maryland Chemist of the Year Dinner	December 10	TBA
Executive Committee Meeting	December 11	Towson University
February Meeting	TBA	
March Meeting	TBA	
Student Awards	April 12	TBA
Remsen Award	TBA	

If you have any ideas or suggestions about new events, let us know: [contact-us@mdchem.org](mailto:contact-us@mdchem.org)

## MARYLAND SECTION ELECTION RESULTS FOR 2015 OFFICERS

**Vice Chair:** Dr. Paul Smith  
**Chair Elect:** Dr. Stephanie Watson  
**Secretary:** Dr. Louise Hellwig  
**Treasurer:** Dr. Holly Cymet

### Councilors, 2015-2017 term

(3 open positions):

Dr. Stephanie Watson 2015-2017  
Dr. Dana Ferraris  
Dr. Jan Edward Kolakowski

### Alternate Councilors, 2015-2017 term

(3 open positions):

Dr. Sandra Young  
Dr. Charles M. Zapf  
Dr. Pumtiwitt McCarthy

### Member at Large (1 year term)

(5 positions open)

Dr. George Farrant  
Dr. Sara Narayan  
Dr. Rose Pesce-Rodriguez  
Dr. Beatrice Salazar  
Dr. Angela Sherman

### CONGRATULATIONS TO OUR NEWLY ELECTED OFFICERS!

Please feel free to contact anyone from the Executive Committee to find out more about the section and how you can participate.

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### REMINDER: Receiving the Chesapeake Chemist

Hopefully, if you are reading the Chesapeake Chemist this month, you are receiving it via e-mail from us. We went to electronic-only mailings to our MD ACS membership in October 2006.

**Changing your e-mail address? Moving out of the MD ACS area?** Update your information either by:

- E-mailing us at [contact-us@mdchem.org](mailto:contact-us@mdchem.org) – give us your member #, full name, and e-mail changes and we can ensure that your records are updated with National ACS.
- **Contacting the National ACS membership division: 800-333-9511 (US only) or [service@acs.org](mailto:service@acs.org)**

To ensure that you receive the Chesapeake Chemist, please add the MD ACS e-mail ([contact-us@mdchem.org](mailto:contact-us@mdchem.org)) to your accepted e-mail address list IF you have a spam filter.

If you are a member who currently doesn't receive the Maryland ACS Chesapeake Chemist but download it from our website, it is possible that National ACS does not have your e-mail address on file. If you want to receive the Chesapeake Chemist via e-mail, please e-mail us at [contact-us@mdchem.org](mailto:contact-us@mdchem.org) – give us your member #, full name, and e-mail address and we can ensure that your records are updated with National ACS.

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