

## Nine Faculty awarded grants in 2018



### Renewed NSRI contract "proof of great work"

Dr. Ken Bayles, Professor, Pathology and Microbiology, stated "The renewal of our NSRI contract is a recognition of the great work being conducted at the University of Nebraska in infectious disease research. It is not only affirmation of the work we have been doing for the past five years, it is a "green light" for more in the next five years. With the unparalleled access to the DoD biodefense research portfolio the NSRI can provide, we are poised to greatly expand our capabilities in bioinformatics, drug development, diagnostics, and biodetection".

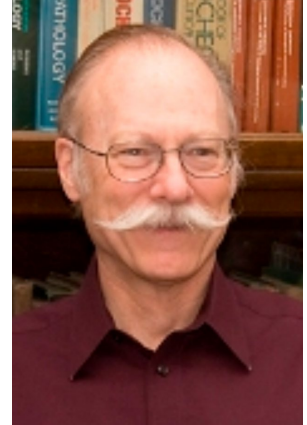
Read more about the renewed NSRI contract at [UNMC Newsroom](#).



### Campbell awarded Administrative Supplement grant to National Human Genome Research Institute's U01

Dr. Scott Campbell, associate professor, Pathology and Microbiology, Sr. Director of Research Technologies – UNMC and Director of Pathology and Public Health Informatics received the NIH NIA Administrative Supplement Award in connection to the DHHS/NIH/National Human Genome Research Institute's U01.

Dr. Campbell's project entitled "Alzheimer's Disease biorepository discovery toolset", has a main goal to create and distribute SNOMED CT for anatomic pathology, molecular pathology associated with Alzheimer's disease and related disorders for knowledge discovery and biobanks. Co-Investigators involved are Drs. Michael Punsoni, Assist. Professor, Pathology and Microbiology, James Campbell, Professor, Internal Medicine and Daniel Murman, Professor and Vice Chair, Clinical/Translational Research, Neurological Sciences. Dr. Carol Geary, Post-doctoral Research Associate, Neurological Sciences also contributed to this project.

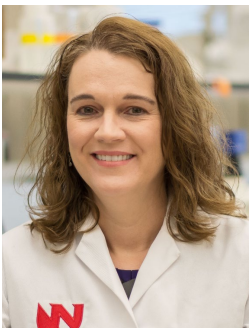


### Carson given R03 grant for enterovirus research

Enteroviruses, including coxsackievirus, have been shown to decay to non-infectious forms, and the process is both temperature and time dependent. The capsids of these viruses explore multiple conformations (called capsid breathing), including a metastable low energy closed state, a transient open state, and a metastable non-infectious state called the A-particle. The receptor for coxsackieviruses (CAR) that enables viral infection of cells catalyzes the transition to A-particle.

continued...

CAR binding to the closed conformation is binding to the open conformation (per studies of related viruses). This difference establishes the conditions for an allosteric (cooperative) mechanism of receptor action on virus. Steven Carson, Ph.D. has proposed kinetic models that describe the interactions of CAR with coxsackievirus B3 (CVB3). The research funded by the R03 will interrogate the catalytic effect of soluble CAR on CVB3 strains that differ by single capsid amino acids and have stabilities at 37C ranging from a half-life of 7 hr (wild type) to 17 hr (a selected stable mutant).



**Dr. Kielian awarded 5-year R01**

Neurosurgery to relieve life-threatening edema following traumatic brain surgery or stroke

(decompressive craniectomy) or gain temporary access to the brain for tumor resection or epilepsy (craniotomy) requires removal of a portion of the skull (i.e. bone flap). The incidence of infection after craniotomy/craniectomy ranges from 0.8-12%, with a significant number caused by methicillin-resistant S. aureus (MRSA), which forms a biofilm on both surfaces of the bone flap. Dr. Kielian's laboratory has developed a mouse model of S. aureus craniotomy-associated biofilm infection that shares important ultrastructural and MRI attributes with human disease, which they will utilize to identify mechanisms for infection persistence. Translational research will also be performed in collaboration with UNMC neurosurgeons by immunophenotyping leukocytes from patients with craniotomy infections by RNA-Seq and metabolomics.



**Dr. Marilynn Larson given task order from NSRI**

Dr. Marilynn Larson, has received a task order from the National Strategic Research Institute to develop and optimize microbial assays and provide training on their use as a diagnostic tool in the field.



**Dr. Scot Ouellette granted funding from NSF**

Dr. Scot Ouellette, Assoc. Prof, received nearly \$400,000 from the Molecular and Cellular Bioscience Division of the National Science Foundation to study the underlying continued...

**Dr. Paul Fey receives Outstanding Graduate Student Educator Award**



Department of Pathology and Microbiology and the Immunology, Pathology & Infectious Disease Graduate Program awarded outstanding graduate students and educators in the annual awards ceremony on May 8, 2018. Paul Fey, Ph.D. (pictured above/left with Dr. Rakish Singh, Chair of the graduate program) received the Outstanding Graduate Student Educator Award for 2017-2018.

Changes in gene expression of bacterial pathogens in response to starvation conditions. This project will also focus on using several strategies to increase participation by American Indian students in college-level STEM research.



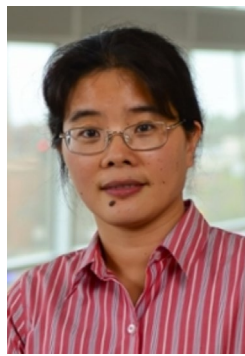
### **Reid awarded R21 grant**

NIH awarded Dr. Patrick Reid, Asst. Prof. an R21 grant for his submission entitled "Modeling Chronic Chikungunya Virus Infection in a vascularized Bone Model." The research outlined in the grant seeks to explore and elucidate the mechanisms underlying the bone pathology observed during chikungunya virus infection.



### **Dr. Rakesh Singh recipient of R01 grant**

Current therapeutic strategies for pancreatic cancer are largely ineffective, and metastatic disease frequently develops even after potentially curative surgery. The specific objective of this project is to investigate whether CXCR2 and its ligands play a critical pro-tumorigenic role in Kras-dependent modulation of tumor cells and microenvironment during pathogenesis. This grant application will decipher the underlying mechanisms(s) and will develop innovative cancer therapies targeting CXCR2 signaling in combination with conventional anti-tumor regimens is a very real possibility in pancreatic cancer.



### **Dr. Sun given R21 grant for research on how SOCS1 protein exacerbates subsequent bacterial infection**

Dr. Keer Sun, Assoc. Prof. received a R21 grant for research on how SOCS1 protein, a feedback inhibitor of cytokine signaling, exacerbates subsequent bacterial infection. A frequent sequela of influenza infection is secondary bacterial pneumonia. Even with currently available antibiotics, bacterial pneumonia is a significant cause of morbidity and mortality in influenza pandemics and epidemics. The results of Dr. Sun's investigation will provide the basis for identifying novel therapeutic targets for prevention of these infectious disease in humans.

## **Dr. Tammy Kielian to be panelist for "UNMC's Women in Science: Our Voices, Our Stories"**



Dr. Kielian, Professor, Department of Pathology and Microbiology is one of four women faculty members taking part in an event to help mark the International Day of Women and Girls in Science. This event is scheduled for February 11 from 4-5 p.m. and will be livestreamed. Dr. Kielian said "I wanted to participate to provide helpful suggestions and encouragement for individuals at any state of their scientific career." Read more from Dr. Kielian and the event itself at [UNMC Today](#).

## Six Faculty receive honors



(Left to right: Drs. Javeed Iqbal, Pete Iwen, St. Patrick Reid, Vinai C. Thomas, Caroline Ng and Scot Ouellette)

The Distinguished Scientist Award recognizes researchers who have been among the most productive scientists at UNMC during the past five years. Those receiving this award are Drs. Javeed Iqbal, Pete Iwen and Scot Ouellette.

The New Investigator Award is received by UNMC scientists who have secured their first funding from the National Institutes of Health, the Department of Defense or another national source. These investigators also had to demonstrate scholarly activity. Those receiving this award are Drs. Caroline Ng, St. Patrick Reid and Vinai C. Thomas. To learn more visit [UNMC Today](#).

## Department of Pathology and Microbiology assists with breakthrough treatment

Nebraska Medicine recently became one of the first cancer centers in the Midwest to provide a breakthrough treatment for lymphoma called CAR T-cells. With support from the Department of Pathology and Microbiology and the clinical laboratory, this exciting technology is now available. UNMC was one of the first centers in the county to perfect stem cell stem cell transplantation which paved the way for CAR T-cell therapy. Dr. Phyllis Warkentin, Dr. James Landmark and Dr. Anne Kessinger were key pioneers in this field. In 1996, Dr. Warkentin collaborated with other leaders in the field to create the Foundation for Accreditation of Cellular Therapy (FACT) based in Omaha. Nebraska Medicine operates a fully accredited good manufacturing practices (GMP) to facilitate these state-of-art technologies. ([CART T-cell therapy at Nebraska Medicine.](#))



## Dr. Talmon named assistant dean for medical education



Geoffrey Talmon, M.D., professor with the Pathology and Microbiology department has been named assistant dean for the medical education for the College of Medicine. Dr. Talmon will be responsible for educational issues within the College of Medicine and will coordinate the Liaison Committee on Medical Education accreditation process for the next site visit for College of Medicine in 2021. Read more at [UNMC Newsroom](#).

## Department of Pathology and Microbiology transitioned to virtual microscopy - opportunity provided to Nebraska high schools



“Out with the old, in with the new” is a thought one may ponder when discussing new and exciting things. However, Nebraska high schools who took part in a Nebraska Department of Education (NDOE) curriculum on exploring laboratory medicine as a career,

may not have been fully aware of the opportunity available to them. Faculty within the Department of Pathology & Microbiology saw a prospect to help expand a teaching opportunity while changing another. Due to transitioning from physical glass slides to virtual microscopy for teaching medical students histology and pathology within the College of Medicine at UNMC, microscopes, pathology and microbiology slides, and other laboratory supplies were no longer being utilized.

Dr. Peter Iwen, Director to the Nebraska Public Health Laboratory, heard about these available resources and made sure they were put to good use. Dr. Iwen met with Department of Pathology and Microbiology’s Chair, Dr. Steven Hinrichs, and Vice Chair of Medical Education, Dr. Geoffrey Talmon. Together the three brainstormed ideas that soon developed into a wonderful opportunity for high school students in Nebraska.

With ideas compiled, UNMC staff collaborated with the NDOE Health Sciences Coordinator, Carol Ringenberg Packard, to develop a means to utilize these resources. The NDOE hosts an annual Career and Technical Education conference in June for Nebraska teachers in Kearney. A session promoting a course exploring laboratory medicine as a career and provide schools with new state standards for the Laboratory Medicine program was added. The NDOE advertised this session to both private and public school teachers around Nebraska. Seats were made available to teachers who taught the coursework in their schools. It also provided teachers with a microscope and other tools they could bring back to their schools to help enhance their teaching activities.

Dr. Geoffrey Talmon, Vice Chair for Medical Education and Associate Professor, Pathology and Microbiology stated "Although the microscopes are older, the optics for these generally do not change over the years. We are hopeful visualization of the 'unseen' world will stimulate students in the sciences."

**Dr. Campbell helped solve big data problem with electronic health records**



Dr. Scott Campbell, Assoc. Professor, Pathology and Microbiology along with Dr. Jim Campbell, Professor, Division of Internal Medicine, General Medicine developed a way to codify and name multitude of facts that come from cancer gene testing. Read more at [UNMC Newsroom](#).

## Dr. Santarpia and his team worked to ensure system operational for DoD



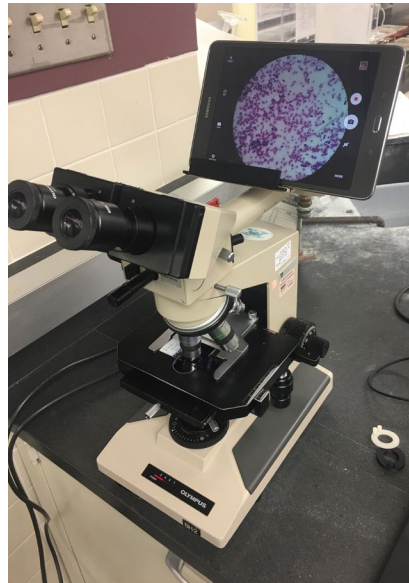
Joshua Santarpia, Ph.D., Assoc. Professor, Pathology and Microbiology and the Research Director for NSRI, said his team worked to ensure the Transport Isolation System (TIS) developed by the Department of Defense (DoD), can contain infectious disease, both as designed and in operation. The TIS is an enclosure the DoD designed to safely transport patients with highly contagious diseases. It was first used after the Ebola virus outbreak in 2014. Read more at [UNMC Newsroom](#).

## Dr. Cox invented in response to staff needs

Dr. Jesse Cox, (pictured right) Chief Resident, Pathology and Microbiology, developed a 3D-Printed Microscope Smartphone Mount (pictured bottom right). After hearing staff members were struggling using their iPhones to assist each other with a frozen section off campus, Dr. Cox



designed a device to position a smartphone, quickly and easily, to an eyepiece to capture photos and video. While current available devices do exist to perform similar functions, most are cumbersome and/or expensive. Using 3D printing resources available on campus, multiple prototypes were developed, ultimately landing upon a design both universal and easy to use. As part of his experience, Dr. Cox spoke and worked with area high school students involved in club organizations through their high schools regarding the design, development and prototyping process through DoSpace and the [UNMC Makers' Invent-a-thon Contest](#) held in the spring. Dr. Cox launched [Yellow Basement Design](#) to sell his devices to a larger market.



## Joint Effort for Drug Development Pipeline

A contract awarded by the Department of Defense's Armed Forces Radiobiology Research Institute sought assistance from the University of Nebraska to develop medical countermeasures for prevention and/or treatment of Acute Radiation Syndrome. The project, led in a joint effort by Drs. Ken Bayles (UNMC) and Dave Berkowitz (UNL), activated a University-wide "Drug Development Pipeline", which coordinates activities of a broad range of expertise in drug development across the University system. Initial phases of the project involve a "concept refinement study" establishing a plan to identify promising lead compounds and then utilizing the Pipeline to carry out the studies needed for advancement to phase I clinical trials. Learn more at [UNMC Today!](#)

## World renowned UNMC pathologist, Sonny L. Johansson, dies.

Sonny L. Johansson, MD, PhD, a world renowned pathologist at the University of Nebraska Medical Center, died December 27, 2018 at his home in Alingsås, Sweden where he retired to in 2015. Dr. Johansson had an international reputation in surgical pathology, with special expertise in urologic pathology, but also in head and neck and in soft tissue and bone tumor pathology. He was born October 27, 1942 in Sweden and earned his MD and PhD at the University of Göteborg (Gothenburg), Sweden. After initial training in urologic surgery, he pursued a career in pathology. His residency training was at Sahlgrens Hospital in Göteborg and at St. Vincent Hospital, Worcester, Massachusetts, completing his training in 1976. He became a faculty member at Sahlgrens Hospital where he established his reputation in urologic pathology, becoming the pathology expert for the Swedish-Norwegian Testicular Cancer Group, a part of the European consortium for evaluation of the then newly developed therapy for testicular germ cell cancers. His clinical and basic research were instrumental in identifying the analgesic phenacetin (one component of empirin compound) as a cause of lower urinary tract cancer in humans, key to it being banned worldwide, including in the USA in the late 1980s.



After a 6 week visiting research professorship at UNMC in 1984, he was persuaded to permanently join the UNMC faculty a year later, where he continued until his retirement at the end of 2014. “Sonny was an outstanding pathologist, cancer researcher, and teacher, exactly the type of expert we wanted to help us continue to build a strong department and Medical Center,” indicated Dr. Sam Cohen, colleague of Dr. Johansson since 1972 and the person who recruited Dr. Johansson to UNMC. Dr. Johansson received many accolades for his surgical pathology expertise as well as his achievements in research and his teaching of medical and graduate students, and residents and fellows in pathology and in other clinical departments. He was recognized in Best Doctors in America in 1996, continuing until his retirement. His UNMC colleagues elected him to the medical honors society, Alpha Omega Alpha in 2000, and he was named the initial Vickery Professor of Pathology in 2005 (named after a former Nebraska Medical School graduate who attained fame as a pathologist at Harvard). His enthusiasm for his work and the teaching of others was contagious and enjoyed by all with whom he interacted, frequently spiced with vivid stories in his characteristic “Swenglish” accent. “Sonny was an extraordinary pathologist, with a keen eye and strong analytical skills with the microscope,” stated Dr. Rodney Markin, pathologist and colleague at UNMC, now Chief Operating Officer of the University of Nebraska and UNMC Vice Chancellor for business development. “Sonny was a terrific teacher and I always learned from him at every opportunity I had to sit with him.” Surgeons were especially appreciative of his expertise, his passion for excellence, and his timeless energy. Drs. Dan and Bill Lydiatt, ENT surgeons, “were deeply saddened to hear of Dr. Johansson’s passing. He was a consummate pathologist, a timeless mentor and a real friend. To establish a head and neck surgical oncology practice in the early 1990s required a team of like-minded experts. There is an adage amongst surgeons that you live and die by your pathologist. We hit a home run when Sonny joined us. He played a huge role in our success and added humor and friendship in the bargain.”

Upon his retirement for health reasons, he returned to Sweden with his wife, Marianne. He is survived by his wife and his four children, Patrik (also a faculty member at UNMC), Christian, Nicholas, Andrea, and their families. A memorial service will be held at Hjamareds folkhogskoa, Alingsås, Sweden on January 24, 2019. We were indeed privileged and honored to have had Dr. Johansson as an esteemed faculty member and friend.

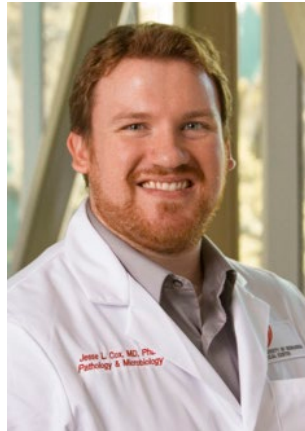
## Dr. Cushman-Vokoun elected to UNMC Faculty Senate



Dr. Allison Cushman-Vokoun, Assoc. Prof., Pathology and Microbiology, was elected vice-president/president-elect of the UNMC Faculty Senate for the 2018-2019 academic year. The senate serves as the governing body empowered to represent the UNMC faculty. It includes representatives from each major academic unit. For the full list of elected officers go to [UNMC Newsroom](#).

## Dr. Cox named resident of the month

Dr. Jesse Cox, Chief Resident, Pathology and Microbiology, was named UNMC College of Medicine resident of the month for March 2018. Dr. Cox credited the people in his training program, both residents and staff, for making the environment exceptional. In addition, he mentioned working with so many different specialties and professionals throughout Nebraska Medicine made it wonderful. Read more of what Dr. Cox had to say [here](#).



## Where Are They Now

After completing our Graduate Program in 2016, Dr. Schaeffer-Koziol accepted a position as Senior Medical Science Liaison at Shire, a global biotechnology company focused on treatments for rare diseases and highly specialized conditions. In this role, she engages in scientific discussions with healthcare professionals, builds and maintains a network of therapeutic area experts, and provides scientific education. As a field-based employee, Dr. Schaeffer-Koziol lives in Kansas City and covers the central United States.



Pathways is an online archive news source for the Department of Pathology and Microbiology.

Contact:

Liz Tierney

402-559-4656

[liz.tierney@unmc.edu](mailto:liz.tierney@unmc.edu)

Kirsten Stites

402-559-7601

[kstites@unmc.edu](mailto:kstites@unmc.edu)