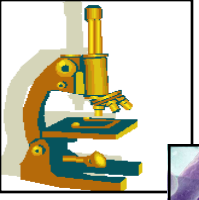

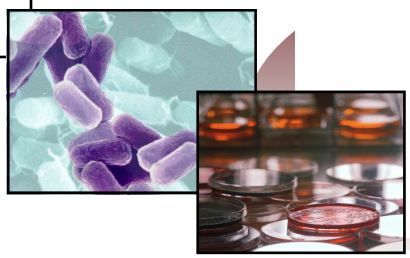

IBASM NEWSLETTER

Volume 16, Issue 2
February, 2014

Greetings from the President: Becky Sparks-Thissen

I hope everyone is excited to start getting ready for our annual Spring IBASM meeting. This year's meeting will be held at Turkey Run State Park at the Canyon Inn March 28-29. In this edition of the newsletter, you will find all the information you need to prepare for and register for what should be another great meeting.

We will have ample opportunities for student presenters to present poster and oral presentations. This is a great opportunity to present your latest research to your colleagues. Oral presentations are highly encouraged. In addition, we are privileged to have Dr. Maria Marco as our branch speaker. It promises to be two days of good science and conversation!

For those of you getting ready to graduate and go on the job marker, I highly encourage you to consider giving an oral presentation. It's great practice talking about your data in front of a friendly audience.

For those of you considering poster presentations, we have a made a change to the schedule from previous years. We would like to have posters available Friday night for viewing following Dr. Marco's talk. This will occur during the reception and allow for informal discussions before the poster judging Saturday.

I look forward to seeing you all in April. Best wishes for a good spring semester!

In this issue:

Message from the President-Elect - Nancy Magill

Our spring meeting of IBASM is scheduled for Turkey Run Inn in Marshall, IN. We have this Inn scheduled for March 28 and 29. We will have Maria Marco speaking to us about "You Are What You Eat: Diet, Prebiotics, Probiotics and Health".

Please encourage your undergraduate students and graduate students to present at this meeting. A small meeting like this is a wonderful experience for an undergrad. This is particularly true for those from small institutions but larger institutions should also consider sending undergraduate students who may not otherwise have such opportunities. In addition to the poster presentations, we will look for student to give short oral presentations of their work. This is great practice for those who will be defending soon whether it be an Honors thesis or a dissertation.

Please register early. There are a variety of rooms reserved for us with prices ranging from $85.11 for a double bed to $105.71 for a cabin type room to $131.03 for a room with 2 Queen beds. These rooms should be reserved by February 28, 2014. You can call 1-877-563-4371 or online at www.indianainns.com. Use the group code 0328IU.

Please also remember that meals are not included in the registration fee for the meeting. Buffet style meals are available at the following prices: Dinner Friday is $17.47, Breakfast Saturday is $11.22 and Lunch on Saturday is $12.47.

I look forward to seeing you in March. If you have question or concerns, please contact me at: ngmagill@indiana.edu or (812) 856-5978.

FOCUS

Call For Papers • December 6 at 5:30 p.m. EST

Mission Statement

Fine Focus is a web and print journal dedicated to showcasing the research of undergraduate students, internationally, in all fields of microbiology. *Fine Focus* is managed entirely by undergraduate students from production to print.

Scope

Fine Focus publishes original research by undergraduate students in microbiology. This includes works in all microbiological specialties and microbiology education. Research in other biology disciplines will not be accepted unless the main emphasis of the work centers on microorganism(s).

For instructions on how to submit a manuscript, please visit our website.

Contact Information:
E-mail: journal@finefocus.org
Website: finefocus.org
Twitter: @focusjournal
Facebook: facebook.com/finefocusjournal

The first microbiology research journal for undergraduates

From the Desk of Jim Mitchell-...Educational Representative

Student Poster Competition

Abstract submission form will be distributed by email separately and is also located at IBASM website: http://ibasm.iweb.bsu.edu/. We will be utilizing 4x4 sq.ft. tri-fold styrofoam poster boards and each student is limited to one board. Tacks 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. Oral presentations are informal and an excellent venue to gain lecture experience with a small audience. 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)

2014 IBASM Spring Meeting

Tentative Agenda

Turkey Run Inn

Turkey Run State Park

Lusk Room

Friday March 28, 2014

5:00-7:00 PM	Registration
6:00-7:00 PM	Dinner
7:00-8:00 PM	**ASM Branch Lecture**- Maria Marco, Department of Food Science & Technology, University of California in Davis
8:00-10:00 PM	Welcome reception with poster viewing

Saturday March 29, 2014

7:30-8:30 AM	Breakfast
8:30-11:00 AM	Poster Judging and Viewing
11:00-12:00 PM	Presentation by Tom Parr, Fedora Pharmaceuticals
12:00-12:30 PM	IBASM Business Meeting
12:30-1:30 PM	Lunch
1:30-2:30 PM	Student Oral Presentations
2:30-3:30 PM	Presentation by Heather Bruns, Ball State University. **Teaching Award**
3:30-4:00 PM	Announcement of Student Award Winners and Closing Remarks

ABSTRACT FORM FOR THE 2014 IBASM ANNUAL MEETING

Complete *all appropriate boxes* of this form and email by **February 28th** to: jkmitchell@bsu.edu (Dr. Jim Mitchell). 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 if submitted by above deadline. Limited funding will be available to subsidize lodging and food for student presenters (see registration form). Abstract Form also located at http://ibasm.iweb.bsu.edu/

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 one)**

☐ **Oral and/or** ☐**Poster presentation (check appropriate 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** ☐ **M.S. Graduate** ☐ **or Ph.D. Graduate Student Award (a short paper is required from award winners).**
If competing for an award student must present a poster. (If left blank student will not be judged in competition).

Check if presenting student will also be presenting at the 2014 ASM General Meeting: ☐
Are you competing for the national travel award to the 2014 ASM General Meeting? : ☐ **Yes** ☐ **No**

ABSTRACT

IBASM Annual Meeting Registration and Meal Reservation Form

March 28 and 29, 2014
Turkey Run Inn, Marshall, IN

Please use this form to register for the IBASM meeting and reserve your room and meals. 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; however, they do not have to pay registration fees. Upon completion, **e-mail** this form to Nancy Magill (ngmagill@indiana.edu) no later than February 28, 2014. If necessary, forms may also be mailed to Nancy Magill at the address given at the end of the form. **Registrations received after February 28, 2014 will be subject to a $7.00 late fee (regular members) or a $4.00 fee (student members).** Please feel free to contact Nancy at the email address provided above if you have any questions.

Please fill in the requested information.

Name:_____ **#Adults** _____ **#Children**_____

Address:_____

Phone:_____ **Fax:**_____ **Email:**_____

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

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

A block of rooms have been reserved at the Turkey Run Inn at Turkey Run State Park. You should contact them directly at 1**-877-563-4371 or www.indianainns.com** and reference **group code 0328IU** to make your reservation. Note that payment is due at the time of your reservation. **You must make your reservation by 2/28/14**. The rooms will be released on 2/28/2014 and we will not be able to guarantee you a room.

Payment

Registration

Member ($30)	$_____
Student ($7)	$_____

Dues (if applicable)

Non-student ($15)	$_____
Student ($5)	$_____

Meals:

Dinner ($17.47)	$_____
Breakfast ($11.22)	$_____
Lunch ($12.47)	$_____

Late fees (if applicable) $_____

Total Enclosed $_____

A check payable to "Indiana Branch ASM" for the total costs of registration, dues (if applicable), and meals must be sent by mail by **February 28, 2014** to: Nancy Magill, Biotechnology Program, Simon Hall MSBI, Indiana University, Bloomington, IN 47405.

Please Note:

Abstracts for the Annual IBASM Meeting are due by February 28, 2014

2014 Membership Application/Renewal

If you have not done it already, it is time to pay your IBASM dues for 2014. You can do it either online when you pay your dues to the ASM National Organization (www.asm.org) or by using this form. 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
School of Sciences
Indiana University Kokomo
2300 South Washington Street
Kokomo, IN 46904-9002
Phone: (765) 455-9371; email: cchauret@iuk.edu

Please check:
_____ New Member Application
_____ Renewal for 2014

and
_____ Student Member in 2014 ($5)
_____ Full Member in 2014 ($15)

Name:

Current Position & Title:

Institution:

Mailing Address (new address Yes / No?) :

Phone:
Email:
Fax:
National ASM Member #::

Background

Highest Degree:
Institution:
Professional Interests:

McClung First Place Graduate (Ph.D. Division) Winner

A Dual Approach to Develop *Cyanothece* 7822 as a More Desirable Chassis for Bio-production through Growth Media Modifications and Transcriptomics

David Welkie and Louis A. Sherman

Department of Biological Sciences, Purdue University, West Lafayette, IN 47907

Introduction

The robust metabolic capabilities of some cyanobacterial species, along with the reliable genetic systems, present possibilities for engineering the production of high value products. The unicellular, N_2-fixing strain *Cyanothece* sp. PCC 7822 is a great candidate for this goal. It is naturally capable of producing large amounts of H_2 gas as a diazotrophic by-product and it has an impressive ability to store numerous intracellular granules including glycogen, polyhydroxybutyrate, cyanophycin, and polyphosphate (1). *Cyanothece* 7822 is typically grown in BG-11 medium, a relatively rich medium (2). The goal of this work was to better understand the nature of intracellular metabolite storage in *Cyanothece* 7822 and improve growth characteristics. We hypothesized that, by reducing the amount of various macronutrients, intracellular storage content would decrease and growth would improve.

Materials & Methods

Growth was monitored using both a spectrophotometer and light microscopy and population composition was analyzed by flow cytometry. Intracellular material storage content was determined through the use of transmission electron microscopy. RNA-Seq analysis was performed on cells growing in nitrogen free media across 4 time points during a 12h light- 12h dark cycle.

Results & Discussion

Decreasing the available nitrogen source (N) from 17.65 mM to 4.41 mM and reducing the phosphate (P) from 0.23 mM to 0.06 mM (1/4X NP BG-11) resulted in improved growth (Fig. 1A) at the end of 168 h incubation with continuous light. Adjustments to the N:P ratio had a insignificant effect on growth once N and P levels were decreased to 25% of normal BG-11 (data not shown). Furthermore, cells grown in nitrogen free modified BG-11 were still capable of N_2-fixation and H_2 evolution (Fig. 1B). These results prompted us to standardize on this 1/4X NP BG-11 for further investigations on intracellular storage content.

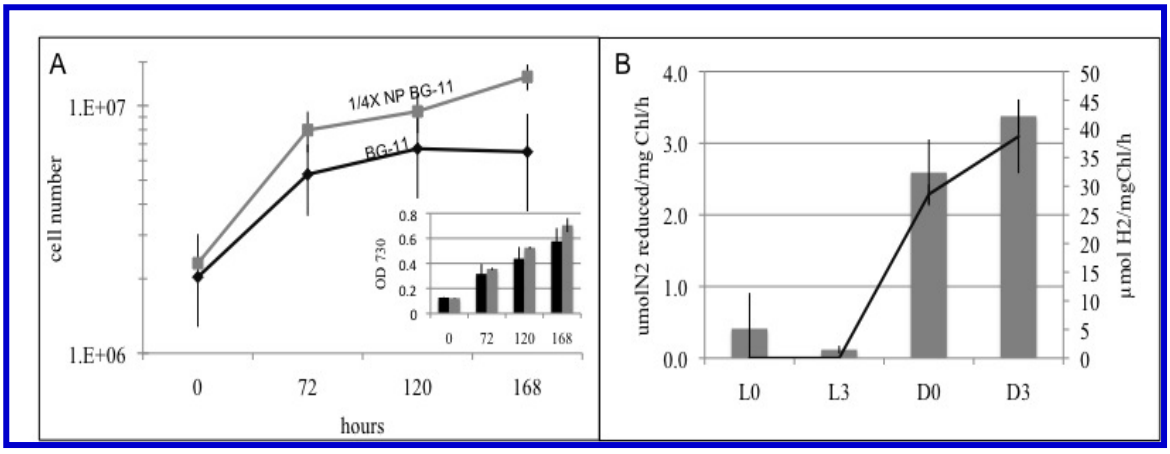

Fig. 1. Growth of *Cyanothece* 7822 in BG-11 and 1/4X NP BG-11 and N_2ase activity of *Cyanothece* growing in reduced N-deficient BG-11.

Flow cytometry analysis of cells from *Cyanothece* 7822 demonstrated that cultures grown in regular BG-11 were composed of two distinct populations that differed in terms of both cell size and internal complexity (Fig. 2AB blue). When grown in the modified BG-11, as a single tight population (Fig. 2B red), similar to that seen with *Cyanothece* 51142 (Fig. 2A red) was observed. This was confirmed with light microscopy; cells of *Cyanothece* 7822 grown in BG-11 were larger and oval-variable in size (Fig. 2C) where as those grown in low NP BG-11 were smaller, globose, and more uniform in size (Fig. 2D).

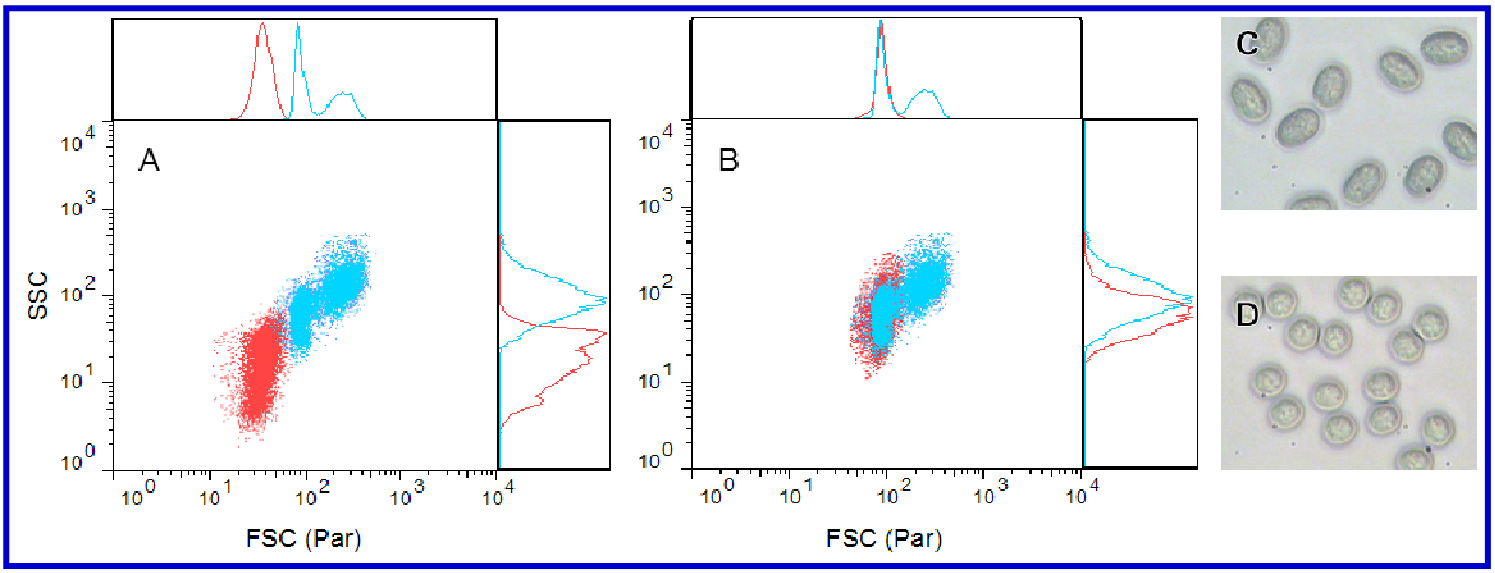

Fig. 2. (A) Distribution of cells by size (x-axis) and internal complexity (y-axis) of *Cyanothece* 51142 (red) and *Cyanothece* 7822 grown in BG-11 (blue); (B) *Cyanothece* 7822 grown in 1/4X NP BG-11 (red) and *Cyanothece* 7822 grown in regular BG-11 (blue); (C) High magnification light micrographs of *Cyanothece* 7822 grown in (C) BG-11 media and (D) 1/4X NP BG-11.

Electron micrographs of *Cyanothece* 7822 grown in BG-11 (Fig. 3) had shown the presence of numerous storage granules in the cell. In many of the BG-11 cells, there was dark material in the nucleoplasmic area and some cells contained many dark granules, interpreted as polyphosphate. Cells grown in the reduced medium exhibited this dark material far less frequently and generally had fewer granules present.

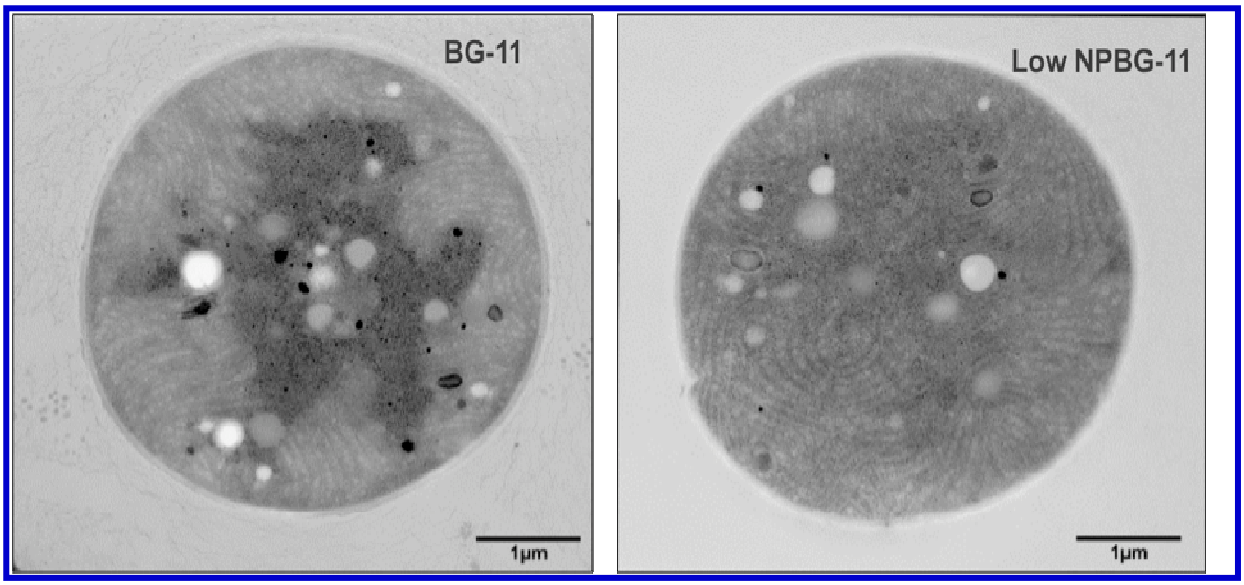

Fig. 3. TEM of *Cyanothece* 7822 grown in BG-11 and 1/4X NP BG-11

While observing the electron micrographs we noticed the presence of many smaller granules in the thylakoid membranes where glycogen is usually found. To identify these as glycogen, we utilized a histochemical procedure, termed the PATO technique (3). Fig. 4 compares the PATO stained granules in cells grown under N_2-fixing conditions in a 12h light-12h dark diurnal cycle at L0 and D0 time points. All of the dark staining granules are composed of glycogen and are more numerous and densely packed in cells at the end of the light period and significantly reduced at the end of the dark period. These results correlated with biochemical measurements and led us to confirm that these small granules contain glycogen.

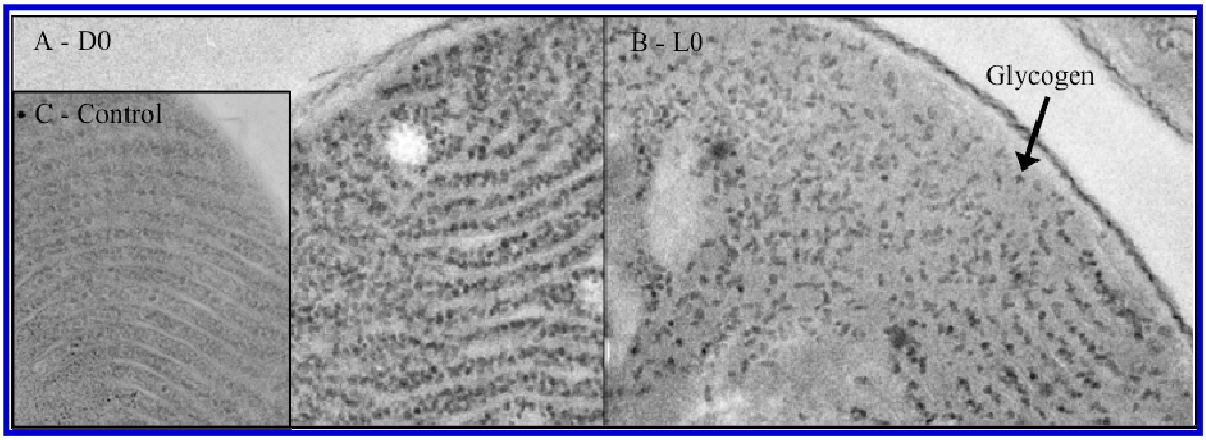

Fig. 4. PATO stained TEM micrographs of *Cyanothece* 7822 at time point D0 and L0.

It is surprising that *Cyanothece* 7822 forms smaller glycogen granules while *Cyanothece* 51142 is known to produce larger starch-like granules (4). The different morphological types of glycogen granules within the genus *Cyanothece* are notable and warrant more investigation. Bioinformatic analysis of glycogen biosynthesis genes of Cyanothece members reveals that strains known to produce the starch-like type contain three branching enzyme isoforms, differing mainly in their N-terminal domains, whereas strains known to produce the smaller β-granules contain only isoforms 1 and/or 2. Exception to this rule is observed in *Cyanothece* sp. PCC 8801 and further molecular and biochemical analysis might uncover the reasons why carbohydrate storage varies among cyanobacteria.

In addition, transcriptomic and proteomic analysis of *Cyanothece* 7822 is underway and the combination of being able to manipulate the physiology through media adjustments, such as those discussed here, along with insights into transcriptional regulation and protein degradation from "omic" analyses will provide a thorough approach to developing *Cyanothece* 7822 into a valuable chassis for biofuel production.

References

1. Bandyopadhyay A, Elvitigala T, Liberton M, & Pakrasi HB (2013) Variations in the Rhythms of Respiration and Nitrogen Fixation in Members of the Unicellular Diazotrophic Cyanobacterial Genus Cyanothece. (Translated from English) *Plant Physiol* 161(3):1334-1346 (in English).
2. Allen MM (1968) Simple Conditions for Growth of Unicellular Blue-Green Algae on Plates. (Translated from English) *J Phycol* 4(1):1-& (in English).
3. Hanker JS*, et al.* (1964) Osmiophilic Reagents: New Cytochemical Principle for Light and Electron Microscopy. (Translated from eng) *Science* 146(3647):1039-1043 (in eng).
4. Schneegurt MA, Sherman DM, Nayar S, & Sherman LA (1994) Oscillating Behavior of Carbohydrate Granule Formation and Dinitrogen Fixation in the Cyanobacterium Cyanothece Sp Strain Atcc-51142. (Translated from English) *J Bacteriol* 176 (6):1586-1597 (in English).

Second Place Graduate (M.S. Division) Winner

Crude Elderberry (*Sambucus nigra)* Treatment Decreases Melanoma Tumor Size *in vivo* and Separation of Active Components Reveals Non-Protein Fractions Capable of Suppressing Melanoma and Increasing T Lymphocyte Proliferation of Elderly Mice

Alexandra M. Okihiro[1], Dr. Peng Jing[2] & Dr. Elliott Blumenthal[1]
Department of Biology[1], Department of Chemistry[2], IPFW, Fort Wayne, IN

Introduction

Current treatments for melanoma, such as chemotherapy, can be toxic to important immunological cells. There is a need for natural treatments that suppress tumor growth without compromising the body's immune system. Our goal is to identify active elderberry components capable of suppressing melanoma growth both *in vivo* and *in vitro,* assess the ubiquity of fraction activity in other cancer cell lines, and examine fraction effect on spleen cell proliferation. Lastly, the identity of active fractions was assessed. Proper identification of tumor-suppressing elderberry fractions may lead to diet-based strategies for the prevention and inhibition of many cancers, including melanoma.

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Materials & Methods

Column Chromatography was used to separate the components of elderberry powder. Fractions were evaporated dry and re-dissolved in 0.5 mL PBS. Neighboring active fractions were pooled.

In vivo studies: C57BL/6J mice were randomly grouped into a water treated (control) group and an elderberry (10 mg/mL) treated group. Mice were given daily 0.5 mL i.p. treatment injections for 14 days before s.c. injection of 1 x 10^5 B16-F10 murine melanoma cells to the right flank. Treatments were continued up to day 21 and mice were sacrificed on day 27.

In vitro studies: Tritiated thymidine uptake assays were used to measure the percent proliferation of cells. Murine melanoma (B16-F10), human neuroblastoma (SH-SY5Y), and spleen cells from a young and old mouse were treated with 10 µL crude and pooled fraction treatments at 24 hours, tagged with 1 mCi/mL radioactive tritiated thymidine at 48 hours and were harvested and counted at 72 hours. Spleen cells were incubated with 0.125 µg/mL concanavalin A (Con A) to induce T lymphocyte proliferation.

Identification: Active pooled fractions 7, 14, 16, and 29 were boiled at 100°C for 5 minutes to denature proteins, and then were used in a B16-F10 cell suppression assay. Reversed-phase HPLC was used to identify peaks of anthocyanins in pooled fractions 16 and 29 at 520 nm. Gradient elution was achieved using mobile phases of Milli Q water, formic acid, and acetonitrile.

Results

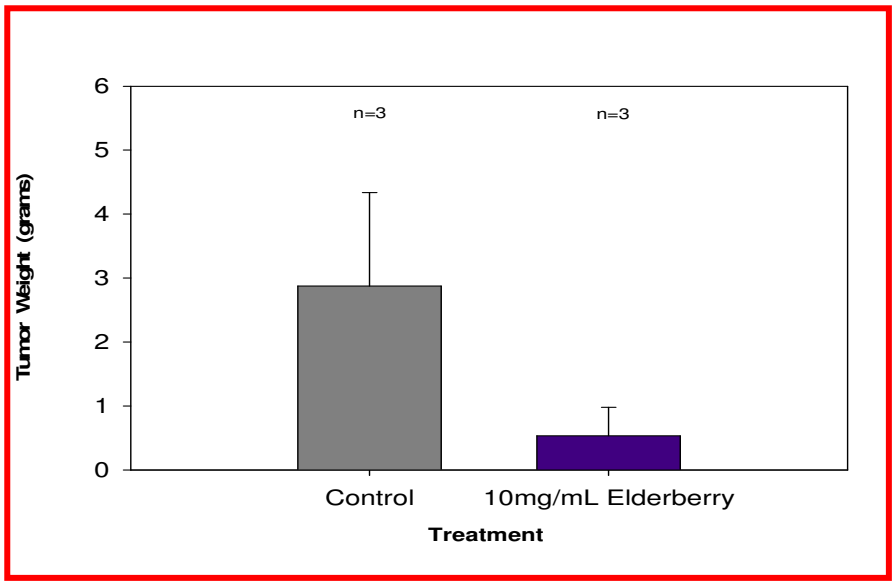
Following sacrifice of mice in the *in vivo* study using crude elderberry treatments, tumors were dissected and weighed. On average, tumor-bearing mice treated with elderberry had smaller tumors compared

to tumor-bearing mice given water treatments (Figure 1).

Column chromatography of elderberry components yielded 111 samples. Neighboring active samples were pooled into 39 pooled fractions. Treatment of B16-F10 cells and SH-SY5Y cells with pooled fractions and 10 mg/mL crude elderberry resulted in significant suppression of cancer cell growth ($p<0.05$). Old mouse spleen cells incubated with Con A and pooled fractions elicited a greater percent proliferation compared to the identical treatment in young mice spleen cells, but not greater than the positive control (spleen cells with Con A only).

In a B16-F10 cell suppression assay with heated pooled fractions, the 10 mg/mL crude elderberry, pool 16, and pool 29 heated treatments significantly decreased the proliferation of melanoma cells vs. their respective non-heated fractions (Figure 2). Reversed-phase HPLC revealed cyanidin 3-sambubioside as the main anthocyanin in pool 16 (85%) and cyanidin 3-glucoside as the main anthocyanin in pool 29 (83%).

Fig. 1. Tumor weight results for young tumor-bearing mice given control and elderberry treatments.



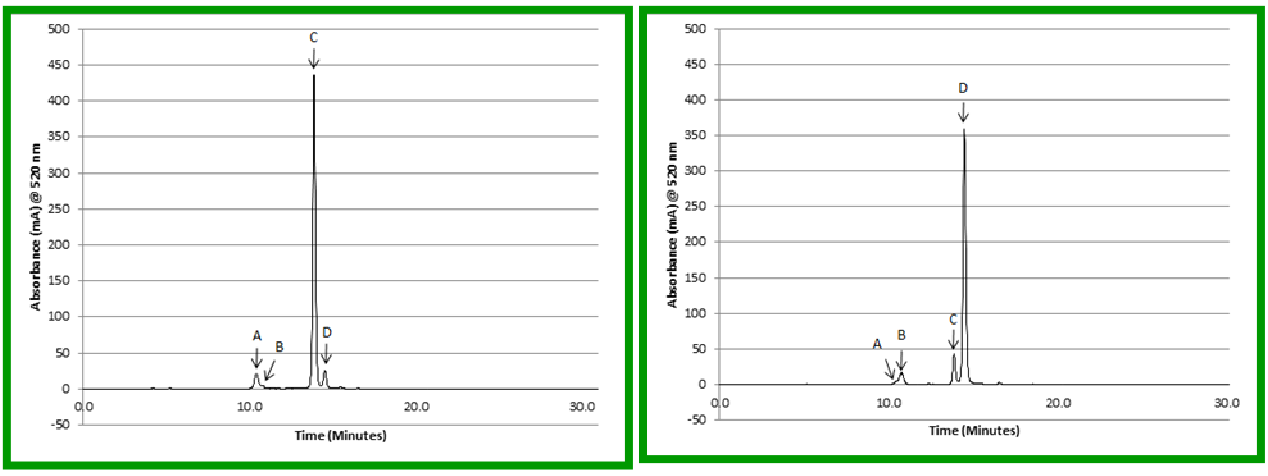


Fig. 2. Reversed-Phase HPLC Identification of Anthocyanins in Pool 16 and Pool 29 at 520 nm. Elderberry anthocyanins include A) cyanidin 3-sambubioside 5-glucoside B) cyanidin 3,5-diglucoside C) cyanidin 3-sambubioside D) cyanidin 3-glucoside **(Left Panel)** Pool 16 chromatogram. **(Right Panel)** Pool 29 chromatogram.

Conclusions & Discussion

Crude elderberry may be able to decrease the size of melanoma tumors. Also, 67% of the control tumors metastasized into the peritoneal cavity (vs. 0% elderberry tumors), suggesting that crude elderberry may decrease the risk of melanoma metastasis. Anthocyanins cyanidin 3-sambubioside and cyanidin 3-glucoside contribute greatly to the inhibition of cancer growth *in vitro* and may also help elicit an immune response in senescent mice. Further characterization of the benefits from elderberry anthocyanins may be useful in a naturopathic strategy to suppress multiple cancers and advocate diet based strategies to prevent the onset of melanoma.

David Welkie receiving his award from IBASM's President **Dr. Rebecca Sparks-Thissen**

Alexandra Okihiro receiving her award from IBASM's President **Dr. Rebecca Sparks-Thissen**

Men-Only Hepatitis B Mutation Explains Higher Cancer Rates
December 2013

A team of researchers has identified a novel mutation in the hepatitis B virus (HBV) in Korea that appears only in men and could help explain why HBV-infected men are roughly five times more likely than HBV-infected women to develop liver cancer. Although some women do progress to cirrhosis and liver cancer, the mutation is absent in HBV in women. The research is published ahead of print in the *Journal of Clinical Microbiology* .

"This is the first mutation found that can explain the gender disparity in incidence of hepatocellular carcinoma," says Bum-Joon Kim of Seoul National University, Korea, an author on the study.

In the study, the researchers randomly collected and analyzed serum samples from 292 patients with chronic HBV infection who visited one of 3 hospitals in Korea from 2003-2005. Previous studies had suggested that a gene mutation known as W4P/R was associated with higher incidence of liver cancer and cirrhosis. They developed an assay to specifically identify HBV with the W4P/R mutation. When compared to patient outcomes, the W4P/R mutation was significantly associated with severe liver disease and was found exclusively in male patients.

The investigators believe the assay they developed to discover the mutation may hold promise as a diagnostic for predicting male progression to cirrhosis and liver cancer. They caution that first larger studies are necessary to confirm their findings, as only 67 of the 292 samples came from women.

HBV infection is a global health problem, with 350 million chronic carriers of the virus, a number that is roughly equivalent to the combined populations of the US and Canada. The prevalence of infection ranges from less than half a percent in the United States to around 10 percent in Asia, to as high as 15 percent in parts of Africa. Major means of transmission include injection drug abuse, unprotected sex, and transmission via childbirth. Worldwide mortality is about 600,000 annually, according to the World Health Organization. In the US, despite the availability of a vaccine, an estimated 3,000 die annually from hepatocellular cancer or chronic liver disease caused by hepatitis B.

A copy of the manuscript can be found online at http://bit.ly/asmtip1013a.

Small Changes in Ag Practices Could Reduce Produce-Borne Illness
December 2013

Researchers from Cornell University have identified some agricultural management practices in the field that can either boost or reduce the risk of contamination in produce from two major foodborne pathogens: salmonella, the biggest single killer among the foodborne microbes, and *Listeria monocytogenes*. Their findings are published ahead of print in the journal *Applied and Environmental Microbiology*.

"This is going to help make produce safer," says Laura Strawn, a researcher on the study. "We could significantly reduce risk of contamination through changes that occur a few days before the harvest."

Many of the risk factors were influenced by when they were applied to fields which suggests that adjustments to current practices may reduce the potential for contamination with minimal cost to growers, says Strawn.

Foodborne illness sickens an estimated 9.4 million, and kills around 1,300 annually in the US, according to the Centers for Disease Control and Prevention. Produce accounts for nearly half the illnesses, and 23 percent of the deaths.

"The research is the first to use field collected data to show the association between certain management practices and an increased or decreased likelihood of salmonella and *L. monocytogenes*," says Strawn.

For salmonella, manure application within the year prior to the researchers' sampling boosted the odds of a contaminated field, while the presence of a buffer zone between the fields and potential pathogen reservoirs such as livestock operations or waterways was protective.

Irrigation within three days before sample collection raised the risk of listeria contamination six-fold. Soil cultivation within the week before sampling also increased the chances of contamination.

"These findings will assist growers in evaluating their current on-farm food safety plans (e.g. "Good Agricultural Practices"), implementing preventive controls that reduce the risk of pre-harvest contamination, and making more informed decisions related to field practices prior to harvest," says Strawn. "Small changes in how produce is grown and managed could result in a large reduction of food safety risks."

A copy of the manuscript can be found online at http://bit.ly/asmtip1013b.

MICROBIOLOGY IN THE NEWS

(from: http://www.eurekalert.org/bysubject/index.php?kw=33)

Secrets of potato blight evolution could help farmers fight back
Science
January 31, 2014

Scientists have discovered vital clues as to how the pathogen responsible for the Irish potato famine adapted to spread between different plant species. Researchers at Oxford University and The Sainsbury Laboratory (Norwich, UK) looked in unprecedented detail at how *Phytophthora infestans*, a pathogen that continues to blight potatoes and tomatoes today, evolved to target other plants. The findings will enable scientists to develop more resistant crops in future.

Antibiotic 'smart bomb' can target specific strains of bacteria
mBio
January 30, 2014

Researchers from North Carolina State University have developed a de facto antibiotic "smart bomb" that can identify specific strains of bacteria and sever their DNA, eliminating the infection. The technique offers a potential approach to treat infections by multi-drug resistant bacteria.

Engineered virus is effective against triple negative breast cancer cells
FASEB Journal
January 30, 2014

Scientists have discovered a potential cure for one of the most aggressive and least treatable forms of breast cancer called "triple negative breast cancer." This discovery was published in the February 2014 issue of The FASEB Journal. Please note that human clinical trials are necessary before any definitive claims of a cure can be made and treatments can be made available.

Important Dates

February 28, 2014:	Abstract form due for Annual IBASM meeting
February 28, 2014:	Registration form due for Annual IBASM meeting
March 28-29, 2014:	Annual IBASM meeting at Turkey Run State Park
May 17-20, 2014:	114th Annual Meeting of the ASM, Boston, MA

2013-2014 IBASM OFFICERS

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