UNMC High School Alliance
A Health Sciences Enrichment Program

Fifth Year of the High School Alliance Begins in 2014-2015

As we begin our fifth year of the program, we continue to be the academic enrichment program that immerses highly motivated secondary students from varying educational and socioeconomic backgrounds into an environment that introduces them to healthcare professions.

We would like to thank The Sherwood Foundation, all of the UNMC faculty, staff, professional and graduate students for their continued support and commitment to this program. We would also like to thank the school districts, their superintendents, counselors, and science teachers for sending us such inquisitive, passionate students.

To our teachers and UNMC High School Alliance staff, thank you for making the program successful. And of course, we want to thank the parents and the students who made the decision to be a part of the program.

This year the High School Alliance includes 60 students from Omaha Public Schools, Millard Public Schools, Bellevue Public Schools, Papillion LaVista Public Schools, Council Bluffs Community Schools, Westside Community Schools, Gretna Public School, Ralston High School and Douglas County West Community Schools. Four of those students have returned for a second year. We will learn more about those students in the spring newsletter.

Students can continue to choose among courses such as:

see Fifth Year pg 7

Infectious Disease: Microbes, The Good, the Bad, the Ugly

The Infectious Disease course has increased to four days this year, providing many opportunities to complete hands-on activities outside of the lab. Mr. Kevin McGuire continues to prepare the lab for experiences that cannot be found outside of the clinical lab, and Ms. Imhoff and Ms. Donner now record their lectures on Blackboard to allow more time in class for discussions and case studies. This year more lab experiences have been added, including a multiday unknown discovery and a skill based lab practical.

see Infectious pg 6

Pathology — Connecting Cells to the Clinic: Fundamentals of Disease

The pathology course, instructed by Dr. Geoffrey Talmon, has been filled with trips to the hospital morgue, enthusiastic lectures, hands-on clinical lab activities, and student collaboration. Throughout the semester, the High School Alliance students are busy researching a disease for a final semester paper and presentation they will construct and present.

see Pathology pg 6
From the Program Coordinator

Welcome to the new students and their families for the 2014-2015 year, and Hello to our alumni and friends!

We will continue to send a newsletter twice a year — once in the fall and once in the spring to update you on what is happening at the UNMC High School Alliance Program.

There are so many exciting things happening on campus this year. New buildings are under construction, (the College of Pharmacy, the Buffet Cancer Center, the Lauritzen Outpatient Center), a new logo was unveiled during the month of October, and the Biocontainment Unit healthcare professionals have successfully treated two patients who had the Ebola virus. These are historic times for our campus, and we are happy that the High School Alliance students are able to be a part of this vibrant environment.

Our fifth year is off to a great start with 56 first-year students and 4 second-year students attending their classes and working on their independent studies. We have grown so much since the first class of 32 students during the 2010-2011 school year when we first opened our doors. We will learn more about our second-year students in the spring newsletter as well as more from our alumni.

As always, please feel free to contact any of us with the High School Alliance program if you have questions. The application process for the 2015-2016 school year will be here before we know it.

Heidi Kaschke
Program Coordinator

Kateland Bryan (Council Bluffs Thomas Jefferson) works on a project in the Infectious Diseases class on September 24, 2014.
Biocontainment Unit

The High School Alliance students will not be allowed to tour the Biocontainment Unit during the fall semester as we have done in previous years. A decision regarding the spring semester will be made should the unit not be in use.

Students from the High School Alliance Class of 2014 tour the Biocontainment Unit during the spring semester last year. Student Taylor Webb (Bellevue West) is shown in the biopod.

Facts about the Biocontainment Unit at Nebraska Medicine

The biocontainment unit was unveiled on March 7, 2005.

Dr. Philip Smith is the Medical Director of the biocontainment unit and was one of the people who developed the idea for the unit which was made possible through federal funding in the wake of 9/11.

It was a joint project involving UNMC, The Nebraska Medical Center, and Nebraska Health and Human Services.

The 10-bed unit is the largest in the United States and is set up to handle highly contagious and deadly infectious conditions, including: SARS, smallpox, tularemia, plague, Ebola virus, and other viral hemorrhagic fevers.

A lab was created within the unit itself so tests did not have to be performed in labs elsewhere on campus.

The biocontainment unit is part of the hospital, but separate from all other units.

Medical staff can enter only by security access.

The biocontainment unit has its own air handling system which ensures no infectious particles get out of the rooms and into the hospital or community.

A dunk tank for laboratory specimens and a pass-through autoclave help assure that hazardous infections are contained.

Hepa-filtered individual isolation units (also called biopods) are available for safe transport and transfer of an infected patient to the unit.

All medical supplies and linens are stored and cleaned within the unit so they cannot cross-contaminate other areas.

The biocontainment unit is staffed with 40 medical professionals, including registered nurses, respiratory therapists, and technicians. They have been specially trained to staff the unit and are on-call 24 hours a day.

The unit can be up and running in less than four hours.

Preparing the unit would include studying the disease, stocking supplies and medicines, starting up the equipment, and organizing the required protective equipment.

Each day, the staff who care for patients in the unit can generate three to four 20-gallon-capacity biohazard boxes of used personal protective equipment such as surgical gowns, bonnets, face shields, disposable respirators, booties, and gloves.

This equipment along with other waste goes through an autoclave, which uses high-pressure steam to sterilize the items. The autoclave is within the unit. This is important, and what makes a biocontainment unit different from a standard hospital.

Removing the waste from a patient’s room can take one to two days.

After a room has been cleaned, the room is closed for 48 hours and 15 to 20 air exchanges per hour are run. When that process is complete, the room is wiped down with bleach and other disinfectants before using ultraviolet germicidal irradiation, which kills microorganisms.

Once the room has been given the “all clear”, a standard hospital cleaning will occur because many of the chemicals used leave a residue.

For more information about the Biocontainment unit please visit:

www.nebraskamed.com/biocontainment-unit

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Community Health—Outside the Individual: Investigating the Public’s Health

By: Michele Merrill, Certified High School Teacher

The Community Health course welcomes back Ms. Katie Brandert and Dr. Brandon Grimm as the lead instructors.

Under Ms. Brandert and Dr. Grimm’s guidance, the students have taken field trips to both the Community Engagement Center at the University of Nebraska Omaha and the University of Nebraska-Lincoln Feedlot near Mead, Nebraska.

The students were able to get up-close and personal with items that impact their day to day lives. Hearing the cows sing a chorus for the students, along with learning how the animals are treated as humanely as possible were the highlights of the trip to the Feedlot.

The students have also participated in different activities that have taken the idea of health care from the individual to the community, bringing the class towards the concepts of public health.

Students have had the opportunity to hear from guest speakers such as Dr. Adi Pour, the Director of the Douglas County Health Department and Dr. Shawn Gibbs, who is a member of the Nebraska biocontainment leadership team and an expert in environmental exposure assessment.

With information from the guest speakers and field trips, the students are working on research projects that involve areas of public health concern. The students are working in pairs to write a formal paper and give a presentation that discusses their research findings and addresses actions that can take place in the community to help with an area of public health concern.

Applications for the 2014-2015 UNMC High School Alliance program will be available in December 2014. Please check our website: www.unmc.edu/alliance to download the application and for more information. The deadline for submitting applications will be in March 2015.
Biomedical Research

By: Ashlie Nelson, Certified High School Teacher

The Biomedical Research course welcomed four new UNMC graduate students as instructors this year. We owe a special thank you to Bryan Becker, Beiqing Wu, Megan Bosch, and Nicholas DeKorver for teaching in the course.

The High School Alliance students look forward to applying the molecular biology concepts and laboratory techniques they learned in class when in their UNMC host’s biomedical research labs this semester.

Dr. Howard Fox, Dr. Sorin Luca, Dr. Robert Lewis, and Dr. Irving Zucker have graciously opened their labs for the students to learn first-hand about the biomedical research being performed at UNMC.

The students will go forth from this course well versed in molecular biology, prepared to successfully seek out future undergraduate lab opportunities, and will be equipped with an understanding of the experimental designs used in biomedical research.

Pictured above from left to right are: Elijahiana Parker (Omaha Central), Tanmayee Chengalasetty (Millard North), and Daniel Coyle (Westside) using pipettes in the Biomedical Research class on September 30, 2014.

Michelle Xiao (Westside) Alair Vega (Millard North) and Luis Banda (Omaha South) pipette in the Biomedical Research class on September 30, 2014.
UNMC High School Alliance Alumni — We want to stay connected with you!

“Like” our page on Facebook. Email us your updated contact information. Tell us where you are attending or planning to attend college. Let us know where you are applying for professional school or where you are working.

unmchsalliance@unmc.edu

Jaci Neri (Omaha South) and Allison Bartenhagen (Gretna) use antigens to determine their blood types in the pathology class on September 24, 2014.

UNMC High School Alliance In Focus

Once a month, the UNMC High School Alliance features a student in the on campus publication called UNMC Today. The student for the month of September was Monica Houston from Omaha Benson. We recognized two students for month of October Morgan Dillon from Bellevue East and Shekinah Kiagiri from Ralston. Below you will learn more about why these students chose to be a part of the High School Alliance.

Monica became involved in the program because she has had a strong drive to pursue a career in the medical field. She is really good in science and math so this program was a fit for her. Monica plans to become a surgeon or an OB/GYN.

Morgan wants to become a radiologist and likes to learn about human anatomy. She wants to be able to help diagnose patients and make them feel better. She is excited about radiology because it is a field that uses the latest technology.

For Shekinah, growing up in Kenya led to her wanting to be able to help people. She was surrounded by health disparities and decided that she wanted to do something about that. She aspires to someday work for Doctors Without Borders, Medical Teams International, or the World Health Organization.

Shekinah is the first student in the program from Ralston High School.

All of the students are enjoying their experiences on campus, especially shadowing healthcare professionals and embracing the opportunity that they have been given with the program.

Pathology continued from pg 1

Content surrounding cytology, histology, tissue repair, immunology, inflammation, and hemostasis have prepared the students how to identify various disease states at both the cellular and tissue level.

As the semester advances the students will gain an understanding of how this identification process plays a role in patient diagnosis.

This course is ultimately providing the students with a realistic experience of what a foundational healthcare course will be like in professional school

By: Ashlie Nelson, Certified High School Teacher

Infectious continued from pg 1

The students are enjoying the extra time in the lab, as well as the Clinical Microbiology Lab tour. Students are excited to know that the Biocontainment Unit on campus is being used to work with Ebola to provide care and a wealth of new knowledge, but are saddened that they will not be able to see the space firsthand. The guest speakers will discuss the different careers that are available in the line of Infectious Disease, and answer any question that they students have about both the career and the microorganisms the professionals work with. The students are currently working on a research paper connected to an infectious disease outbreak that made an impact on society, and in their small groups to write a script for a skit that involves the onset and care of an infectious disease. They are also watching the news for current events that involve infectious disease agents which they present to the whole class to keep everyone connected to the organisms that are in the community. By: Jaynie Bird, Certified High School Teacher

Luis Banda from Omaha South baked and decorated a cake as a cell in telophase of mitosis in celebration of Dr. Talmon’s and Mrs. Nelson’s birthdays.
High School Alliance In Focus Students

Monica Houston (Omaha Benson) top left, Morgan Dillon (Bellevue East) top right, and Shekinah Kiagiri (Ralston) bottom left.

Fifth Year  continued from pg 1

Biomedical Research, Infectious Diseases, Community Health, Art and Science of Decision Making, Pathology, Genetics, The Study of Patient Centered Care, or Anatomy.

We are always discovering ways to improve the number of courses that we offer and are working with the UNMC College of Pharmacy to develop a new class for future students.

We hope that you enjoy the information in this newsletter. If you would like to see other aspects of the program, please let us know. We are happy to showcase our program and the UNMC campus whether in person or adding more pages to our newsletter.

We are looking forward to a successful fifth year of the UNMC High School Alliance program!

Dates to Remember (dates are subject to change)

November 6-7: No School
November 19: Student Shadowing
November 26-28: No School
December 8: Mentor Lunch and Learn
December 19: Last Day of Fall Semester
January 7: First Day of Spring Semester
January 12: Mentor Lunch and Learn
January 13: Ice Skating
January 20: No School
January 30: Student Shadowing
February 2: Mentor Lunch and Learn
February 17: No School
February 26: Student Shadowing
March 2: Mentor Lunch and Learn
March 6-7: No School
March 10-14: No School Spring Break
April 5: Mentor Lunch and Learn
April 7: Student Shadowing
April 28: No School
May 4: Mentor Lunch and Learn
May 16: Seniors Last Day
May 23: Juniors Last Day
May 23: Recognition Day
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A Health Sciences Enrichment Program

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Visit unmc.edu/alliance to share this newsletter and other UNMC publications with friends and colleagues.

1 UNMC High School Alliance Begins Fifth Year
The UNMC High School Alliance begins its fifth year.

4 Community Health Class Takes Field Trips
Two field trips for the Community Health Class teaches students about public health in the Omaha metro area.

5 Biomedical Research Class
Learning about molecular biology prepares students for hands-on experiences in labs.

Bob Anderson (Gretna) and Brianna Martinie (Omaha Burke) gran stain in Infectious Diseases class.

Alair Vega (Millard North) uses a pipette in the biomedical research class.

Aysha Hussain (Millard North) and Ashley Eastman (Bellevue East) practice suturing on bananas in the pathology class.