

# ATSU RESEARCH

A newsletter produced by Research Support

Image (lumbar spine models) courtesy of Dr. Brian Degenhardt, Dr. Eric Snider, Ken Pamperin, and Kelly Rogers



*“The point is, is that when we succeed, we succeed because of our individual initiative, but also because we do things together.” ~Barack Obama*

## 2017 A.T. Still University research symposiums

Several research symposiums were held at A.T. Still University (ATSU) this year. On the Arizona campus, the Arizona School of Dentistry & Oral Health (ATSU-ASDOH), the A.T. Still Research Institute (ATSRI) Center for Oral Health Research, and one department from the Arizona School of Health Sciences (ATSU-ASHS) hosted symposiums. On the Missouri campus, ATSRI hosted its annual symposium.

## ATSU-ASDOH Research Week and Student Research Day

From Jan. 17 through Jan. 20, ATSU-ASDOH held a research week in conjunction with its annual Student Research Day. For Research Week activities, two lunchtime presentations were given by ATSU-ASDOH faculty and two by dental professionals from Philips Oral Healthcare and Colgate Palmolive Company. On Jan. 17, ATSU-ASDOH faculty presented, “Research Speed Dating: An Overview of Ongoing Research Studies at ASDOH.” On Jan. 18, Drs. Maureen Perry and Seena Patel presented, “To Premedicate or Not: That Is the Question.”

Ten third-year students presented results of their research at the 10th annual ATSU-ASDOH Student Research Day on Jan. 20. Over 150 students and faculty from ATSU-ASDOH attended the presentations. Five faculty members also presented original research posters as part of the research day. Lucas Shin was selected as the winner of the ATSU-ASDOH Student Research Day and will represent ATSU-ASDOH at the upcoming Dentsply Sirona Student Clinician Research Competition at the American Association for Dental Research (AADR) meeting in March 2018. Shin is conducting research that evaluates the use of lasers to kill bacteria in endodontically infected teeth. Austin Shackelford won the AADR student research award, which consists of a \$500 cash award to present his research at the AADR meeting in March 2018. In cooperation with the Barrow Neurological Hospital in Phoenix, Shackelford is conducting research to determine the protective mechanisms of a ketogenic diet on neuroinflammation. He has also applied to compete in the International Association for Dental Research Unilever Hatton Competition and Awards program in July 2018, which is the most prestigious student research competition in dentistry.

## 2017 ATSU-ASDOH Research Day student oral presentations

\*indicates presenter

Boyse B, Porter B\*, Lyman J\*, Pratt F. Dental implants: cross sectional study to determine risk factors associated with implant failure.

Chae JM, Gousman J\*, Seo JW, Park JH. Mandibular symphysis bone density and its effect on mandibular growth and morphology in adolescent patients.

## **Presentations, continued**

Kristensen V\*, Duong ML, Perry M, Spolarich A. Evaluating the effectiveness of animal assisted therapy in a dental setting.

Levy AB, Mitchell JC, Shin LK\*, Razhzhub L. Decontamination of the root canal system during endodontic therapy.

Patel S, Spolarich A, Holladay C\*, Lemieux DJ\*. Direct oral anticoagulants (DOACs) and postoperative bleeding complications after dental extractions.

Ruoff P\*, Shlossman M, Levine R, Makin I, Schupp J, Gillece J, Delisle J, Patton B, Martinez A. Non-surgical periodontal therapy using scaling and root planing (SRP) in combination with diode laser.

Shackelford AJ\*, Oh H, Ma SC, Kim DY. The effect of ketones on inflammation in an in vitro periodontal disease model.

Tuttle K\*, Spolarich A, Coles DR, Kottemann W. Molar intrusion capabilities of Invisalign with or without miniscrew anchorage in the open bite patient: a pilot study.

## **2017 ATSU-ASDOH Research Day faculty poster presentations**

\*indicates presenter

---

Gohlke E\*, Fallone K\*. Impact of a training program on dental hygiene student perceptions of working with patients with special needs.

Howell S\*, Patel N, Kothari H, Sturgill J, Perry M. Antibiotic prophylaxis protocols for treating patients with end-stage renal disease: results of a three part study.

Nenad MW\*, Halupa C, Spolarich AE, Gurenlian JR. A dental radiography checklist as a tool for quality improvement.

Spolarich AE\*. Training pharmacists to counsel older adults about oral health.

## **ATSRI Center for Oral Health Research inaugural Scientific Symposium**

On Jan. 21, ATSRI's Center for Oral Health Research held its inaugural Scientific Symposium, which was hosted in collaboration with the Arizona chapter of AADR. The symposium was designed to bring together the oral healthcare and research communities of Arizona to share new knowledge obtained through original research, translate current findings from research to support best practices, increase and diversify the number of individuals engaged in oral health research, and cultivate collaborative partnerships to improve the oral health of the community. Over 150 attendees participated in the symposium, including students from three dental schools and five dental hygiene schools. As part of the symposium, Dr. Jack Ferracane, president of AADR, presented an overview of AADR's strategic plan. Six internationally known speakers were also featured, and 28 posters were presented. Seven students and four faculty members from ATSU-ASDOH and one faculty member from the Missouri School of Dentistry & Oral Health (ATSU-MOSDOH) presented posters.

## **ATSRI Center for Oral Health Research inaugural Scientific Symposium posters**

Halim I, Halim H. Effect of facemask therapy for correction of Class III malocclusion.

Holladay C, Lemieux DJ, Patel S. Direct oral anticoagulants (DOACs) and postoperative bleeding complications after dental extractions.

Makin IRS, Pedapati C, Parikh V, Levine R, Shlossman M. Characteristic performance measurements: beam distribution and output power from two laser systems used in dentistry.

Muller R, Bilich L. Impact of education programs on oral health literacy of refugees.

Park JH, Putrus RR, Pruzansky DP, Grubb J. ABO certification protocols in postgraduate orthodontic programs.

## **Posters, continued**

Porter B, Lyman J. Dental implants: cross sectional study to determine risk factors associated with implant failure.

Rana BB, Duong ML, Perry MM. Exposure of pre-clinical dental students to patients with special needs.

Schaffer R, Perry MM, Spolarich AE. INR testing at the point of dental care delivery.

Shackelford AJ, Oh H, Ma SC, Kim DY. Ketones alleviate neuroinflammation through modulation of metabolic sensors.

Spolarich AE. Training pharmacists to counsel older adults about oral health.

Taylor CA, Patel VN, Smith SA, Hoffman MP. Heparan sulfate 3-O-sulfation increases progenitor cell expansion.

Zaza R. Implementation of interprofessional collaboration in a dental service setting.

## **ATSU-ASHS Physical Therapy Poster Days**

---

This year, the Physical Therapy department held two student poster days on May 5 and July 7. Twenty-five posters were presented, involving 64 students. Poster topics arose from student capstone projects that are mentored by faculty, and the posters covered a variety of physical therapy topics. The poster days were attended by students and faculty from ATSU-ASHS, ATSU-ASDOH, and ATSU's School of Osteopathic Medicine in Arizona. ATSU alumni and community-based clinicians also attended.

### **2017 Physical Therapy Poster Day posters**

\*indicates poster competition winners

---

Banuelos R, Kramer D, Nwambouno A, Ohmler L. Effects of aerobic, non-aerobic, and resistive training on insulin resistance in subjects with type II diabetes: a case series design.

Bender A, Stohr M. The acute effects of robot-assisted ankle rehabilitation and tDCS on corticospinal excitability in chronic stroke survivors.

Black K, Derthick D, Karstens J, Lawrence T. A descriptive study of foot posture and lower extremity function in firefighter recruits.

\*Bodam J, Christ A. The effect of instruction and context on multi-limb dual task control in Parkinson disease.

Brooks A, Drew S, Lenzmeier S, Zawada D. The effects of vibrotactile feedback on locomotor function in individuals with lower limb amputation.

Chapman C, Dunnington T, Higgins K, Yamamoto A. The use of a kinetic lower extremity orthosis to improve locomotor function.

\*Clouse J, Maxfield R. The inclusion of athletes with a physical disability in school-based sports teams: the coach's perspective.

Dillon J, Hayes P, Klotz T, Patel T. Outcome measures to assess for baseline testing outcome measures to assess for baseline testing of concussions in high school football players.

\*DuBose J, Tierney KA. The inclusion of athletes with a physical disability in school-based sports teams: the parent's perspective.

Dukuly M. The efficacy of physical therapy intervention in the treatment of male urinary incontinence: a pilot study.

Eagen B, Howe J, Lorbeck K. Effects of diaphragmatic breathing on decreasing symptoms of urinary urge incontinence.

## **Posters, continued**

Egan J, Leibrich M. Lower extremity robotic rehabilitation for stroke survivors.

Evans A, Finney J. A descriptive study of FMS and physical fitness scores in firefighter recruits.

Fernandes S, Bisson N. Effect of the A Matter of Balance program on balance confidence in older adults.

Flood K, Gomez B. A descriptive study of lower extremity outcome measures in high school female basketball players.

Freeman M, Chalanycz J. The lived experience of athletes with a physical disability participating on school-based sports teams.

Genovese J, Kurashima K. Should kinetic energy be included with potential energy in determining power when performing stair climbing in males between 21 and 35 years?

\*Gombold K. Normative grip strength values in males and females, ages 50-89 years old.

\*Greene R, Hernandez D, Kopale K. Use of compression garment in a child with neuromotor deficits: differences in posture and functional mobility.

Griffin L, Roof K, Santiago C, Toprani B. Interrater reliability for physical therapy students using the Functional Movement Screen.

Pucci A, Seamans K, Turner A, Vu J. A submaximal step test used to predict peak aerobic capacity in healthy children ages 7-11 years old.

Renaud B, Slater A. The effect of Matter of Balance classes on dual-task abilities during the Timed Up and Go in community-dwelling elders.

Shah N, Smithson C. The inclusion of athletes with a physical disability in school-based sports teams: the athlete's perspective.

Wankier A. Analysis of authorship in the *Journal of Physical Therapy*: a preliminary report.

Yarrington D, LeBaron T. Should kinetic energy be included with potential energy in determining power when performing stair climbing in females between 21 and 35 years?

## **Ninth annual Interdisciplinary Biomedical Research Symposium**

On Nov. 11, the ninth annual Interdisciplinary Biomedical Research Symposium was held on the Missouri campus. Hosted by ATSRI, the symposium included 11 oral presentations given by students and staff from ATSU, Truman State University, and Northeast Regional Medical Center and a poster session that included 40 poster presentations by faculty and students from the three institutions. One hundred seven people attended the symposium, which included faculty, students, and staff from the three institutions and attendees from the local community. Twenty faculty members and 23 students from ATSU's Kirksville College of Osteopathic Medicine and ATSU-MOSDOH attended.

### **Ninth annual Interdisciplinary Biomedical Research Symposium oral presentations**

\* indicates presenter

Brown AG\*, Ostrowski TD. Activation pattern of nucleus tractus solitarii neurons in response to acute hypoxia in the STZ-induced rat model of Alzheimer's disease: a preliminary study.

Dobard SE\*, Cammack SA, Sexton WL. Measurement of myocardial microvascular PO<sub>2</sub>: impact of sumatriptan.

Jackson TM\*, Stanley EM, Ostrowski TD, Middlemas DS. Intracerebroventricular peptide administration for antidepressant studies in juvenile rats.

## **Presentations, continued**

Jones K\*, Rogers M, Lesh MB. Adenoma detection rates at Northeast Regional Medical Center: a retrospective study.

Karl CE\*, Hudman DA, Sargentini NJ. Impact of *queA* gene deficiency on DNA repair-dependent processes in *Escherichia coli*.

Kinney KE\*, Robbins GB, Brechue WF. Carbonic anhydrase inhibition does not impact force generation or fatigue following sustained MVICs.

Ramachandra R\*, Marler T, Elmslie KL, Heier A, Elmslie KS. Expression of Nav 1.9 channels in Group III and Group IV muscle afferents.

Syed H\*, Ahmad Z. Exploring the link between antimicrobial properties of venom peptides and microbial ATP synthase.

## **Ninth annual Interdisciplinary Biomedical Research Symposium posters**

\*indicates poster competition winners

---

Bergman SR, Snider KT, Johnson JC. Correlation between pelvic index, as measured on lateral postural radiograph, and chronic low back pain.

Brannen D, Adams J, Brechue WF. Is there an independent anatomical definition of metatarsus atavicus?

Braungardt HJ, Banez JC, Chung R, Singh VK. Characterizing the effects of staphyloxanthin and branched chain fatty acid deficiencies in *Staphylococcus aureus*.

Brown AG, Ostrowski TD. Activation pattern of nucleus tractus solitarius neurons in response to acute hypoxia in the STZ-induced rat model of Alzheimer's disease: a preliminary study.

Buell JH, Avigliano JD, Schrant BL, Sexton WL. A new method to measure diaphragm function before and after neuromuscular blockade in rats.

\*Curry EC, Chamberlain NR. Initial characterization of persistence inducing factor in *Staphylococcus aureus* SH1000.

Dobard SE, Cammack SA, Sexton WL. Measurement of myocardial microvascular PO<sub>2</sub>: impact of sumatriptan.

DuMontier AD, Brechue WF. Importance of first metatarsal loading on foot arch structure and gait.

Farrales ER, Taylor RJ, Burlis TM, Arabas JL, Mayhew JL, Brechue WF. Influence of body type and mode of resistance training on changes in upper-body strength in young men.

Frommer BA, Cox JL. Effect of MTA3 overexpression on B16 melanoma cells.

\*Gorman NT, Mayhew JL, Brechue WF. Inconsistency of bilateral asymmetry between sprinting and jumping performance: rethinking leg dominance.

Hamilton M, Bhatia S, Webb S, Degenhardt B. Correlation of force and displacement on level of restriction in vertebral segments.

Hammers ME, Stuart MK. Effect of tetracycline on carbohydrate metabolism in *Trichomonas* spp.

Headman Z, Wasinger NA, Lambson BW, Fullmer TM, Kondrashova TV, Brechue WF. Cardiac structure-function and aerobic capacity in young adults with a history of competitive sports.

\*Hudman DA, Sargentini NJ. Prevalence of tick-borne pathogens in Northeast Missouri.

Jackson TM, Stanley EM, Middlemas DS. Modified tail suspension as an indication of depression in adolescent rats.

## Posters, continued

---

Jackson TM, Stanley EM, Ostrowski TD, Middlemas DS. Intracerebroventricular peptide administration for antidepressant studies in juvenile rats.

Johnson P, Lovy A, Martin CAL, Brechue W. Electrocardiograph changes associated with a 24-hour footrace.

Jones K, Rogers M, Lesh MB. Adenoma detection rates at Northeast Regional Medical Center: a retrospective study.

Karl CE, Hudman DA, Sargentini NJ. Impact of *queA* gene deficiency on DNA repair-dependent processes in *Escherichia coli*.

Kasper J, Arabas J, Mayhew J, Brechue WF. Impact of body type on change in upper-body strength following resistance exercise training in young women.

Kinney KE, Robbins GB, Brechue WF. Carbonic anhydrase inhibition does not impact force generation or fatigue following sustained MVICs.

Lambson BW, DuMontier A, Stokke JM, Snyder M, Schneider RP, Brechue WF. Osteopathic muscle energy treatment, pulmonary function and exercise tolerance.

Miller A, Fulcher A, Ramaraj P. In-vitro study to determine the biochemical basis of protection by progesterone in melanoma based on human melanoma cell models.

Oberdiek HM, Hughes H, Arabas JL, Mayhew JL, Brechue WF. Validity of repetition prediction equations to estimate upper-body strength before and after resistance training in young women.

\*Phillips PL, Siress ZT, Reyes L, Walkenhorst MS. Epigenetic reprogramming of host genes in response to oral *Porphyromonas gingivalis* infection.

Plassmeyer SP, Windsor PK, Mattock DS, Han BH, Miller BR. Computational investigation of biflavonoid inhibitors of amyloid beta aggregation in Alzheimer's disease.

Ramachandra R, Marler T, Elmslie KL, Heier A, Elmslie KS. Expression of Nav 1.9 channels in Group III and Group IV muscle afferents.

\*Siress ZT, Phillips PL. Development of *fim* operon knockouts in select *Porphyromonas gingivalis* strains.

Sloan EV, Kinney KE, Brechue W. Impact of music on suppression of the autonomic stress response and central motor drive of sustained isometric muscle contractions.

\*Syed H, Ahmad Z. Exploring the link between antimicrobial properties of venom peptides and microbial ATP synthase.

Taylor RJ, Burlis TM, Farrales ER, Arabas JL, Mayhew JL, Brechue WF. Validity of repetition prediction equations to estimate upper-body strength in trained and untrained men.

\*Vetter HM, Cooper AR, Pazdernik V. Association of vitamin D and abnormal uterine bleeding.

Wasinger NA, Geisbuhler T, Brechue WF. Carbonic anhydrase inhibition alters the Starling, but not the Anrep contractile responses in the isolated heart in vitro.

\*Young BA, Adams J, Kondrashova T, Segal S. Alterations of systemic blood flow produces tonic immobility in alligators.