American Association of Pharmaceutical Scientists | Press Release

Embargoed until: Nov. 13, 2017 1:00 p.m. PST

Media Contact: Stacey May
703-459-7677
mays@aaps.org

Nano-targeting Treatment for Prostate Cancer
Novel Delivery System Targets Cancerous Bone Lesions

SAN DIEGO, Nov. 13, 2017 — Metastatic or castrate-resistant prostate cancer can spread to the bone in certain patients. While several new treatments are available, they can have a difficult time reaching the bone and often result in missing the metastatic lesions. New research presented today at the 2017 American Association of Pharmaceutical Scientists (AAPS) Annual Meeting and Exposition seeks to address this challenge with the development of a bone-targeted nanoparticle (NP) that delivers the chemotherapy drug cabazitaxel directly to the bone.

Jamboor K Vishwanatha, Ph.D. and his team from University of North Texas Health Science Center engineered the NP formulation to bind to the chemical structure of the bone and were effective at reducing tumor size, maintaining bone structure, and decreasing pain. In the study, "Efficient Bone Microenvironment Nano-targeting for Improved Therapy for Bone Metastatic Prostate Cancer," bone tumors were established for one week in mice (starting n=6 per group) then treated weekly with either saline, free cabazitaxel, non-targeted NPs, or targeted NPs.

"A significant and troubling issue for prostate cancer patients is when the cancer spreads to the bone, resulting in difficult-to-treat and painful lesions," said the study's primary author Andrew Gdowski, D.O. "A key focus for our research was to reduce tumor size and pain."

The targeted NPs had a strong burst release of cabazitaxel within the first 8 hours and sustained release of up to 72 hours. The targeted NPs also had a fourfold increase in binding to bone at six hours and an eightfold increase at 72 hours when compared to the non-targeted NPs. Mice (n=6) treated with targeted NPs had no bone lesions on x-ray, with 100 percent in the saline and cabazitaxel groups and 33 percent in the non-targeted NP group with bone lesions.

Vishwanatha and his team also demonstrated a reduction in pain for the targeted NP group. In the von Frey assay, (indicate functional pain status in these mice) the group treated with targeted NPs had a significant reduction in relative response indicating they were experiencing less pain.

Lead team member Amalendu Ranjan, Ph.D. noted, "What is exciting is not only that these targeted nanoparticles work well to decrease tumor size but that we were able to maintain the bone structure and reduce pain, which is an ongoing challenge when treating these patients."

The next stage of the research will be to perform additional pre-clinical validation studies and work on streamlining the production method for large-scale NP production.

Efficient Bone Microenvironment Nano-targeting for Improved Therapy for Bone Metastatic Prostate Cancer will be presented Monday, Nov. 13, 1:00 p.m.- 2:00 p.m. (PST), Poster Forum 2 in the San Diego Convention Center.

The 2017 AAPS Annual Meeting and Exposition is taking place in San Diego November 12 – 15. It will bring together more than 6,000 scientists, business leaders, government officials, and students from around the world to share and learn the latest scientific advances and industry developments. The meeting will feature 100 scientific sessions and 2,200 posters, workshops, and short courses. Download the AAPS mobile application for additional information.

Editor's Note: All media must provide press credentials to attend this meeting and register on-site at San Diego Convention Center, main registration. To schedule an interview with Andrew Gdowski and Amalendu Ranjan, or for any other press inquiries, please contact Stacey May at 703-459-7677 or mays@aaps.org or Hillarie Turner at hillarie@vaneperen.com. For the most up-to-date program information, please click here.

# # #

About AAPS: The **American Association of Pharmaceutical Scientists** (AAPS) is a professional, scientific organization of approximately 9,000 members employed in academia, industry, government, and other research institutes worldwide. Founded in 1986, AAPS advances the capacity of pharmaceutical scientists to develop products and therapies that improve global health.
Visit **www.aaps.org** and follow us on Facebook and Twitter @AAPSComms. The official Twitter hashtag for the meeting is: #AAPS2017.