News Letter

IBASM

Volume 7, #2 January 2005

Message from the President
Jeanne Barnett

Happy 2005! I hope you are all having a good year and are planning to attend the Indiana Branch Meeting at Brown County State Park, April 15 – 17, 2005. The speakers are set and we have a great program. This year, we will also ask 4 students submitting abstracts to give a 15 minute presentation. We will make the selection from the submitted abstracts and will limit the presenters to 1 from each lab. If you are interested in giving a presentation, please be sure to indicate that with your abstract submission. Since we have such good research in our state, we thought it would be a good idea to hear from some of you.

We are privileged to have 2 ASM speakers this year. Dr. Ralph Tanner is Professor of Microbiology at the University of Oklahoma, teaching the senior laboratory in microbial diversity and physiology for the past 15 years. He was an ASM Wellcome Visiting Professor and is a past chair of Division Q, Environmental and General Applied Microbiology. He is an applied microbial physiologist with particular experience with acetogens, methanogens, SRM, clostridia and other

Continued on page 2

Message from the President-Elect
Dominique Galli

Our next annual spring meeting is coming up. This year the event will take place from April 15-17, 2005 at the Abe Martin Lodge in Brown County State Park near Nashville, IN. The preliminary program and a registration form are included in this issue. With your registration you will have to prepay your meals. We will also ask you to make your room reservations with us. However, do not send us payment for the rooms but rather pay the lodge directly when you check out on April 17. The cost for a room (two double beds) will be $76.59, which includes all taxes.

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J. Barnett's message (continued from page 1)
works in industrial biocides and disinfectants, another hangover from his industry days. New microorganisms are a routine reward in this work, resulting in about 20 publications in microbial systematics over the years.

Dr. James Tiedje is a Professor at Michigan State University. His main research interest is to understand the ecology, physiology and biochemistry of microbial processes important in nature and of value to industry. His research is aimed at understanding the competitiveness, vegetation and community interactions of a microorganism that determine the success of a microorganism in its habitat. His lab has 3 main areas of interest. The first is to discover, understand and develop new bioconversion reactions by anaerobes, especially for destruction of hazardous wastes. The second is the ecology, physiology and biochemistry of denitrification. The third is the study of the fate and impact of genetically engineered microbes so their success or risk in nature can be better predicted.

Don't forget the 105th general ASM meeting June 5-9,2005, in Atlanta, GA. Prior to the General Meeting, the 12th ASM Conference for Undergraduate Educators will take place. Both of these meetings provide valuable information for us as microbiologists and educators. ASM also has several specialty meetings during the coming months. Help show the expertise of our members by participating in these meetings.

The Indiana Branch received additional funds from the regional office of ASM. These funds were used to purchase books for the winners of the poster presentations from April, 2004. We are pleased with the support we have gotten from the national and regional offices. Please continue to respond to the support with our best meeting yet.

The tentative program for the up-coming meeting is as follows:

Friday, April 15 (yes, that's TAX DAY!)

4 – 6 p.m. – registration
6 – 7 p.m. – dinner
7 – 8 p.m. – student presentations (4 at 15 minutes each)
8 – 9 p.m. – **Dr. Ralph Tanner** – "A Funny Thing Happened on the Way from the Sewage Plant"
9 - ? p.m. – social time

Saturday, April 16

7:30 – 8:30 a.m. – breakfast
9 – 11:30 a.m. – Poster Presentations
11:30 – 12:00 a.m. – Business Meeting
12:00 – 5:00 p.m. – Lunch and Free Time – Enjoy the Park
5:30 – 6:30 p.m. – Dinner
7:00 – 7:45 p.m. – **Dr. Nancy Behforouz** – "The AIDS Epidemic: An Update"
8:00 – 9:00 p.m. – **Dr. Jim Tiedje** – "Molecular Windows into Microbial Communities"
9:00 - ? p.m. – social time

I look forward to seeing you all in April.

D. Galli's message (continued from page 1)

A maximum of five people are permitted per room. Since Jeanne Barnett is giving you the information on the program, let me introduce you to this year's venue. Brown State Park will have two entrances, the West Gate, which is accessible from State Road 46 West (the Bloomington side), and the North Gate, which is accessible from State Road 46 East (the Columbus side). The park entrance fee is $4 for in-state vehicles. If you take a closer look at the program you will notice that we didn't plan anything for Saturday afternoon. Instead we decided to give you ample time to explore Brown State Park with its 12 miles of hiking trails and Ogle Hollow Nature Preserve. Alternatively, you can pay a visit to nearby Nashville, IN, a mecca for those who love arts, crafts, and antiques. For more info please check out the following links: http://www.browncountystatepark.com/ and http://www.nashville-indiana.com/.

McClung First Place Graduate (Ph.D.) Winner from 2004

Quorum-Sensing Signal Production in Bacteria Associated with Marine Sponges

Elisha Rahe, Department of Biology, Indiana University, Bloomington, Indiana

Sponges are sessile filter feeders that utilize bacteria, phytoplankton, and algal particles for food. Certain bacteria may serve as a source of food for the sponge, whereas other bacteria may inhabit the sponge, composing up to 40% of the sponge biomass (5). The large numbers of sponge-associated bacteria and their role in the sponge environment makes the sponge a particularly interesting organism to study the microbial process called quorum-sensing.

Quorum-sensing is a process that allows bacteria to monitor their population density and coordinate gene expression through the release of diffusible signal molecules (3). In alpha proteobacteria, commonly used signaling molecules are *N*-acyl homoserine lactones, or AHLs (2).

Quorum-sensing was first discovered in the marine bacterium *Vibrio fischeri* (1). *V. fischeri* associates with light organs of some luminescent fish, and at high population densities, expresses genes that result in luminescence (1). Luminescence is regulated by quorum-sensing and involves an AHL synthase, *luxI*, and the transcriptional activator, *luxR* (1). LuxI utilizes S-adenosylmethionine and an acyl-acyl carrier protein to synthesize the AHL, *N*-3-oxo-hexanoyl-homoserine lactone (1). LuxR is involved in regulating the expression of *luxI*, while also activating expression of target genes which result in luminescence (1).

The initial stages of my project involved screening approximately twenty different strains of sponge associated bacteria for AHL production by a commonly used method (4) of dichloromethane extractions followed by Thin Layer Chromatography (TLC) analysis.

Strain KLH11 was especially interesting. It produces greater than six putative AHLs (Figure 1). The abundance of potential signaling compounds synthesized by KLH11 makes it a very novel and promising strain to study in terms of its possible integral role in the bacterial sponge environment and involvement in quorum-sensing. 16S rDNA comparative phylogenetic analysis revealed that strain KLH11 is most closely related to another marine bacterium *Silicibacter pomeroyi* DSS-3 (Figure 2).

Rahe's paper (continued from page 4)

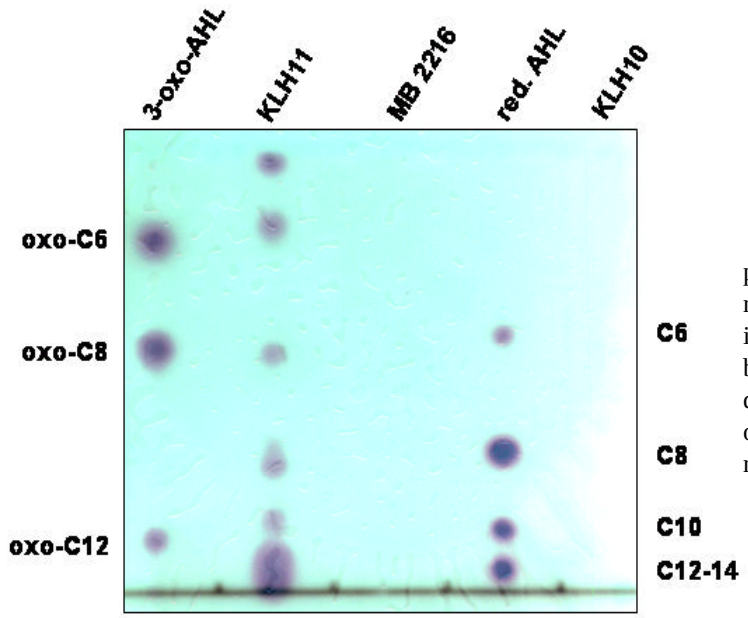

Figure 1. Thin Layer Chromatography utilizing the *A. tumefaciens* NTL4 reporter strain illustrates detectable AHLs in strain KLH11. MB 2216 is the marine broth control. KLH10 produces no detectable AHLs. The remaining lanes (3-oxo-AHL and red. AHL) are oxidized and reduced standards, respectively.

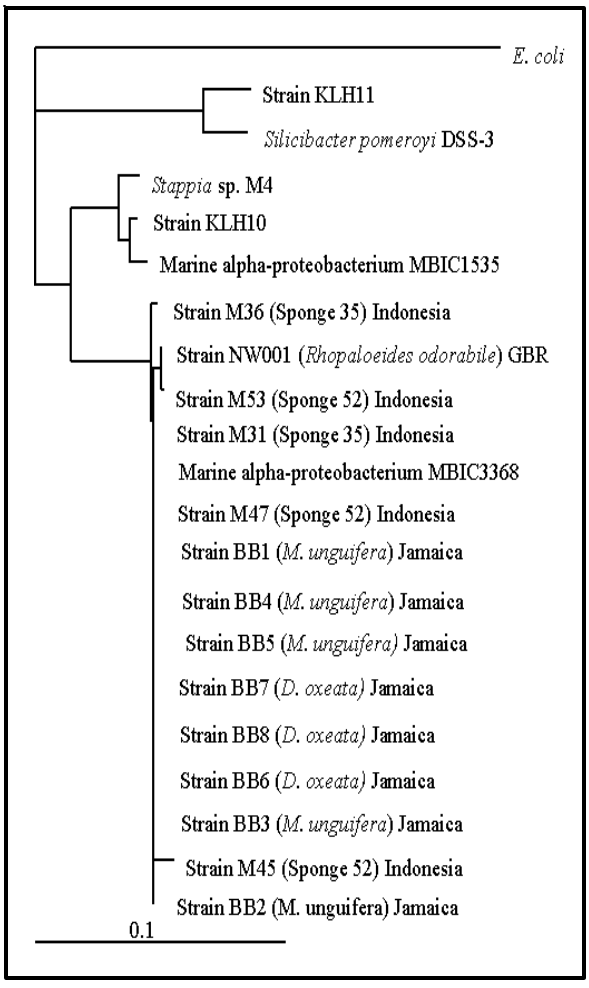

Figure 2. Phylogenetic tree based on 16S rDNA that depicts the relationship between KLH11 and *Silicibacter pomeroyi* DSS-3.

Rahe's paper (continued from page 5)

TLC analysis has indicated that *S. pomeroyi* synthesizes three AHLs that have a similar migration pattern to a subset of AHLs that are synthesized by KLH11 (Figure 3A and B). The genome sequence of *Silicibacter pomeroyi* DSS-3 has recently been completed (Mary Ann Moran *et al*. in press). Genome sequence analysis of *S. pomeroyi* indicated two *luxI* homologs, *silI1* and *silI2*. The genes *silI1* and *silI2* were Polymerase Chain Reaction (PCR) amplified and fused to a high copynumber expression plasmid followed by introduction into *Escherichia coli.*

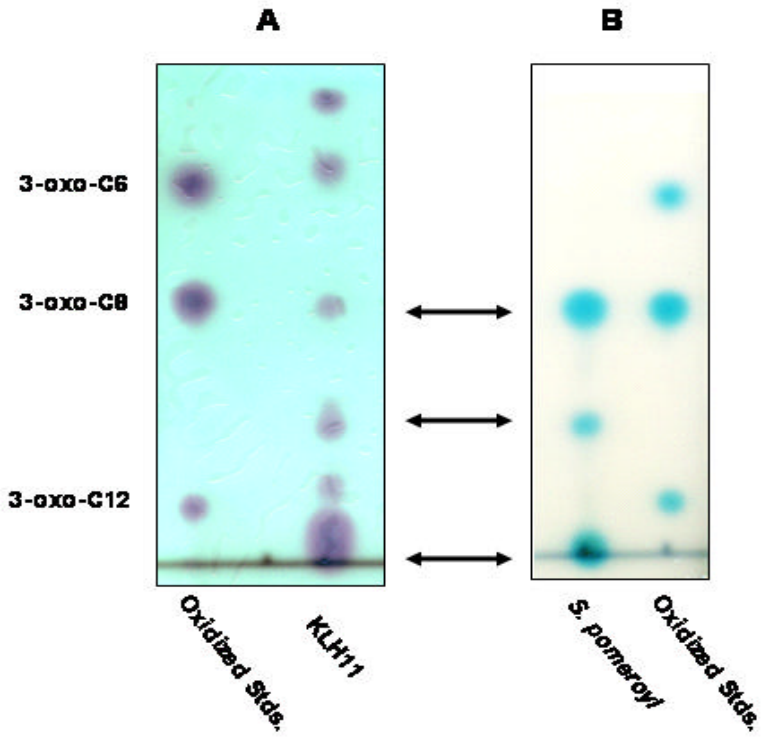

Figure 3: Thin layer chromatography of KLH11 (A) and *S. pomeroyi* (B) using the *Agrobacterium tumefaciens* KYC55 (6) reporter strain. Three AHLs synthesized by KLH11 have a similar migration pattern to AHLs that are produced by *S. pomeroyi.*

Rahe's paper (continued from page 6)

The presumptive AHL synthase genes were inserted into the plasmids in an orientation that fuses them to the *lacZ* promoter P_{lac} that is carried on these plasmids. One plasmid carries *silI1* fused to P_{lac} (pER100; P_{lac}::*silI1*) and a second carries *silI2* (pER104; P_{lac}::*silI12*). Dichloromethane extractions from *E. coli* harboring pER100 followed by TLC analysis indicated that pER100 (P_{lac}::*silI1*) produces the same three AHLs as the *S. pomeroyi* parental strain (Figure 4). Similar analysis of pER104 (P_{lac}::*silI2*) indicates that pER104 produces three AHLs which have a similar but distinct migration pattern in comparison to the *S. pomeroyi* parental strain (Figure 4.)

This suggests that each AHL synthase encodes synthesis of a different set of AHLs and also provides verification that the *luxI* homologs identified in *S. pomeroyi* function as AHL synthases, when expressed in *E. coli*.

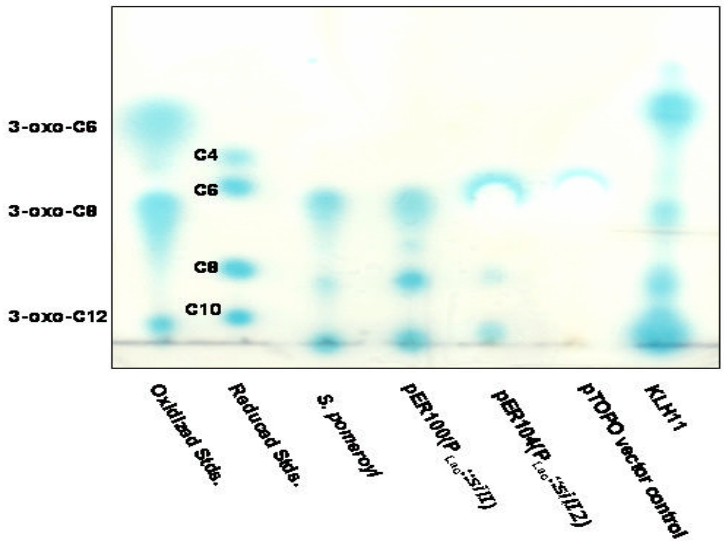

Figure 4. Thin Layer Chromatography with the *Agrobacterium tumefaciens* KYC55 (6) reporter strain. Three AHLs produced by the *S. pomeroyi* parental strain comigrate with three from pER100 and are similar to those synthesized by pER104. (Included in Mary Ann Moran *et al.* in press)

References

1. **Fuqua, C., and E. P. Greenberg**. 2002. Listening in on bacteria: Acyl-homoserine lactone signalling. Nature Reviews Molecular Cell Biology 3:685-695.
2. **Fuqua, C., and E. P. Greenberg.** 1998. Self perception in bacteria: quorum sensing with acylated homoserine lactones. Curr Opin Microbiol 1:183-9.
3. **Fuqua, W. C., S. C. Winans, and E. P. Greenberg.** 1994. Quorum Sensing in Bacteria - the LuxR-LuxI Family of Cell Density-Responsive Transcriptional Regulators. Journal of Bacteriology 176:269-275.
4. **Shaw, P. D., G. Ping, S. L. Daly, C. Cha, J. E. Cronan, K. L. Rinehart, and S. K. Farrand.** 1997. Detecting and characterizing N-acyl-homoserine lactone signal molecules by thin-layer chromatography. Proceedings of the National Academy of Sciences of the United States of America 94:6036-6041.
5. **Vacelet, J. 1977.** Electron microscope study of the association between some sponges and bacteria. Journal of Experimental Marine Biology and Ecology 30:301-314.
6. **Zhu, J., Y. R. Chai, Z. T. Zhong, S. P. Li, and S. C. Winans.** 2003. Agrobacterium bioassay strain for ultrasensitive detection of N-acylhomoserine lactone-type quorum-sensing molecules: Detection of **autoinducers in** *Mesorhizobium huakuii*. Applied and Environmental Microbiology 69:6949-6953.

McClung First Place Graduate (Masters) Winner from 2004

Degradation of Human Vault RNA3 by RNA Interference and Multidrug Resistance in GLC4/REV, a Small-Cell Lung Cancer Cell Line

Mike Adam, Carolyn Vann, and James Olesen
Ball State University, Muncie, IN

Multi-drug resistance (MDR) is the most common failure of chemotherapeutic cancer treatment. Cytotoxic drugs such as doxorubicin are administered as a cancer treatment, but may be ineffective because the drug is actively pumped out of the cell. This occurs when plasma membrane protein pumps such as the P-glycoprotein (P-gp) molecule are present. However, cell lines such as human small-cell lung cancer (GLC4), which are P-gp negative, still exhibit MDR.

A newly discovered ribonucleoprotein organelle, the vault, may provide MDR re-sistance to some cell types [5]. Although the precise function of vaults has not been determined, the number of vault particles per MDR cancer cell is higher or up-regulated when that cell is exposed to a cytotoxic drug [3]. This up-regulation, the vault's apparent association with the nuclear membrane [2], and its structural homology to the central plug of the nuclear pore complex [2], suggest the vault may have a role in drug trafficking out of the nucleus.

Vaults are multi-subunit organelles with a molecular mass of » 13 MDa and are com-posed of protein and RNA components. The overall shape of this ribonucleoprotein is a symmetrical barrel-shaped mid-section with two smaller protruding caps at opposite ends. The major vault protein (MVP) constitutes » 70% of the vault's mass as it makes up the entire central barrel portion. The cap structures in humans house three vault RNAs (vRNA1-3) and two minor proteins, a telomerase related protein (TEP1) and a vault related poly(ADP)-ribose polymerase (vPARP) [6].

The vRNAs are believed to be functional and to be involved in the vaults' association with MDR. The vRNA(s), like the MVP, show a drastic up-regulation (up to 15 fold) when a cell is exposed to a cytotoxic agent. If the vRNAs are the functional portion of the vault, the reduction of cellular vRNAs should correlate to a reduction in vault function. Furthermore, if the vault complexes confer or help confer MDR in a cell, the loss of the vRNA will sensitize the cells to drug exposure.

The purpose of this research was to implement RNA interference (RNAi) technology to reduce the expression of cellular vRNAs. Then, exposure to the cytotoxic cancer drug, doxorubicin, and subsequent up-regulation of vault particles, should produce vaults lacking the targeted vRNA. If the vRNA is important to vault function, MDR should decrease, and cytotoxic damage should stimulate the cells to initiate apoptosis. If the vault is found to directly induce MDR, then silenceing vault expression could become a novel therapy to treat cancers characterized by MDR.

RNAi is a means of post-transcriptional gene silencing. When a double-stranded RNA molecule enters a cell, it is cleaved into small strands (19–23 bp) by an enzyme called dicer. These small RNA fragments bind to a RNA-induced silencing complex (RISC) which uses the small RNA strands as a template to bind to mRNAs of homologous sequence. Once a homologous RNA is found, that RNA is degraded via endonuclease digestion [4].

The suspension cells used in this study were human small-cell lung cancer cells named GLC4 [kindly provided by Dr. Valerie Kickhoefer (Department of Biological Chemistry, UCLA)]. They were chosen because the number of vault components (especially the MVP and vRNA) increase 13 to 15

fold as the cells exhibit MDR after they are exposed to adri-amycin (doxorubicin) [3]. GLC4 cells exist in three states: parental, ADR (adriamycin resistant), and REV (revertant). Parental GLC4 cells have never been exposed to a drug, and have the lowest number of vaults per cell compared to the ADR and REV states.

The ADR state occurs when GLC4 cells (of any state) are exposed to a drug, develop resistance, and exhibit increased production of vault particles up to a 15 fold relative to the parental line. The REV state is seen when GLC4/ADR cells are removed from drug exposure and the cells still maintain an elevated number of vaults [» 4 fold more than the parental line [3]]. When GLC4/REV cells are exposed to doxorubicin, they increase their number of vault particles becoming GLC4/ADR at a much faster rate than the parental GLC4 line transition to the GLC4/ADR state.

Last year, Ardehali and Vann [1] used RNAi technology to decrease the expression of human vault RNA1 (hvRNA1) in GLC4 cells. Their preliminary experiments showed that when cells transfected with siRNA specific to hvRNA1 were exposed to 345 nM and 1035 nM of doxorubicin for 12 hr and 24 hr, apoptosis increased, indicating the potential loss of MDR. However, a low efficiency of transfection of GLC4/REV cells was problem-atic.

In this study, transfection of GLC4/REV cells was optimized by comparing two transfection reagents Qbiogene's jetSI (Qbiogene, Carlsbad, CA) and GeneTherapySys-tems'GenePORTER2 (GeneTherapySystems, San Diego, CA). The MEIG3 plasmid, which contains the green fluorescent protein (GFP) gene, was used as a marker of transfection efficiency. Transfected cells were counted under a fluorescence microscope, and transfection efficiency was calculated as the number of fluorescing cells divided by total cells counted times 100. It was determined that the GenePORTER2 reagent produced the highest transfection efficiency at » 20%, and was chosen to be used in future transfections of GLC4 cells.

A small interfering RNA (siRNA) sequence targeted against human vault RNA3 (siV3) was designed using Ambion's online siRNA calculator. The specificity of the sequence was confirmed by a BLAST search. This sequence and a negative control insert (sineg, a sequence not homologous to any known gene) were cloned into the pSilencer vector (Ambion, Austin, TX) and verified via PCR and sequencing of the recombinant plasmid.

Using the GenePORTER2 transfection reagent the recombinant plasmids, pSilencer/ siV3 and pSilencer/sineg, were transfected into GLC4/REV cells. Transfected cells were stably selected with hygromycin (drug resistance conferred by the pSilencer vector), and transfection was verified via PCR amplification of the plasmid insert region from total DNA extracted from the cells.

To verifiy that the siRNA successfully down-regulated vRNA3, RT-PCR was per-formed to semi-quantitatively assess the amount of vRNA3 present in transfected and non-transfected GLC4/REV cells. RT-PCR verification was also performed on the cells transfected with the siRNA against vRNA1 (siV1) which was previously completed by Ardehali [1]. Comparisons of the data were informative in determining if the silencing strategy effectively silenced the targeted vRNA and in comparing the individual roles of the two vRNAs in MDR. Preliminary results indicated that both vRNAs were not down-regulated by the siRNAs. However, non-specific bands were observed in negative controls that were the same size as the vRNA amplicons. These bands could be masking results in the other samples, so the RT-PCR reaction needs to be optimized to verify the results.

A Western analysis was performed to determine if caspase-8-induced apoptosis was increased in cells transfected with either vRNA1 or vRNA3. Caspase-8 is an upstream initiator caspase of the apoptotic pathway and increased expression is associated with apoptosis. Transfected GLC4/REV cells (siV1, siV3, and sineg), and an untransfected GLC4/REV population were treated with two levels of doxorubicin (345 nM and 1035 nM) for two time periods (12 hr and 24 hr). Total proteins were extracted from the

Adam's paper (continued from page 9)

cytoplasm of the four populations, electrophoresed on a 10% polyacrylamide gel, and a Western blot was performed using a caspase-8 antibody. The Western analysis showed no difference in caspase-8 expression in doxorubicin-treated and untreated cells. However, in contrast to the RT-PCR and Western results, a four-day growth curve analysis showed that the cells transfected with either siRNA and exposed to either level of doxorubicin had a reduced growth rate as compared to the untransfected cells. These findings suggest that cellular growth rates are inhibited by transfection or the down-regulation of the siRNAs may have an effect on cell growth and not apoptosis. Conclusions cannot be made until the RT-PCR negative control contamination is resolved.

Future experiments will manipulate the RT-PCR conditions to eliminate non-specific banding such that the degree of success of the down-regulation of the vRNAs can be determined. It also must be determined if the siRNAs are being expressed by the pSilencer vector. If down-regulation is not observed, alternate vectors, different siRNAs, or other methods of siRNA transfection may be examined. In addition, the level of expression of various initiator capases associated with the doxorubicin-induced apopotosis will be compared to determine whether the caspase-8 apoptotic pathway is used in this case.

Bibliography

[1] **Ardehali, B.** (2003). Down regulation of vault RNA1 by RNA interference in multidrug resistant GLC4/ADR, a small-cell lung cancer cell line. Master's thesis Ball State University.
[2] **Chugani, D., Rome, L. & Kedersha, N.** (1993) Evidence that vault ribonucleoprotein particles localize to the nuclear pore complex. J. Cell Sci., 106, 23–29.
[3] **Kickhoefer, V., Rajavel, K., Scheffer, G., Dalton, W., Scheper, R. & Rome, L.** (1998) Vaults are up-regulated in multidrug-resistant cancer cell lines. J. Biol. Chem., 273 (15), 8971–8974.
[4] **McManus, M. & Sharp, P.** (2002) Gene silencing in mammals by small interfering RNAs. Nature Rev. Gen., 3, 737–747.
[5] **Mossink, M., van Zon, A., Scheper, R., Sonneveld, P. & Wiemer, E.** (2003) Vaults: a ribonucleoprotein particle involved in drug resistance? Oncogene, 22 (47), 7458–7467.
[6] **van Zon, A., Mossink, M., Scheper, R., Sonneveld, P. & Wiemer, E.** (2003) The vault complex. Cell Mol. Life Sci., 60 (9), 1828–1837.

Mike Adams, receiving his certificate from Jim Mitchell

IBASM Annual Meeting Registration & Room Reservation Form
April 15 – 17, 2005
Abe Martin Lodge – Brown County State Park

Please use this form to register for the meeting and reserve your room and meals at Abe Martin Lodge. The meeting registration is $25 for regular members and $5 for students. Remember, regular members and presenting students must be an IBASM member to attend the meeting. A separate form will be provided in the newsletter to pay annual membership fees. Families are encouraged to come and, of course, they will not have to pay any registration fee. Please provide all of the necessary information below and send the completed form with check payable to "Indiana Branch ASM" for the total costs of registration and meals by **March 1st** to:

Dominique M. Galli, Ph.D.
IU-School of Dentistry
Department of Oral Biology
1121 W. Michigan St.
Indianapolis, IN 46202

Remember: You do need to make your room reservation with us. However, do not send payment for your room. You will pay the lodge directly when you check out. Room rates (two double beds) per night are $76.59, which includes all taxes. Check-in is at 4:00 pm and check-out is at 12:00 noon.

Name _____ # Adults_____ # Children_____

Address_____

Phone _____ Fax _____ E-mail _____

Please check the appropriate spaces and send the total payment with your registration. If you have any questions please contact Dominique Galli at (317) 278-1936, or send an e-mail to dgalli@iupui.edu.

	Member ($25)	Student ($5)		Total
Meeting Registration	_____	_____		$_____
Room (# of nights)	_____	_____		NA
# of adult meals	Dinner ($18.00)	Lunch box ($9.20)	Brkft. ($8.70)	
April 15	_____			$_____
April 16	_____	_____	_____	$_____
April 17			_____	$_____
# of children's meals (age 3-10)		Dinner ($8.70)	Lunch box ($9.20)(adult size) Brkft. ($4.60)	
April 15	_____			$_____
April 16	_____	_____	_____	$_____
April 17			_____	$_____
Total Enclosed				$_____

If you prefer a vegetarian meal please check this box: ☐

E.coli in Dried Sausage Able to Withstand Digestion Process

Acidic conditions encountered during the digestive process may not be enough to inactivate some harmful bacteria in fermented dry sausages say Canadian researchers. Their findings appear in the November 2004 issue of the journal *Applied and Environmental Microbiology*.

Escherichia coli O157:H7 is one of the leading causes of foodborne diseases and can result in severe complications in humans ranging from hemorrhagic colitis to death. Previous outbreaks have been primarily associated with ground beef and raw milk, but a recent increase in cases involving highly acidic foods such as fermented dry sausages, mayonnaise, and apple cider have raised new concerns.

In the study fermented dry sausages were inoculated with *E. coli* O157:H7 and exposed to synthetic saliva for 1 minute, synthetic gastric juice for 120 minutes, and synthetic pancreatic juice for 250 minutes. Results showed that not only did existing *E. coli* O157:H7 cells remain viable after exposure to both synthetic saliva and gastric juice, they began to grow at a significant rate when exposed to the pancreatic juice.

"From a food safety point of view, this implies that the industrial processes used to manufacture dry sausages must be designed in such a way that no viable *E. coli* O157:H7 cell can ever be found in an average portion of sausage for human consumption, because no additional protection will be afforded by the subsequent digestive process," say the researchers. "This new information will be very valuable in refining our assessment of the risk associated with the manufacture of fermented dry sausages with regard to E. coli O157:H7."

(**F. Naim, S. Messier, L. Saucier, G. Piette.** 2004. Postprocessing in vitro digestion challenge to evaluate survival of Escherichia coli O157:H7 in fermented dry sausages. Applied and Environmental Microbiology, 70. 11: 6637-6642)

Shock Therapy Effective Against Bacteria on Stainless Steel Implants

Electric currents may help prevent the growth of harmful bacteria from occurring on surgical stainless steel say researchers from The Netherlands. Their findings appear in the November issue of the journal *Applied and Environmental Microbiology*.

Steel implants and pins are commonly used by orthopedic surgeons to repair human bone structure. Infection occurs in patients at an alarming rate of up to 71%, often causing serious complications effecting the surrounding tissue and bone. The formation of biofilms at the implant site make the infections even more difficult to treat with antibiotics, as bacteria inside biofilms are shielded from host defense mechanisms.

"The literature indicates that 500 to 5,000 times higher levels of antibiotics are needed to achieve the same antimicrobial effects on biofilm organisms as on planktonic microorganisms," say the researchers.

In the study researchers examined whether or not electric currents (direct currents and block currents) would be effective at causing a *Staphylococcus epidermidis* biofilm to detach from surgical stainless steel. Results showed a detachment rate of 78% after 360 minutes of exposure to 100 volts of direct currents, and a 31% detachment rate after receiving 100 volts of block currents. The bacteria remaining on surface showed to be only 2 to 3% viable following treatment.

"We have described a method by which bacterial biofilms can be stimulated to detach from surgical stainless steel by use of a small electric current to disconnect the link between the biofilm and the conducting," say the researchers. "This method can be used in combination with conventional pin site care to prevent or cure infections by applying the current between a circular electrode placed around the pin and the pin itself."

(**A.J. van der Borden, H. van der Werf, H.C. van der Mei, H.J. Busscher.** 2004. Electric current-induced detachment of *Staphylococcus epidermidis* biofilms from surgical stainless steel. Applied and Environmental Microbiology, 70. 11: 6871-6874.)

Selected Highlights from the Journals of the ASM, Jan 2005 (from ASM Tipsheet)

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Llama Antibodies May Help Prevent Dandruff

The addition of llama antibodies to shampoo could be a new strategy for fighting dandruff, say European researchers. Their findings appear in the January 2005 issue of the journal *Applied and Environmental Microbiology*.

Malassezia furfur, a fungus frequently found on the human scalp, is often associated with the formation of dandruff. Current methods of treatment consist of shampoos containing antifungal compounds.

In the study researchers immunized a llama with *M. furfur* three times over a period of five weeks. They then screened blood samples and found antibodies that targeted a specific protein on the surface of the organism even in the harsh chemical conditions of shampoo.

"Here we describe a novel approach for preventing the formation of dandruff by inhibition of *M. furfur* with antibodies," say the researchers.

(**E. Dolk, M. van der Vaart, D.L. Hulsik, G. Vriend, H. de Haard, S. Spinelli, C. Cambillau, L. Frenken, T. Verrips.** 2005. Isolation of llama antibody fragments for prevention of dandruff by phage display in shampoo. Applied and Environmental Microbiology, 71. 1: 442-450.)

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New Coronavirus Identified in Pneumonia Patients

Researchers from Hong Kong have identified a novel coronavirus in patients suffering from pneumonia. Their findings appear in the January 2005 issue of the *Journal of Virology*.

Coronaviruses are responsible for 5 to 30 percent of human respiratory tract infections largely due to their unique ability to replicate. Because so many cases of respiratory tract infections are reported each year, researchers are actively trying to identify new causative agents.

The new virus, labeled CoV-HKU1, was first identified in a 71-year old pneumonia patient that had just returned from China. Following the discovery, nasal samples were taken from patients suffering from respiratory illness, but negative for SARS and screened for the presence of CoV-HKU1. Samples taken from a 35-year old woman suffering from pneumonia were positive for the virus, supporting the identification of a new group 2 coronavirus.

"Our data support the existence of a novel group 2 coronavirus associated with pneumonia in humans," say the researchers. "Further clinical, seroepidemiological and phylogenetic studies would be required to determine the relative importance of CoV-HKU1 compared to other respiratory tract viruses in causing upper and lower respiratory tract infections, its seroprevalence, and the origin of the virus."

(**P.C.Y. Woo, S.K.P. Lau, C. Chu, K. Chan, H. Tsoi, Y. Huang, B.H.L. Wong, R.W.S. Poon, J.J. Cai, W. Luk, L.L.M. Poon, S.S.Y. Wong, Y. Guan, J.S. Malik Peiris, K. Yuen.** 2005. Characterization and complete genome sequence of a novel coronavirus, coronavirus HKU1, from patients with pneumonia. Journal of Virology, 79. 2: 884-895.)

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2005 Membership Application/Renewal

*If you have not paid your dues for **2005,** you can do it now. Dues are $15.00 for non-students and $5.00 for students (per year). Please return the completed form with check, payable to IBASM, to*

Dr. Christian Chauret
Biological and Physical Sciences
Indiana University Kokomo
2300 South Washington Street
Kokomo, IN 46904-9002
Phone: (765) 455-9290; Fax: (765) 455-9371; email: cchauret@iuk.edu

Please check:
_____ New Member Application
_____ Renewal for 2005

and
_____ Student Member for 2005
_____ Full Member for 2005

Name:

Current Position & Title:

Institution:

Mailing Address (new address Yes/ No ?)

Phone:
Email:
Fax:

National ASM Member #:

Background

Highest Degree:

Institution:

Professional Interests:

ABSTRACT FORM FOR THE 2005 IBASM ANNUAL MEETING

Complete this form and submit the original and 1 copy by **February 15** and send it to:

Dr. Christian Chauret, IU Kokomo, 2300 S. Washington St., Kokomo, IN 46904-9003

ELECTRONIC SUBMISSIONS ARE PREFERRED (e-mail abstracts to: cchauret@iuk.edu). Abstracts should be prepared according to the National ASM guidelines. All abstracts should include the title, authors, and institutional address. Abstracts will be published in the meeting program as submitted. **Limited funding will be available to subsidize lodging and food for student presenters.**

Name and mailing address of presenting author:

Name:_____ Phone:_____

Address:_____

FAX:_____

_____

_____

_____

e-mail: _____ Subject Category:_____

(i.e. pathogenesis, DNA viruses, etc.)

*** Are you a student presenter? Yes or No**

**** Check if presenting author is a student competing for:**

undergraduate ___ , graduate ___ , or high school ___ Student Awards (a short paper is required from the award winners)

***** Would you like to be considered for an oral presentation? ___ yes ___ no**

ABSTRACT:

New BSU Student Organization, First of Its Kind in Indiana

Crime Scene Investigation, foodborne illness, bioterrorism, vaccines, and biotechnology jobs all have one thing in common: the new Ball State University student chapter of the American Society for Microbiology (BSUASM), is sponsoring speakers over these and other diverse subjects this year on campus. This new group, organized last Spring by Dr. John McKillip, Assistant Professor of Microbiology, and recognized by the national ASM and the BSU Student Activities Office, is underway this academic year with an active group of student officers consisting of undergraduate, M.S., and doctoral students in the Department of Biology. The BSUASM Chapter is the first and only such student group in Indiana.

The officers include President Adam Hott (Ed.D candidate, Biology), Vice President Angela Deane (Junior, Genetics), Secretary Bryan Troxell (M.S., Biotechnology Certification Program), Treasurer Kiev S. Gracias (Ed.D. student, Biology), and Public Relations Liaison Robin Cooper (M.S., 2004, Biotechnology Certification Program). With a continually updated website (www.bsu.edu/web/asm), the new student chapter has also been recognized and awarded funding recently by the parent society, ASM, which will elevate the profile of the students involved, and their activities. The group kicked off this Fall semester with an organizational officers meeting at Prairie Creek Reservoir in Muncie. President Adam Hott outlined a series of prospective speakers for Fall, addressed fundraising and service activities, and solicited input from the other officers on cross disciplinary recruitment into the chapter. President Adam Hott says he sees the BSUASM vision including service to students in departments of multiple colleges, as well as the campus and community in general, largely through speakers and activities that would serve to draw diverse interests.

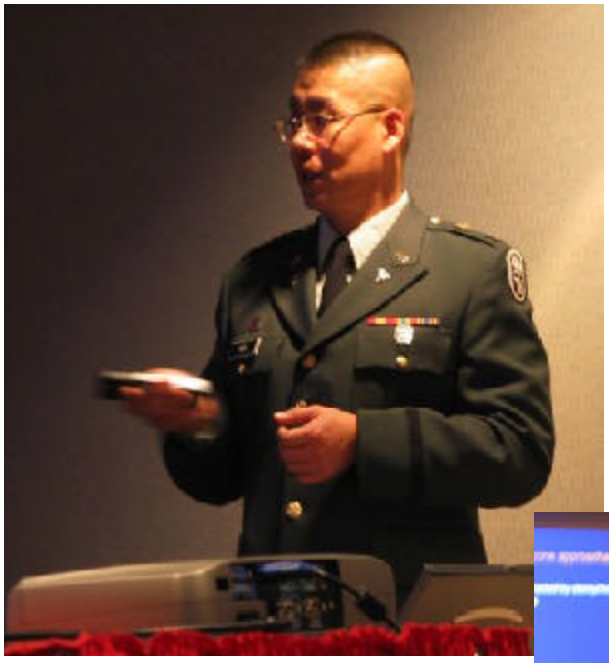
In terms of speakers, the new student ASM chapter has invited new Ball State President Dr. JoAnn Gora to one of the upcoming meetings to meet students and key faculty in a smaller setting and to speak informally on how the BSUASM Chapter and Department of Biology fit into the contributions Ball State is making to Indiana biotechnology. During the week of December 6, 2004, Dr. Max Wu presented a research seminar entitled "Developing a multivalent vaccine for group B meningitis." Dr. Wu is a Captain in the U.S. Army and discussed his research program at Walter Reed Army Institute of Research in Silver Spring, MD. Funding for Dr. Wu's BSU campus visit was provided by the Student Organizations and Activities office, as well as Lilly II monies. Students and faculty from Anderson and Taylor Universities, Ivy Tech State College/Muncie/Anderson/Marion, and employees at Ball Memorial Hospital attended this high-profile seminar.

Other speakers invited during chapter meetings this semester will address topics ranging from crime scene investigation to regional job opporunities in the biotech arena. Cooperative service activities with other student organizations are also being planned, such as a joint venture with the student members of the American Chemical Society. Cooperative activities with the student Wildlife Society, Pre-Med Club, and others are also being planned.

Faculty advisor, Dr. John McKillip, says he is anxious to see close interactions between the BSUASM-sponsored speakers and activities and those of the new Biotechnology Certification Program at Ball State. "There is now a critical mass of faculty and students at Ball State with interest and enthusiasm in areas of microbiology and biotechnology, and this new chapter will be a terrific means for students across multiple disciplines to learn more about what these fields have to offer." For more information on the new BSUASM chapter, visit their website or contact any of the officers at bsuasm@bsu.edu.

Dr. Max Wu's Presentation at BSUASM in December 2004

"Developing a Multivalent Vaccine for Group B Meningitis"



SPONSORS OF THE EVENT:
Student Organizations and Activities Office (BSU), Lilly Funds

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