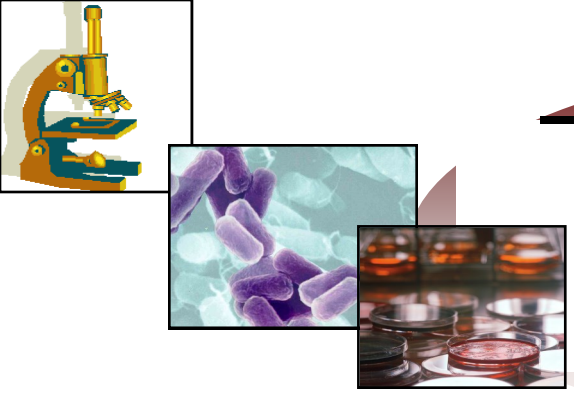


IBASM NEWSLETTER

Volume 20, Issue 2
February, 2018

Greetings from the President: Tanya Soule

I am excited to see all of you at our spring meeting on April 6-7, 2018 at the University of Indianapolis! Our ASM Branch Lecturer, Dr. Nancy Miller from Boston Medical Center, will be speaking about medical mycology. This year we will also be hosting an additional ASM Branch Lecturer, Dr. Daniel Wozniak from the Ohio State University, who will share some of his research on biofilms.

The IBASM meeting is a wonderful opportunity for both graduate and undergraduate students to present their work. As a graduate student I attended branch meetings annually and was excited to see that Indiana offered the same opportunities. I encourage you to all submit abstracts for either a poster or oral presentation. For those of you working on a thesis, dissertation, senior, or honor's project this meeting is a great opportunity to present your research to microbiologists for valuable feedback.

While you are at the meeting take a moment to speak with our student representatives, Janine Bennett from IPFW and Ahmed Hassan from Purdue University. Both of them are eager to represent the students and would love to hear of any ideas you would like to share for the group or future meetings.

I would also like to remind you that abstracts are due **March 9** while the meeting registration is due **March 2**. Details are in this newsletter for registering, submitting abstracts, and travel.

In this issue:

Message from the President-Elect - Doug Stemke

Welcome to a new year of microbiology in the Hoosier State! I am delighted that this year's IBASM will take place on my campus at the **University of Indianapolis (UIndy) Health Pavilion Complex, April 6th and 7th, 2018**. We will have two internationally distinguished speakers at the meeting, **Dr. Nancy Miller** (Clinical Microbiology and Medical Diagnostics, Boston Medical Center) and **Dr. Daniel Wozniak** (Infection and Immunity Microbiology Center for Microbial Interface Biology, Ohio State University). Naturally, in addition to our guests, we will get a chance to learn about what is going on in the microbial sciences across Indiana though the many fine local talks and posters.

For those who haven't been to the meeting before, the annual IBASM meeting offers those engaged in microbiology an opportunity to gather and discuss our diverse interests in our various fields. Undergraduate and graduate students, postdoctoral researchers, academics, educators, medical, health services, and industrial professionals are all encouraged and welcome to attend this annual meeting. I have had the personal good fortune to attend to attend several branch meetings including the South Central, North Carolina, North Central, and of course Indiana, all of which have been a positive force in my development as a microbiologist.

Along those lines, I highly encourage Undergraduates, Masters and Doctorate Graduate candidates, and Postdoctoral fellows to share their science through the development of a poster or a talk for the meeting. It is an outstanding opportunity to get feedback on your work, make potential contacts in your field, and simply to share in a supportive environment dedicated to the microbial sciences with professionals in aspirant fields. Forms are attached to this newsletter.

A message and request from ASM National. If at all possible, IBASM members who also belong to ASM National are asked to pay for IBASM Branch dues directly through ASM National. The total number of IBASM members that are also ASM national members has implications in how our meetings are funded through the national organization, so to simplify the process I encourage you to purchase your Branch memberships through ASM national. For those who are not members of the national ASM and, are considering such membership, you will find access to the many fine journals, career services, attendance of the National ASM meeting or any of the many specialty meetings, as well as supporting the general interests and causes of microbiology nationally all good reasons to consider national ASM membership.

Those interested in staying locally in Indianapolis we have a block of rooms for April 6 at the Holiday Inn Express on 31, just a little south of I-465. You can call either of the two numbers and ask for the IBASM rates (listed at $88 for the night).

Finally, a few important people to recognize. Congratulations to **Janine Bennett** and **Ahmed Hassan** as our new student representative for the 2018 year. IBASM would not be the success that it is without the dedication and hard work by our student representatives and volunteers. I would be remiss as the newly elected President-Elect if I did not thank our current and past presidents, **Dr. Tanya Soule** and **Dr. Nancy Magill**, for their years of service to IBASM. IBASM would also not have been the success it has without the tireless efforts of **Dr. Christian Chauret**, our long-time Branch Treasure. I am humbled to continue the work done by these hard-working members of IBASM as well as all the other members through the years. Looking forward to 2018!

Message from the Student Representatives

Dear IBASM members,

We are Janine and Ahmed, the student representatives for the IBASM. Welcome back to another semester! We hope everyone had a great holiday and wish everyone new and productive beginnings. It's that time of the year again to think about showcasing your research. This year, the IBASM meeting will take place at the University of Indianapolis on April 6-7, 2017.

Whether you are a graduate or undergraduate student, we encourage you to participate in this meeting. This meeting is a great opportunity to network and learn from great scientists in the field of Microbiology about their research.

Please follow the IBASM guidelines when writing your abstracts and designing your posters. If you have any questions or concerns, please feel free to contact Ahmed Hassan (hassan23@purdue.edu) or Janine Bennett (bennjl02@students.ipfw.edu).

We hope to see you there and look forward to hearing about your research.

IBASM 2018 Call for Abstracts
Student Poster Competition

The abstract submission form is included here but will be distributed by email separately as a word document. We will be utilizing 4x4 sq.ft. tri-fold styrofoam poster boards and each student is limited to one board. Push pins will be supplied but it wouldn't hurt to bring some extras in case we run short. You may participate in both oral (limited # of slots available) and poster sessions but you will only be judged for an award in the poster session. Awards will be presented in the following divisions: Undergraduate, MS graduate and Ph.D. graduate. Post-Doctoral Fellows are welcome to participate in either session but are not eligible for the award competition.

Students will be judged in 5 categories:

Professional Appearance: Jeans and sweat pants are unacceptable; torn, dirty, or frayed clothing is unacceptable. Business casual dress is the standard dress code. (20 points)

Scientific Thought: Is there a clear hypothesis? Are the goals of the study defined? Were data correctly analyzed? Were statistical analyses performed? Did a logical conclusion result? (20 points)

Creativity: Was the topic original? Is there anything new in the approach to answering the question? Were new methods developed? (20 points)

Thoroughness: Was the study as complete as possible? Does the student understand the background material? Were subject headings (e.g. Introduction, Materials & Methods, etc.) presented? Is the student aware of the drawbacks of the study? (20 points)

Presentation (poster): Were the results/conclusions clearly presented? Was the student's verbal expression clear and concise? Was the student able to answer questions? How well did the poster convey the information? (20 points)

ABSTRACT FORM FOR THE 2018 IBASM ANNUAL MEETING

Complete all appropriate boxes of this form (downloadable version http://ibasm.iweb.bsu.edu/) and email it on or by **March 9th 5:00 pm** to Dr. John McKillip at jlmckillip@bsu.edu. **Late submissions will not be accepted**. Abstracts should be prepared according to the National ASM guidelines which are included below; *an example is also provided below for format.* All abstracts should include the title, author(s), and institutional address. Accepted abstracts will be published in the meeting program if submitted by the deadline. Limited funding will be available to subsidize lodging and food for student presenters when requested in the registration form.

Presenting author information:

Name:	Phone:
Address:	Fax:
Subject Category:	Email:

Are you a student presenter? ☐ Yes or ☐ No (check one)

☐ Oral and/or ☐ Poster presentation (check applicable boxes)

If you are not selected for an oral presentation, are you willing to present a poster?

☐ Yes ☐ No ☐ Does not apply

Check if presenting author is a student competing for: ☐ Undergraduate ☐ MS Graduate or ☐ Ph.D. Graduate Student Award (a short paper is required from award winners). If competing for an award the student must present a poster. (If left blank, the student will not be judged in the competition).

Check if presenting student will also be presenting at the 2018 ASM General Meeting: ☐

Are you competing for the national travel award to the 2018 ASM General Meeting? ☐ Yes ☐ No

Title:

Authors:

Affiliation(s):

Keywords:

ABSTRACT

Example Abstract (for reference in formatting yours):

Characterization of Bacterial Isolates from Chronic Conjunctivitis in Dogs and their Ability to form Biofilm *in Vitro*

A. Hassan*[1], W. Younis[1], G. K. Hammac[1], J. Stiles[2] and M. N. Seleem[1].

[1]Department of Comparative Pathobiology, Purdue University, West Lafayette, IN 47907, USA

[2]Department of Veterinary Clinical Sciences, Purdue University, West Lafayette, IN 47907, USA

Biofilms are responsible for 80% of microbial infections which develop in the body and bacterial biofilms on tissue surfaces and chronic wound constitute an ever-increasing threat to human and animal health and place a significant burden on healthcare systems. Chronic bacterial infections in veterinary medicine are commonly reported but association with biofilms is rarely considered. Hence, the objective of this *in vitro* study was to investigate the association between biofilm formation and clinical cases of chronic conjunctivitis in dogs. Twenty bacterial isolates identified at the Indiana Animal Disease Diagnostic laboratory from specimens collected from chronic conjunctivitis in dogs admitted to the small animal teaching hospital at Purdue University were included in the study. Standard methods including examination of colony morphology, hemolysis, biochemical tests, and fermentation of maltose, trehalose and lactose, were used in addition to matrix-assisted laser desorption ionization time of flight (MALDI-TOF) mass spectrometry to identify isolates. In addition, biofilm formation was evaluated using two different methods: Congo Red Agar (CRA) and a microtiter plate assay followed by crystal violet staining. The microtiter plate assay was more sensitive in detecting biofilm forming isolates than was CRA. We were able to detect biofilm formation in 100% of the isolates using the microtiter plate assay, while using CRA we were able to detect biofilm in only 50% of the isolates. In this study, the clinical isolates were confirmed to have biofilm-forming capability, thereby further complicating the therapeutic conditions and outcomes. Furthermore, the microtiter plate assay was shown to be more sensitive than CRA for detecting biofilms and should be considered as a standard technique for detection.

Key words: biofilm; canine; conjunctivitis; MALDI-TOF

From the Desk of John McKillip...Educational Representative

ABSTRACT GUIDELINES BASED ON AMERICAN SOCIETY FOR MICROBIOLOGY (ASM) REQUIREMENTS

SUMMARY OF SUBMISSION STEPS

Step One: Submit the 2018 IBASM Membership Application/Renewal and Registration Forms.

Step Two: Affirmations

- Names of all the authors (primary and co-authors) will appear on the abstract.
- The submitted abstract representing your research has not been accepted for publication in a journal or in an international scientific journal based on the date submitted.
- Upon acceptance of the abstract, the prepared poster (see guidelines) will be placed on the scheduled day and time for viewing and only be removed after the scheduled time.
- Any changes in contact information should be corresponded with IBASM.

Step Three: Title—Please use a short and concise title that indicates the content of the abstract.

- Capitalize the first letter of each word except prepositions, articles and species names.
- Title is not included in the total character count of 2000.
- Do not place a period at the end of your title.
- Do not place hard returns in your title.
- Italicize scientific names (example: "Staphylococcus aureus" will appear as *Staphylococcus aureus*). For therapeutic agents, only generic names may be used (NO trade names are permitted in abstract titles).
- A title of 10 words will be appropriate.

Step Four: *Primary Presenting Author*, Co-Authors, Affiliation

- Authors, groups and institutions and spaces are not included in the 2000-character limit.
- Author's names will be displayed using first initial(s) and full last name. Presenting author will be printed with an asterisk (e.g. J. Smith*, W. S. Brown, and R. A. Jones).
- Each institution and author will be referenced with superscript numbers and include the institution's city, two letter state/province abbreviation and country.
- Please note that IBASM will correspond with the presenting author only. Changes in the presenting author must be communicated to IBASM. It is the responsibility of the presenting author to contact all co-authors with the disposition and scheduling of the abstract. The complete address of the presenting author is required in order to assure that correspondence arrives promptly and easily.

Step Five: ***Keywords***

- Keywords are completely independent of each other and should be able to stand alone in the index.
- Words should be lowercase, except for genus names and proper nouns. For Greek characters, please spell out names.
- Organisms will be italicized in final publications.
- Enter up to three keywords.

Step Six: **Abstract Text** *(included in the 2000-character limit - spaces are not counted)*

- Your abstract may have up to 2000 characters, which does not include the title, authors, affiliations, and keywords. Spaces are not counted. Do NOT include abstract title, authors or keywords in the abstract text.
- Abstract text may be submitted using either of the following methods: Copy/paste or direct entry keystrokes.
- Your abstract may be written without the use of the following bolded headers **(Background, Materials, Results, Conclusion)**. However, your abstract should include a one to two sentence introduction, the description of the methods used, the results obtained, and a conclusion with inclusion of its significance.

POSTER GUIDELINES FOR THE SPRING 2018 IBASM ANNUAL MEETING

University of Indianapolis, Health Pavilion Complex, April 6/7th, 2018

1. ABSTRACT
    - Including an abstract on your poster is recommended and expected by most readers. Ideally, this would be the exact same abstract submitted initially and in the program booklet, although if any new (and vital) data are obtained immediately prior to the meeting, these results may be included on the poster, which could alter the wording of the abstract slightly, and this is acceptable.
2. INTRODUCTION
    - The introduction should give the reader a solid foundation on which to base their understanding of the rest of the poster. It should convey: the importance of the research, the problem you are trying to solve, why the research is necessary, your approach to the problem and the logic behind it, and your **hypothesis**.
    - Do not be verbose; the best Introduction sections are 2-3 paragraphs.
3. METHODS
    - Give enough detail so the reader understands what was done, but do not explain every step. Assume basic knowledge. Be sure to address what and how your statistical analyses were completed and your significance level(s).
    - Present methods in a way that is easy to follow. Cite relevant references.
4. RESULTS
    - Try to make your figures, if possible, in black and white or colors that are colorblind friendly.
    - All figures and graphics should be as high resolution as is possible and practical
    - DO NOT DISCUSS your results in the Results section. You should merely state the observed results.
    - All figures and tables should be self-explanatory; that is, the legend or caption should thoroughly but succinctly explain what the reader is looking at, and should include all relevant labeling, statistical analyses, and scale bars as appropriate 5.
5. DISCUSSION
    - This is where you interpret your results and discuss them.
    - Refer to all of your figures when discussing the corresponding data!
    - State your conclusions and future directions.

6. REFERENCES

- Space is limited so you should only include your most relevant references.
- · Author(s) last name and author(s) initial of first name. Title. Journal Name, Month and Year. Volume #(Issue #): pages. Digital Object Identifier (DOI).
- Law, J. and Gomez, G. 2016. Poster guide for the 2016 IBASM annual meeting. *Journal of Exampleology*, January 2016. 10(1):103-107. doi: 10.1007/s02253-072-1135-4

7. ACKNOWLEDGMENTS

- It is always important to recognize those who helped you analyze data, conduct some of the research, your advisor/mentor who supervised the research, and especially those who provided you with funding, supplies, or organisms.
- Do not acknowledge coauthor(s) of your poster.

8. GENERAL NOTES

- Have poster dimensions set at 40 inches by 24 inches.
- Avoid having font smaller than 24 in Times New Roman (for example).
- Make sure the formatting scheme is consistent!
- The poster should stand alone- it should tell the story of your research without you having to be there.
- Poster sections should be well organized and have a natural flow to them.
- All figures and sections should be properly titled.
- Make sure all edges line up properly.
- Give at least a 1 inch page margin on all sides or you may find your print off eating into your texts and figures.

2018 IBASM Spring Meeting

April 6-April 7, 2018

University of Indianapolis, UIndy Health Pavilion

TENTATIVE AGENDA

Friday April 6, 2018

6:00-8:00 PM	Registration
8:00-9:00 PM	**ASM Branch Lecture**- Nancy S. Miller, MD. Department of Laboratory Medicine, Boston Medical Center. "Fungal Fest".
9:00-10:00	Welcome Reception with Poster Viewing

Saturday April 7, 2018

7:30-8:30	Light Breakfast and Poster Viewing
8:30-10:30	Poster Judging and Viewing
10:30-11:30	**ASM Branch Lecture**- Dr. Daniel J. Woznaik, Ph.D . Departments of Microbiological Infection and Immunity, Microbiology for Microbial Interface Biology, Ohio State University. "Bacterial Biofilms".
11:30- 12:00	Student Oral Presentations
12:00-12:30	IBASM Business Meeting
12:30-1:30	Lunch (Schwitzer Student Center Cafeteria)
1:35-2:30	Student Oral Presentations
2:30-3:15	**IBASM Teaching Award Recipient Lecture**
3:15-3:45	Announcement of Student Award Winners Closing Remarks

Directions and Parking.

From I-65: Get off at the Keystone exit and heading south to the second traffic light (Hanna). Turn right onto Hanna. At the second stoplight (State Street) turn left. You are at the Health Complex and can park near the building anytime after 5:00 PM Friday or all day Saturday.

From I-465 (south Side). Head north on East Street until you reach Hanna (2nd light). Turn right. About a mile further at the 4th light you are at State Street, the Health Complex is on your right. You can park near the building anytime after 5:00 PM Friday or all day Saturday.

IBASM Annual Meeting Registration and Meal Reservation Form

April 6 & 7, 2018 at the University of Indianapolis, Health Pavilion Complex

Please use this form (downloadable version http://ibasm.iweb.bsu.edu/) to register for the IBASM meeting and to reserve your room. The meeting registration fee is $30 for regular members and $7 for student members. You must be an IBASM member to participate in the meeting. Family members are encouraged to attend and do not have to pay registration fees. Upon completion, email (or mail) this form to Doug Stemke (stemked@uindy.edu) no later than **March 2, 2018**. If necessary, forms may also be mailed to Doug Stemke at the address given on the Membership Form below. Payment can be in the mail with a check payable to IBASM (do not send cash) or provided at the meeting (cash or check). Registrations received after March 5 will be subject to a $7.00 late fee (regular members) or a $4.00 late fee (student members). Please feel free to contact Doug Stemke at the email address provided above if you have any questions. **Remember, meeting abstracts are due March 9, 2018**.

Please fill in the requested information.

Name:	#Adults:	#Children:
Address:		
Institution: Phone:	 Fax:	 Email:

If you are not a member, you will need to become a member and include your dues with your payment for the meeting.

2018 IBASM member: ☐ Yes ☐ No

Please indicate which sessions you plan to attend:

☐ Friday evening session ☐ Saturday morning session ☐ Saturday afternoon session

If you are a student presenter, do you request travel assistance? ☐ Yes ☐ No

Lodging and Meals: A block of rooms has been reserved at Holiday Inn Express Indianapolis South To reserve your room you can call 317-783-5151 and ask for the IBASM room rate. **Reservations must be made by March 6, 2018 in order to be guaranteed the room rate.** Dinner on Friday is on your own. Mini bar breakfast (Sat.) will be covered by IBASM. Lunch is on campus ($6.50/person).

Please be prepared to pay individually (cash or card) for each meal.

Payment:

Registration: ☐ Member ($30) ☐ Student ($7) $_____

Dues (if applicable; see following page): ☐ Non-student ($15) ☐ Student ($5) $_____

Late fees (if applicable) $_____

Total Enclosed (mail or pay on-site) $_____

2018 Membership Application/Renewal

If you have not done so already, it is time to pay your IBASM dues for 2018. You can do it either online when you pay your dues to the ASM National Organization (www.asm.org) or by using this form (downloadable version http://ibasm.iweb.bsu.edu/). Dues are $15.00 for non-students and $5.00 for students (per year). Please return the completed form with payment to either the IBASM meeting (cash or check) or by mail with a check (do not send cash), payable to IBASM, to:

Dr. Douglas Stemke
Department of Biology
University of Indianapolis,
1400 E Hanna Ave
Indianapolis, IN 46227
Phone: (317) 788-2169; e-mail: stemked@uindy.edu

Please check: □ New Member Application or □ Renewal for 2018

Please check: □ Student Member in 2018 ($5) or □ Full Member in 2018 ($15)

Please check: ☐ Dues paid to IBASM directly or ☐ Dues paid online at www.asm.org

Name:

Current Position & Title:

Institution:

Mailing Address (new address Yes / No?):

Phone:

Email:

Fax:

National ASM Member # (if applicable):

Background

Highest Degree:

Institution:

Professional Interests:

First Place Undergraduate Division Winner

Role of the HfaD C-terminal Amyloid Domain in *Caulobacter crescentus* Attachment

Delaney T. Halloran, Gail G. Hardy, and Yves V. Brun

Department of Biology, Indiana University

Introduction:

Biofilm formation is dependent on permanent attachment to surfaces. *Caulobacter crescentus* adherence is mediated by the holdfast, a complex of protein and polysaccharide that is anchored to the cell pole by the outer membrane (OM) proteins HfaA, HfaB, and HfaD. However, the mechanism of holdfast anchoring is unknown. HfaB is a lipoprotein with sequence similarity to known secretion channel proteins and is essential for the localization and secretion of HfaA and HfaD. HfaA has amyloid properties in that it is resistant to heat and SDS and contains three predicted amyloidogenic regions, one of which shares identity with a region within the C-terminus of HfaD. HfaD has solenoid properties and similarity to adhesins. HfaD and HfaA form high molecular weight complexes that are important in holdfast anchoring. We hypothesize that the HfaA and HfaD amyloid domains play a role in their association and facilitate the interactions between the holdfast polysaccharide, HfaA, and HfaD.

To explore this possibility, we generated two *hfaD* C-terminal deletions. Each deletion was examined using short-term adherence and Western Blot analysis to determine the effects of these mutations on HfaD. The short-term adherence assay indicated that deleting part or all of the C-terminus of HfaD resulted in decreased adherence similar to the complete deletion of *hfaD*. To determine if the C-terminal deletions affected HfaD protein levels, C-terminal M2 epitope tagged constructs of the deletions were created. Western Blot analysis indicated that the HfaD protein levels of the C-terminal truncation were reduced. HfaD was also severely reduced in a more conservative C-terminal deletion. Furthermore, the truncated HfaD did not localize to the OM. To mitigate the negative effects of the *hfaD* C-terminal deletions, three point mutations were generated within the conserved C-terminal amyloid domain. Similar to the C-terminal deletions, the short-term adherence assay indicated that mutating the conserved amyloid domain residues resulted in decreased adherence similar to a complete *hfaD* deletion. Our results

demonstrate the importance of the HfaD amyloid domain in HfaD function and indicate a need to further characterize the role of the HfaD C-terminal amyloid domain of the hfaD mutations as well as their implications on the model of holdfast anchoring.

Results:

HfaD stability is affected by deleting the C-terminal amyloid domain. Western blot analysis of whole cell lysates using anti-M2 demonstrated that *hfaD*Δ381-415 M2 produced no detectable HfaD protein (Fig. 7A). Western analysis of *C. crescentus* cells with the *hfaD*Δ381-408 deletion confirmed that HfaD stability is partially restored when the last seven residues of the C-terminus are retained; however, there is a severe reduction in the levels of detectable protein (Fig. 7B).

HfaD localization is affected by deleting the C-terminus. (Fig. 8).

Point mutations in the amyloid domain result in protein instability and loss of short-term adherence. (Figs. 9A,B).

Discussion

Characterization of the smaller C-terminal deletion construct by Western blot analysis indicated that the level of HfaD stability was decreased relative to the parental strain but increased relative to a complete HfaD C-terminal deletion. We believe that the smaller 20 kDa-protein band represents a partial HfaD degradation product. To determine if HfaD protein was localizing to the OM, a Western blot was performed on OM proteins extracted from C. crescentus cells containing the smaller HfaD C-terminal deletion. The results suggest that the truncated HfaD is not localized to the OM.

Because the deletion of the HfaD C-terminal domain resulted in degradation and mislocalization of HfaD, specific point mutations within the conserved amyloid domain were created. The HfaD point mutants were examined by short-term adherence and Western blot analysis. Again, the adherence phenotype of each point mutant was determined to be similar to a complete *hfa*D deletion. Western blot analysis of OM proteins extracted from *C. crescentus* cells containing the point mutations demonstrated that mutating these residues also resulted in HfaD instability. Previously HfaD was shown to be unstable in an *hfa*A deletion, and we hypothesize that loss or mutation of key residues within the HfaD C-terminus prevents the in-

interaction between HfaD and HfaA, ultimately resulting in HfaD degradation.

Our results suggest that the HfaD amyloid domain is important in HfaD function and indicate a need to further characterize the role of the HfaD C-terminal amyloid domain.

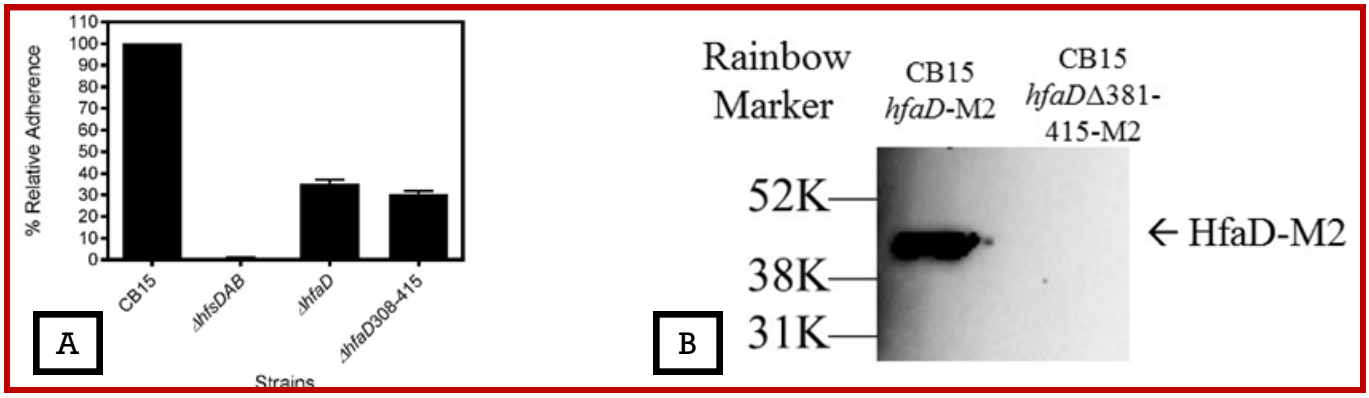


Figure 7. Both A) and B) display results of Western Blots of HfaD. The samples were electrophoresed on a 10% SDS-PAGE gel, transferred to nitrocellulose, and probed with α-M2-HRP

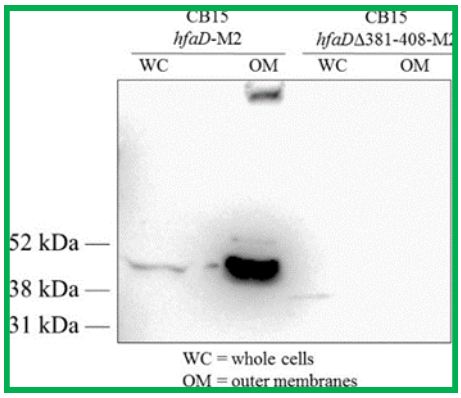
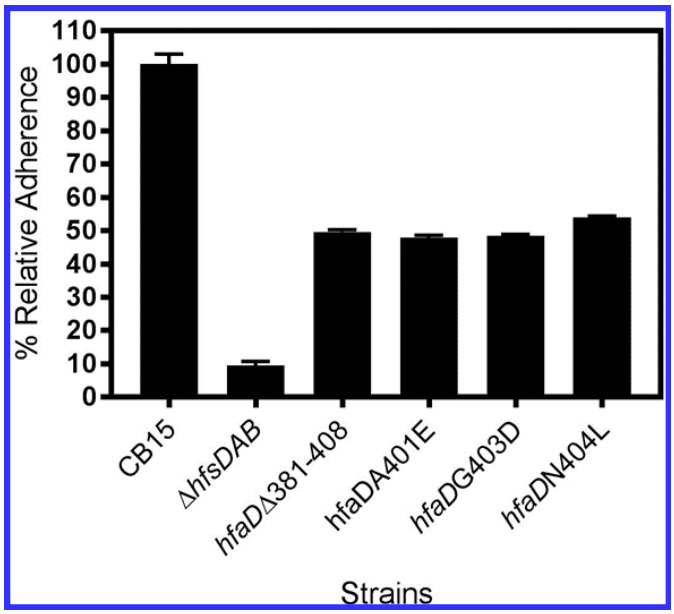


Figure 8. Western Blot of HfaD. WC = whole cell lysates; OM = outer membranes. The samples were electrophoresed on a 10% SDS-PAGE gel, transferred to nitrocellulose, and probed with α-M2-HRP.

Figure 9 A) Short-term crystal violet binding assay. Percent adherence is relative to *C. crescentus* CB15 binding, which is set to 100%. All samples are shown as the mean ± standard error.



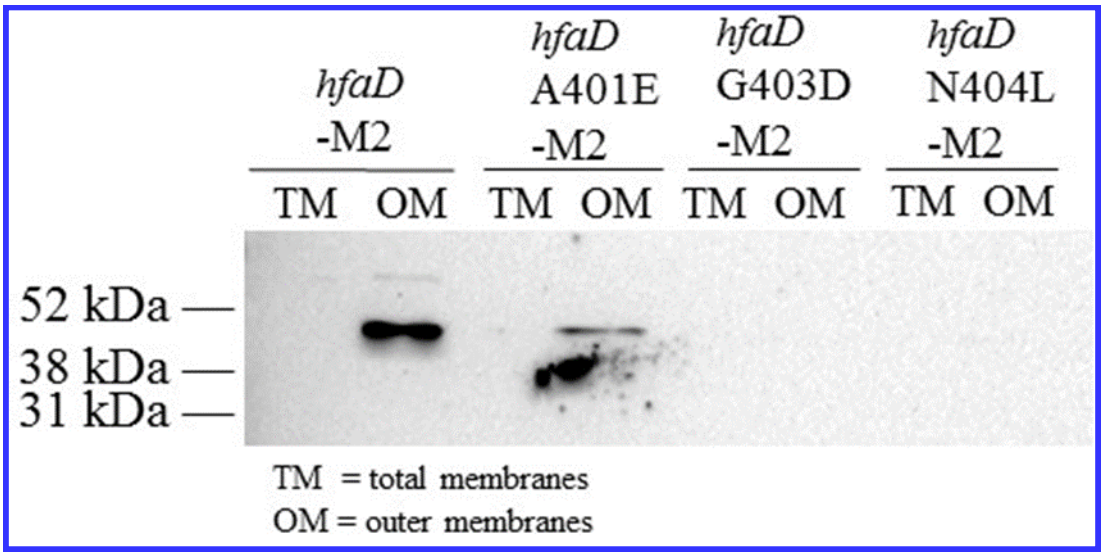


Figure 9 B) Western blot of HfaD. TM = total membranes; OM = OMs. The samples were probed with α-M2-HRP.

Acknowledgements

I would like to thank all of the members of the Brun lab for their patience and support during the development of this work.

Funding

The National Institutes of Health grant R35GM122556 to Y.V.B.

Indiana University 2017 Provost's Travel Award for Women in Science

2015 Hutton Honors College Research Partnership Grant

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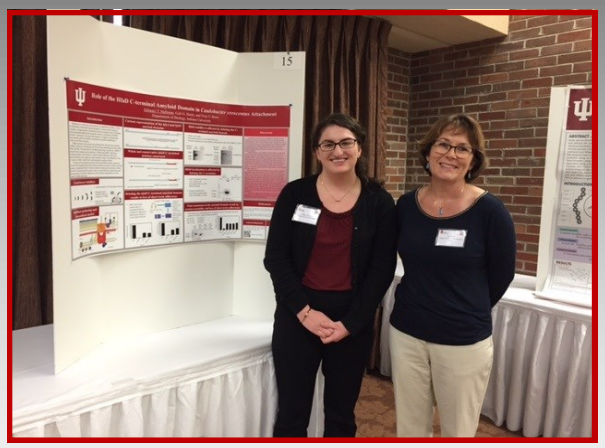
Hardy GG, Allen RC, Toh E, Long M, Brown PJ, Cole-Tobian JL, Brun YV. A localized multimeric anchor ataches the *Caulobacter* holdfast to the cell pole. Mol Microbiol. 2010; 76:409-427.

Rehman ZU, Rehm BH. Dual roles of *Pseudomonas aeruginosa* AlgE in secretion of the virulence factor alginate and formation of the secretion complex. Appl Environ Microbiol. 2013; 79:2002-2011.

Struyve M, Moons M, Tommassen J. Carboxy-terminal phenylalanine is essential for the correct assembly of a bacterial outer membrane protein. J Mol Biol. 1991; 218:141-148.

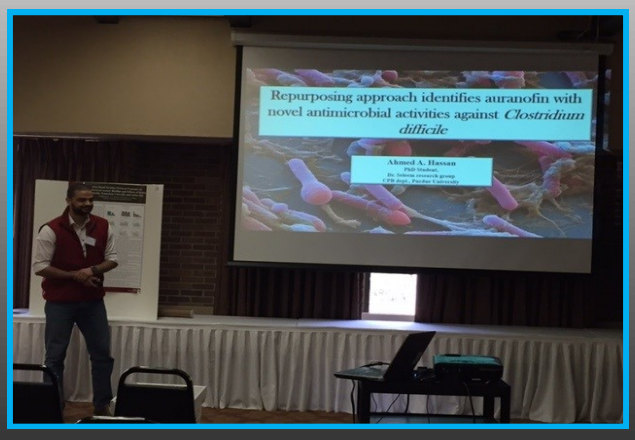
Photos from the 2017 Annual Meeting



Delaney Halloran, IU Bloomington

Tong Chen, IU School of Medicine

All Award Winners



Ahmed Hassan, Purdue University

MICROBIOLOGY IN THE NEWS

https://www.eurekalert.org/bysubject/index.php?kw=33

Lab-on-a-chip for tracking single bacterial cells

Nature Communications

January 31, 2018

Researchers at the Biozentrum of the University of Basel, together with researchers from the Max Planck Institute in Dresden, have set up a novel lab-on-a-chip with accompanying automatic analysis software. This integrated setup can be used to study gene regulation in single bacterial cells in response to dynamically controlled environmental changes.

Research paves the way for the development of vaccines for emerging viruses

PLOS Neglected Tropical Diseases

January 30, 2018

In studying the West Nile virus, which caused outbreaks in North America this century, scientists from Brazil and Senegal identified the gene responsible for the diminished virulence of the lineage known for causing mild effects.

Getting out of hot water -- does mobile DNA help?

Frontiers in Microbiology

January 26, 2018

Extremophiles -- hardy organisms living in places that would kill most life on Earth -- provide fascinating insights into evolution, metabolism and even possible extraterrestrial life. A new study provides insights into how one type of extremophile, a heat-loving microbe that uses ammonia for energy production, may have been able to make the transition from hot springs to more moderate environments across the globe. The first-ever analysis of DNA of a contemporary heat-loving, ammonia-oxidizing organism reveals that evolution of the necessary adaptations may have been helped by highly mobile genetic elements and DNA exchange with a variety of other organisms.

Important Dates

March 2, 2018:	Registration form due for Annual IBASM meeting
March 9, 2018:	Abstract form due for Annual IBASM meeting
April 6-April 7, 2018:	Annual IBASM meeting, University of Indianapolis
June 1-5, 2018:	ASM Microbe 2018, Atlanta, GA

2017-2018 IBASM OFFICERS

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