



CMMN NEWSLETTER

JUNE 2018

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NEWS

Annual NCI Alliance Site Visit

On April 24, 2018, the CMMN welcomed Piotr Grodzinski, PhD, Branch Chief of the National Cancer Institute (NCI) Nanodelivery Systems and Devices Branch in Bethesda, Maryland, Christina Liu, PhD, Program Director for the NCI Nanodelivery Systems and Devices Branch, and Jeff Clogston, PhD, Principal Scientist at the NCI Nanotechnology Characterization Laboratory (NCL) and Senior Scientist, Pavan Adisheshaiah, PhD, also from the NCL. Each year the NCI Alliance for Nanotechnology in Cancer visits the Center to receive updates on scientific advances within the CMMN projects and cores, and to provide members of the CMMN with updates from the Office of Cancer Nanotechnology Research.

With a mission to improve the lives of cancer patients by enabling the scientific transition from basic research to advance clinical studies of cancer diagnostics and therapeutics, five areas of interest for the Alliance moving forward into 2019 include: 1) Nanoparticles for elucidating cancer biology; 2) Strategies to enhance therapeutic effect



From left, back: Samuel Achilefu, Timothy Eberlein, Piotr Grodzinski (NCI), Pavan Adisheshaiah (NCL), John DiPersio, Kareem Azab. Front: Christina Liu (NCI), Jeff Clogston (NCL), Monica Shokeen, Kooresh

of nanomedicine; 3) Companion diagnostics and tools for personalized treatment; 4) Nanotechnology-enabled immunotherapies; and 5) Nanotechnology resources and translation. These topics will be discussed at the October 2018 PI meeting for all Centers of Cancer Nanotechnology Excellence (CCNEs) to be held in Rockville, Maryland. More information about the Alliance can be found on the website: <https://www.cancer.gov/sites/nano>.

LOCAL EVENTS

4th Annual Preclinical Imaging Consortium Meeting
MAY 6-8, 2018, SAINT LOUIS, MISSOURI



Hosted by the Mallinckrodt Institute of Radiology at Washington University School of Medicine (WUSM) in St. Louis, what started as the premier Midwest Preclinical Imaging Meeting (MPIC), has reached the national scale. This May meeting brought together over 150 preclinical imaging facility directors, managers, and users, from across the nation who are experts in the major imaging modalities. The MPIC partnered with the World Molecular Imaging Society and the managers of the Molecular Imaging Laboratories Interest Group to plan and execute this meeting in St. Louis at WUSM. **Dr. Kooresh Shoghi**, project leader for CMMN Core 1, lead this effort in St. Louis.



Preclinical Imaging Consortium Tour 2018

TRAINEE UPDATES

Dr. Cinzia Federico (below) finished her post-doctoral training in the Azab Lab, and has accepted a position as lab manager at a Clinical Research Development and Phase I Unit, in the CREA Laboratory, Department of Hematology, ASST Spedali Civili, Brescia, Italy. Dr. Federico worked closely with Dr. Azab on nano-drug delivery systems for the treatment of multiple myeloma using miRNA. Her research focused on the development of localized drug delivery systems for the treatment and imaging of solid tumors, as well as nano-sized drug delivery systems for the treatment and imaging of solid tumors and hematologic malignancies.



Dr. Pilar de la Puente (right) finished her post-doctoral training in the Azab Lab, and accepted an academic position as assistant professor with a joint appointment in cancer biology, immunology and biomedical engineering, at the University of South Dakota, where she will lead her own lab.



De la Puente was an integral partner in Dr. Azab's work on CMMN-related projects. In Dr. Azab's lab she investigated localized drug delivery systems for hematological malignancies including multiple myeloma, lymphoma and breast cancer, as well as development of tissue-engineered, patient-derived cancer pre-clinical models.

INVITED TALKS

Kareem Azab, PhD, was an invited speaker at the Oncology Ground Rounds on April 12, 2018, at Rhode Island Hospital, Warren Alpert Medical School of Brown University in Providence, Rhode Island. His talk title was "Multidisciplinary approaches for the treatment of multiple myeloma and their translation into clinical practice." Dr. Azab was also an invited speaker at the 4th Annual Immunotherapy in Myeloma Scientific Workshop in San Francisco, California, on May 5, 2018.

Samuel Achilefu, PhD, was an invited speaker at the International Symposium on Biomedical Imaging on April 4, in Washington, D.C. His talk title was "Surgical glasses and probes for image-guided cancer surgeries." On April 10, he gave a talk at the SAGES 2018 Annual Meeting and World Congress of Endoscopic Surgery, in Seattle, Washington, titled "Goggles for Cancer." This talk was a part of a "Gadget and Gizmos" sessions highlighting technologies for surgeons. On April 14, Dr. Achilefu gave a plenary talk at the annual American Association for Cancer Research (AACR) meeting in Chicago, IL, titled "Making the invisible visible in real time."

OUTREACH

CMMN Outreach Program Mini Symposium

CMMN sponsored a program on April 23, 2018, which included Washington University Assistant Professor **Hong Chen, PhD** (right),

from Radiation Oncology and Biomedical Engineering, and Keynote Speaker, **Andrew Wang, MD**, Associate Professor and Director of Clinical and

Translational Research, Department of Radiation Oncology at the University of North Carolina, Chapel Hill. Dr. Chen gave a talk titled, "iFEND: Image-guided focused ultra-



sound-enabled nanoparticle delivery to the brain." Dr. Wang's talk was titled, "Nanoparticles, radiation and cancer immunotherapy."

AWARDS & RECOGNITIONS

Global Impact Award Finalists



Suren G. Dutia & Jas K. Grewal

GLOBAL
IMPACT
AWARD

2018 Finalists

The Skandalaris Center for Interdisciplinary Innovation and Entrepreneurship at Washington University announced its finalists for the \$50,000 Global Impact Award. The competition awards early stage ventures that are scalable, sustainable, and quick-to-market, with proof of concept and a broad impact. Ventures must include at least one Washington University student, postdoctoral researcher, or recent alumnus (less than 10 years) holding a significant role on the team. Two of the seven teams that are finalists are led by CMMN members. **Kareem Azab, PhD, Pilar de la Puente, PhD**, Feda Azab, BPharm, and Amanda Jesk, BS, submitted their company, "Cellatrix." Cellatrix provides a 3D tissue-engineered cell culture system that accurately recreates the cancer microenvironment for use in biological research, drug discovery, and personalized medicine. **Pratim Biswas, PhD, and Ramesh Raliya, PhD**, submitted their company, "Birano." BIRANO develops precision fertilizers using aerosol technology which are more effective than existing known fertilizers in the market. It enhances nutrient uptake, increases crop yield, and nutritional quality. The technology is not only economically viable and easy to adopt but also address environmental sustainability challenges.

Washington University Carl and Gerty Cori Faculty Achievement Award

Congratulations to **Dr. Samuel Achilefu** (above, right) on receiving the Carl and Gerty Cori Faculty Achievement award

in April of 2018. The Cori Award is given to a distinguished member of the faculty from the School of Medicine in



recognition of outstanding achievement in research and scholarship, recognized prominence within the community of scholars, service and dedication for

the betterment of Washington University, and respected accomplishments in teaching.

PEDAL THE CAUSE

It's time to ride!



Join Team Captain, **Samuel Achilefu, PhD**, of the Cancer Lasers Pedal the Cause Team. You can contribute in multiple ways: choose varied distance rides, participate as a spinner, or for as little as \$25, join the team as a virtual rider. Friends and family are welcome. [Click here to register](#). Be sure to choose the "Cancer Lasers" team. Pedal the Cause supports the Center for Multiple Myeloma Nanotherapy. We currently have 14 team members: 11 riders, 1 spinner and 2 virtual riders.

CMMN PUBLICATIONS

Dolezal JM, Dash AP, **Prochownik EV**. Diagnostic and prognostic implications of ribosomal protein transcript expression patterns in human cancers. BMC cancer. 2018 March 12;18(1):275. PubMed PMID: 29530001; PubMed Central PMCID:PMC5848553.

Hathi D, DeLassus E, **Achilefu S**, McConathy J, **Shokeen M**. Imaging melphalan therapy response in preclinical extramedullary myeloma with ^{18}F -FDOPA and ^{18}F -FDG PET. *J Nucl Med*. 2018 April 26. PubMed PMID: 29700126.

Kumar SK, Dispenzieri A, Fraser R, Mingwei F, Akpek G, Cornell R, Kharfan-Dabaja M, Freytes C, Hashmi S, Hildebrandt G, Holmberg L, Kyle R, Lazarus H, Lee C, **Vij R**, et al. Early relapse after autologous hematopoietic cell transplantation remains a poor prognostic factor in multiple myeloma but outcomes have improved over time. *Leukemia*. 2018 Apr;32(4):986-995. doi: 10.1038/leu.2017.331. Epub 2017 Nov 16.

Karakocak BB, Liang J, **Biswas P**, Ravi N. Hyaluronate coating enhances the delivery and biocompatibility of gold nanoparticles. *Carbohydr Polym*. 2018 April 15;186:243-251. PubMed PMID: 29455984; PubMed Central PMCID: PMC5821145.

Miller J, Wang ST, Orukari I, **Prior J**, Sudlow G, Su X, Liang K, Tang R, Hillman EMC, **Weilbaecher KN**, **Culver JP**, **Berezin MY**, **Achilefu S**. Perfusion-based fluorescence imaging method delineates diverse organs and identifies multifocal tumors using generic near-infrared molecular probes. *J Biophotonics*. 2018 April;11(4):e201700232. PubMed PMID: 29206348; PubMed Central PMCID: PMC5903995.

White BS, Lanc I, **O'Neal J**, Gupta H, Fulton RS, Schmidt H, Fronick C, Belter EA Jr, Fiala M, King J, Ahmann GJ, DeRome M, Mardis ER, **Vij R**, **DiPersio**, FH, Levy J, Auclair D, Tomasson MH. 1. A multiple myeloma-specific capture sequencing platform discovers novel translocations and frequent, risk-associated point mutations in IGLL5. *Blood Cancer J*. 2018 Mar 21;8(3):35. doi: 10.1038/s41408-018-0062-y. PMCID: PMC5862875.

Zheleznyak A, **Shokeen M**, **Achilefu S**. Nanotherapeutics for multiple myeloma. *Wiley interdisciplinary reviews. Nanomedicine and nanobiotechnology*. 2018 April 26. e1526. PubMed PMID: 29701006.

