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“Certain bacteria that normally live on the skin or in the nose without causing problems can sometimes lead to diseases elsewhere in the body.”

Congratulations to Dr. and Mrs. Schweitzer on the birth of their daughter, Marigold Claire Schweitzer. She was born on March 24, 2019 and is healthy, happy, and showered with love by John, Stephanie, John Paul, and Jude!

Congratulations to Dr. Tuell on being awarded the “String of Pearls” honor by the Class of 2019.

Welcome!

Publications and Presentations:
Dr. Los recently published two manuscripts in the March edition of American Journal of Medical Genetics:

- Growth and growth hormone in Turner syndrome: Looking back, looking ahead, by Los, E and Rosenfeld R.
- "Donating our bodies to science": A discussion about autopsy and organ donation in Turner syndrome, by Prakash SK, San Roman AK, Crenshaw M, Flink B, Earle K, Los E, Bonnard Å, Lin AE.
Events & Research
Faculty, Staff and Residents

Dr. Gibson and former resident, Dr. Majchrzak at this year’s Once Upon A Time Celebration on April 14th in the ETSU Athletics Center.

Previous events include the Human Trafficking in conjunction with the Once Upon A Time event on April 12 in Stanton Gerber. In total, over 600 people participated in our Spring events this year including families, community, members, faculty, residents and students.

Pajama Party with your Pediatrician event from March 21st at the Johnson City Public Library.

Caduceus Awards Pediatrics:
M3 Outstanding Resident Award:
Victor Smith
M3 Outstanding Attending Awards: John Schweitzer

Sandra has left her position full-time, and will be working on a temporary contract to train her replacement, for which we have been interviewing.

Both Adekunle Oke and Muhammed Jawla presenting their internship experiences the Spring 2019 MPH Field Presentations.

Adekunle worked with Dr. MJ Hajianpour on his retrospective chart review “Genetic Variation in Autism Spectrum Disorders.” He also had the opportunity to present demographic preliminary findings at the 2019 Appalachian Student Research Forum.

Muhammed worked with Dr. George Ford on his retrospective chart review “Appalachian Type 1 Diabetes Improvement Project (ATDIP)”.

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Dr. Macariola and Claire Gleadhill
Time to Think Deeper when HSV is presenting in an unusual way

Dr. Justice and Kathleen Demar: DeMars KR, Justice NA. Pneumonia masking the presentation of incomplete Kawasaki disease. It has been accepted for poster presentation at Pediatric Hospital Medicine 2019 in July.

Dr. Justice and Meredith St. Clair: St. Clair M, Justice NA, Walkup J. Persistent elevation of troponins in the setting of Epstein-Barr viral infection: a case report.
The soluble rOPH suspended in the supernatant was separated from the pellet by centrifugation and further purified using Ni-NTA resin chromatography columns specific for the His7 tag sequence. The UM-UC3 bladder cancer cell line, commonly used in published research to screen efficiency of chemotherapeutics, were cultured in accordance to ATCC. These cells were then compared against none tumorigenic bladder cancer cells and rOPH in a series of tests. Sodium dodecylsulfate (SDS)-PAGE were transferred for western blot analysis using antibodies specific for human OPH to investigate the expression levels present in cells. Native-PAGE electrophoresis showed OPH esterase activity across these cells using S-ANAA substrate as a specific esterase colorimetric stain. With these results, possible treatment options can be investigated with use of novel prodrug chemotherapy specifically targeting OPH in BCa cells, ultimately leading to apoptosis in effected cells. These events may also lead to possible biomarkers used for easier and earlier diagnosis of BCa across various spectrums.

The National Cancer Institution reported over 80,000 diagnoses of bladder cancer (BCa) in the United States in 2018. Despite these numbers, minimal research toward developing new diagnostic techniques and treatment options are underway. Evidence suggests a significant increase in non-specific α-naphthyl acetate esterase levels in BCa patient’s urine. There has been little research focused on identification of the esterase present. It is also suggested that elevated oxidative stress resulting in production of reactive oxygen species (ROS) is common in tumorigenic bladder cells as a result of increased metabolic activity. Oxidized protein hydrolase (OPH) is an 80kD serine protease, previously found to be elevated in many other types of cancer. OPH degrades proteins damaged by ROS and also exhibits a highly specific esterase activity toward (AcApNA) N-acetyl-alanyl-p-nitroanilide and ANAA (α-naphthyl N-acetylalaninate) containing substrate. Investigation of OPH expression in BCa could result in development of new diagnostic techniques and possible application toward produgs targeting cells with elevated ROS and/or OPH. Due to lack of commercial OPH, a positive control for this protein is needed for testing. To do this E. coli (BL-21 DE-3) were cultured and inserted with pET-21a (+) plasmids containing a human OPH gene insert prior to a His7 tag. After being selectively grown on ampicillin media, the bacteria were induced by IPTG and digested using lysozyme.

Expression of Oxidized Protein Hydrolase in Bladder Cancers
Noah P. Rutherford, William L. Stone, Tesha E. Blair, Bal Krishna Thakuri, Marianne Brannon

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Panton–Valentine leucocidin is the key determinant of Staphylococcus aureus pyomyositis in a bacterial GWAS

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Abstract Pyomyositis is a severe bacterial infection of skeletal muscle, commonly affecting children in tropical regions, predominantly caused by Staphylococcus aureus. To understand the contribution of bacterial genomic factors to pyomyositis, we conducted a genome-wide association study of S. aureus cultured from 101 children with pyomyositis and 417 children with asymptomatic nasal carriage attending the Angkor Hospital for Children, Cambodia. We found a strong relationship between bacterial genetic variation and pyomyositis, with estimated heritability 63.8% (95% CI 49.2–78.4%). The presence of the Panton–Valentine leucocidin (PVL) locus increased the odds of pyomyositis 130-fold (p=10⁻¹⁷). The signal of association mapped both to the PVL-coding sequence and to the sequence immediately upstream. Together these regions explained over 99.9% of heritability (95% CI 93.5–100%). Our results establish staphylococcal pyomyositis, like tetanus and diphtheria, as critically dependent on a single toxin and demonstrate the potential for association studies to identify specific bacterial genes promoting severe human disease.

DOI: https://doi.org/10.7554/eLife.42866.001