NIH NATIONAL CANCER INSTITUTE

pipeline news

November 2017

DCTD Division of Cancer Treatment and Diagnosis

DCTD Staff Highlight: Dana Heckman

Dana Heckman, former Deputy ARC Director, Division of Cancer Treatment and Diagnosis, NCI, NIH

Dana Heckman arrived at NIH in 1991 as an Administrative Officer (AO) at the Frederick Cancer Research and Development Center (now NCI at Frederick), and after 26 years of service, retired from the federal government in September 2017. Dana provides an account of her time at NCI and shares a unique historical perspective on DCTD, before it became the DCTD that we know today.

What's your background?

I have an English degree and taught high school English; ironically, I always said that my least favorite subject was science! I learned about government service during summer jobs at Ft. Ritchie, MD while I was in college. After college, I was picked for a writer/editor internship in the Department of the Navy. I started working in Norfolk, VA in 1981, followed by time in Crystal City, VA and Bath, ME. After these jobs, I was hired at Ft. Ritchie as a program analyst, and that's how I returned to Maryland in 1987. I saw a vacancy announcement for an AO job in Frederick, and I arrived at NCI in 1991.

What did your work involve when you first came to NCI?

In June 1991, I joined NCI as an AO in the Biological Response Modifiers Program (BRMP). The Program consisted of intramural labs that are now in the Center for Cancer Research (CCR), the extramural Biological Resources Branch (BRB), and a clinical program that treated cancer patients in Frederick, in the building which is now Frederick Memorial Hospital's oncology center.

DCTD was called the Division of Cancer Treatment (DCT) back then and consisted of five programs, headed by Dr. Bruce Chabner. The Biopharmaceutical Development Program (BDP) was just being developed under BRMP to invest in biologics development, as it was difficult to find companies capable of producing pharmaceutical-grade biologic materials. I became

next page ...

In this issue

Historic view of BRMP, one of the Division of Cancer Treatment's five programs in 1991

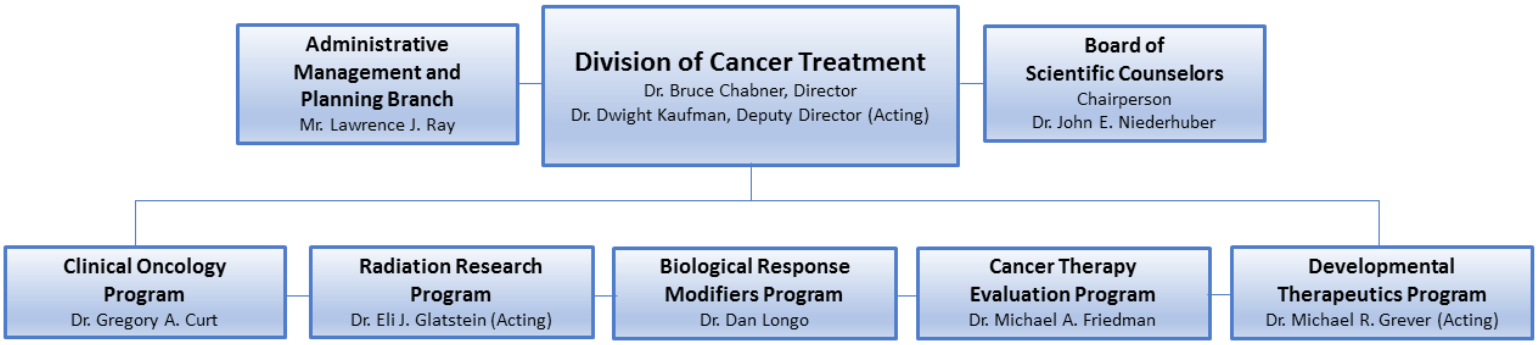
an AO of the Developmental Therapeutics Program (DTP) 1.5 years later and was responsible for all of DTP located in Frederick (two branches and two labs). I then became the DTP Team Lead AO responsible for the DTP AO group, splitting my time between the Frederick and Rockville offices.

How has NCI changed over the years?

I witnessed the explosion in technology that led to increased productivity and work flexibility. When I joined NCI in 1991, we had no email, wrote and mailed paper memos, and fax machines were essential! Computers were used but only for certain systems, such as travel. There was no telework or alternative work schedules. During my time at NCI, the biggest change was the reorganization of NCI into predominantly intramural and extramural programs. DCT became the translational arm of NCI, but maintained its hybrid intramural/extramural research programs – and it does to this day.

How has DCTD's structure changed during your time at NCI?

There have been several iterations of "DCTD" over the years. In 1991, the title was the Division of Cancer Treatment, followed by the Division of Cancer Treatment, Diagnosis, and Centers in 1995, and then it became DCTD in 1997. In 1991, we had intramural labs in DTP and BRMP and a division clinic in Frederick. The Cancer Therapy Evaluation Program (CTEP) contained the Biometric Research Branch, led by Dr. Richard Simon, the Radiation Research Program included the Cancer Imaging Program, and the Clinical Oncology Program was the clinical arm of the division. Since then, the division added the Office of Cancer Complementary



A snapshot of the programs of the Division of Cancer Treatment in 1991

next page ...

and Alternative Medicine, the Translational Research Program, and the Cancer Diagnosis Program.

What initiatives and programs did you see evolve?

In 1995, when NCI's structure separated into intramural and extramural divisions, DTP had contract resources, such as toxicology/pharmacology and chemical synthesis, to do the translational work required to move agents from the lab to the clinic. The merging of the Biological Resources Branch (BRB) into DTP, added BDP's vaccine, antibody, and biologics development capabilities. DTP identified its priorities, which led to the Rapid Access to Intervention Development (RAID) program - now DCTD's NExT Program.

During those early years, Dr. Melinda Hollingshead's vision of Hollow Fiber technology for *in vivo* studies became a routine process in DTP. The NCI-60 Human Tumor Cell Lines Screen, developed by then DTP Branch Chief Dr. Kenneth Paull, was viewed as a great resource for the scientific community, and the Natural Products Repository and collection contracts expanded to support the extramural community and NCI's intramural program. Now, research focuses on molecular targets and targeted therapies as key factors in drug development, and we rely heavily on outside investigators to submit natural products.

What did you accomplish in the role of DCTD's Deputy Administrative Resource Center (ARC) Director?

I became DCTD's Deputy ARC Director in 2004. My accomplishments resulted from a team approach involving many AO collaborators. My colleagues say that one of my major accomplishments was managing DCTD's move from Executive Boulevard to Shady Grove. I want to thank those DCTD-ARC staff who were critical to the success of the project, because they did the majority of the work – I was honored to lead them in the effort: Danielle Fenwick, Chiquita Savoy, David Vargas, Becky Wilkins, and the late Annie Doane. I've also had the privilege of mentoring many excellent AOs, some who remain in DCTD, and others who have moved elsewhere in NCI and NIH.

Now that you're retired, you're still here in DCTD! What are your current projects?

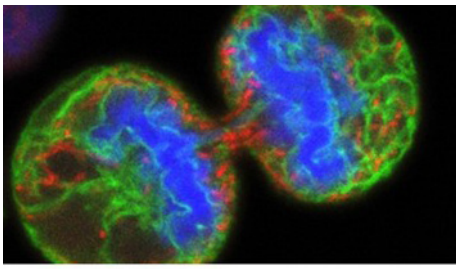
Although I just retired, now I work as a part-time contractor for CTEP. I assist CTEP staff in coordinating a cohesive program of standard operating procedures (SOPs). I'm learning more about what CTEP does, and the external criteria they meet to run this huge clinical enterprise. I have been the mentor for many years, and now I'm the trainee - taking classes, learning about FDA requirements, and the basics. While I get educated, I will work with CTEP staff and outside experts, but I'll also bring my organizational skills to the table. I am excited to move into this next phase of my "DCTD Life" while I enjoy some retirement time. My favorite memories of DCT-DCTD involve the great people I have known; thankfully, I'm still collaborating with them.

Spotlight:

DCTD's Cancer Imaging Program Celebrates 20th Anniversary

October 2017 marked the 20th anniversary of DCTD's Cancer Imaging Program (CIP). For two decades, CIP has strived to advance the understanding of cancer through imaging. CIP works to improve diagnosis and treatment options for patients in two key ways:

- Supporting basic and applied research in cancer imaging
- Promoting imaging during clinical trials



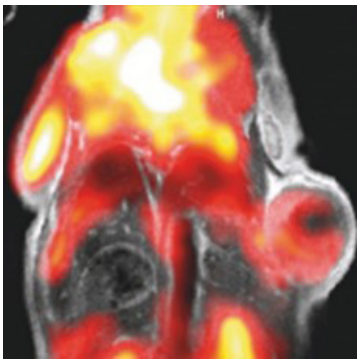
Notable accomplishments over the past 20 years

- Established the following:
  - **American College of Radiology Network (ACRIN)** - Now merged with the Eastern Cooperative Oncology Group (ECOG) to form ECOG-ACRIN, this group designs research focusing on biomarkers for participants who have or are at risk of developing cancer.
  - **Network for Translational Research (NTR)** - Develops, optimizes, and validates imaging technology for use in clinical trials and eventually clinical practice.
  - **Quantitative Imaging Network (QIN)** - Supports development of imaging methods to measure response to cancer therapies.
  - **Image Guided Drug Delivery in Cancer (IGDD)** - Supports investigators that assess imaging methods used in optimizing local delivery of therapeutic drugs to target tissues.
  - **Early Phase Clinical Trials in Imaging and Image Guided Interventions** - Supports investigators conducting preliminary evaluation of the safety and effectiveness of imaging agents, as well as assessments of other image-guided procedures.
- Supported key under-funded research:
  - **Small Animal Imaging Resource Programs (SAIRPs):** Observe physiological and pathological processes of cancer tissues in an intact, living system through use of small animal models.
  - **In vivo Cellular and Molecular Imaging Centers (ICMICs):** Study cancer non-invasively and gain a greater understanding of new cancer growths in humans through imaging.
- Administers The Cancer Imaging Archive (TCIA)
  - A freely accessible catalog of cancer-specific medical images (positron emission tomography (PET), computed tomography (CT), and magnetic resonance imaging (MRI)) for the imaging research community and the public to use as test material for technology development, teaching tools for students, and other purposes.

In the Next Decade

CIP will continue to support the application of imaging to cancer research, thereby creating innovative ways to:

- improve diagnosis
- stage disease and monitor treatment
- establish imaging as a crucial component to the development of new therapies



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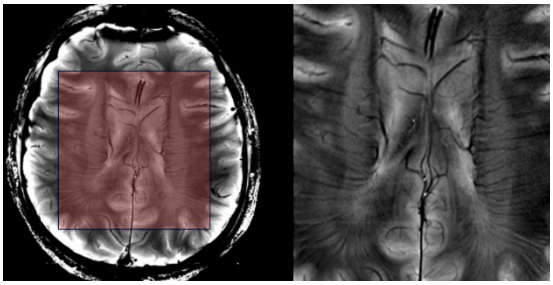
CIP looks forward to future medical imaging challenges as opportunities for research innovation and supporting the focus of DCTD, which is to develop diagnostics and therapies for cancer patients.



News about DCTD Programs and Activities

Program Updates

- Twenty-seven agents are now available through the NCI Formulary. The NCI Formulary is a public-private partnership between NCI and pharmaceutical and biotechnology companies that provides Cancer Center investigators with rapid access to agents or combinations of agents for clinical or preclinical research. The NCI Formulary was launched on January 11, 2017 (NCI press release) with six participating companies (Bristol-Myers Squibb, Eli Lilly and Company, Genentech, Kyowa Hakko Kirin Co, Ltd., Loxo Oncology, and Xcovery Holding Company LLC) offering 15 targeted agents. Since that time, AstraZeneca, Amgen, and Syntrix Biosystems, Inc. have agreed to provide agents to the Formulary. Review the list of available agents.

- In September 2017, DCTD funded Cancer Moonshot grants in the following five areas of precision medicine oncology:
  - Canine immunotherapy trials
  - Pancreatic ductal adenocarcinoma microenvironment
  - Immunoprofiling and biomarkers
  - Treatment resistance
  - Patient-derived xenograft models

  View details on these Funding Opportunity Announcements and the funded grants and NIH's press release on the Partnership for Accelerating Cancer Therapies (PACT), which involves the recently funded Cancer Immune Monitoring and Analysis Centers and the Cancer Immunologic Data Commons.

- DCTD's Translational Research Program announced its fiscal year 2017 SPORE grantees. The 2017 grantees include four new SPORE grantees and three grant renewals.

- The Office of Cancer Complementary and Alternative Medicine has released a Request for Information: Information Resources on Lifestyle and Behavioral Factors Contributing to the Effectiveness of Cancer Therapies

Publications and Outreach

Peer-reviewed Publications

Gore L, Ivy SP, Balis FM, Rubin E, Thornton K, Donoghue M, Roberts S, Bruinooge S, Ersek J, Goodman N, Schenkel C, Reaman G. Modernizing clinical trial eligibility: Recommendations of the American Society of Clinical Oncology-Friends of Cancer Research Minimum Age Working Group. *J Clin Oncol*. 2017 Nov 20;35(33):3781-3787. This paper is one of four supporting manuscripts and a joint research statement by ASCO/Friends of Cancer Research on eligibility criteria in the *Journal of Clinical Oncology*.

Jia L, Lin H, Oppenheim J, Howard OMZ, Li J, Fan H, Zhao Z, Farrar W, Zhang Y, Colburn N, Young MR, Li W, Newman D, O'Keefe BR, Beutler J, Liu J, Hao X, Yang X, Ji T, White JD. US National Cancer Institute - China Collaborative Studies on Chinese Medicine. *J Natl Cancer Inst Monogr*. 2017 Nov 1; 2017(52).

Xi D, Bao T, Chen Q, Chen S, Cheng Y-c, Cullen J, Frank DA, Friedberg JW, Kronish I, Lee JE, Levine M, Li P, Li S, Lu W, Mao JJ, O'Keefe S, Rubinstein L, Shah MA, Standish L, Paller CJ, Chu E. State of the Science: Cancer Complementary and Alternative Medicine Therapeutics Research – NCI Strategic Workshop Highlights of Discussion Report. *J Natl Cancer Inst Monogr*. 2017 Nov 1; 2017(52).

Zia FZ, Olaku O, Bao T, Berger A, Deng G, F AY, Garcia MK, Herman PM, Kaptchuk TJ, Ladas EJ, Langevin HM, Lao L, Lu W, Napadow V, Niemtzow RC, Vickers AJ, Wang XS, Witt CM, Mao JJ. The National Cancer Institute's Conference on Acupuncture for Symptom Management in Oncology: State of the Science, Evidence, and Research Gaps. *J Natl Cancer Inst Monogr*. 2017 Nov 1; 2017(52).

Meehan TF, Conte N, Goldstein T, Inghirami G, Murakami MA, Brabetz S, Gu Z, Wiser JA, Dunn P, Begley DA, Krupke DM, Bertotti A, Bruna A, Brush MH, Byrne AT, Caldas C, Christie AL, Clark DA, Dowst H, Dry JR, Doroshow JH, Duchamp O, Evrard YA, Ferretti S, Frese KK, Goodwin NC, Greenawalt D, Haendel MA, Hermans E, Houghton PJ, Jonkers J, Kemper K, Khor TO, Lewis MT, Kent Lloyd KC, Mason J, Medico E, Neuhauser SB, Olson JM, Peeper DS, Rueda OM, Seong JK, Trusolino L, Vinolo E, Wechsler-Reya RJ, Weinstock DM, Welm A, Weroha SJ, Amant F, Pfister SM, Kool M, Parkinson H, Butte AJ, Bult CJ. PDX-MI: Minimal information for patient-derived tumor xenograft models. *Cancer Res*. 2017 Nov 1;77(21)e62-e66. This paper is part of a larger issue in *Cancer Research* on computer resources.

Goetz MP, Suman VJ, Reid JM, Northfelt DW, Mahr MA, Ralya AT, Kuffel M, Buhrow SA, Safgren SL, McGovern RM, Black J, Dockter T, Haddad T, Erlichman C, Adjei AA, Visscher D, Chalmers ZR, Frampton G, Kipp BR, Liu MC, Hawse JR, Doroshow JH, Collins JM, Streicher H, Ames MM, Ingle JN. First-in-human phase I study of the tamoxifen metabolite Z-endoxifen in women with endocrine-refractory metastatic breast cancer. *J Clin Oncol*. 2017 Oct 20;35(30):3391-3400.

Cabanillas ME, de Souza JA, Geyer S, Wirth LJ, Menefee ME, Liu SV, Shah K, Wright J, Shah MH. Cabozantinib as salvage therapy for patients with tyrosine kinase inhibitor-refractory differentiated thyroid cancer: Results of a multicenter phase II international thyroid oncology group trial. *J Clin Oncol*. 2017 Oct 10;35(29):3315-3321.

Salgado R, Moore H, Martens JWM, Lively T, Malik S, McDermott U, Michiels S, Moscow JA, Teipar S, McKee T, Lacombe D, IBCD-Faculty. Societal challenges of precision medicine: Bringing order to chaos. *Eur J Cancer*. 2017 Oct;84:325-334.

Spyridon Bakas, Hamed Akbari, Aristeidis Sotiras, Michel Bilello, Michel Rozycki, Justin S Kirby, John B Freymann, Keyvan Farahani, Christos Davatzikos. Advancing The Cancer Genome Atlas glioma MRI collections with expert segmentation labels and radiomic features. *Sci Data*. 2017 Sep 5;4:170117.

next page ...

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Kim KY, Le QT, Yom SS, Ng RHW, Chan KCA, Bratman SV, Welch, JJ, Divi RL, Petryshyn RA, Conley BA. Clinical utility of Epstein-Barr Virus DNA testing in the treatment of nasopharyngeal carcinoma patients. *Int J Radiat Oncol Biol Phys.* 2017 Aug 1;98(5):996-1001.

Huang EP, Lin FI, Shankar LK. Beyond correlations, sensitivities, and specificities: A roadmap for demonstrating utility of advanced imaging in oncology treatment and clinical trial design. *Acad Radiol.* 2017 Aug; 24(8):1036-1049.

Elhalawani H, Mohamed ASR, White AL, Zafereo J, Wong AJ, Berends JE, AboHashem S, Bowman W, Aymard JM, Kanwar A, Perni S, Rock CD, Cooksey L, Campbell S, Fing Y, Lai SY, Marai EG, Vock D, Canahuate GM, Freymann J, Farahani K, Kalpathy-Cramer J, Fuller CD. Matched computed tomography segmentation and demographic data for oropharyngeal caner radiomics challenges. *Sci Data*. 2017 Jul 4;4:170077.

Cancer Currents Blog Posts

Liquid Biopsy: Using DNA in Blood to Detect, Track, and Treat Cancer; **Miguel Ossandon, MS** and **Brian Sorg, PhD**, Cancer Diagnosis Program; November 8, 2017.

Studies Identify Therapies That May Delay Melanoma Recurrence after Surgery; **Elad Sharon, MD, MPH**, Cancer Therapy Evaluation Program; October 19, 2017.

Extensive Lymph Node Removal Doesn't Improve Survival in Some Women with Early-Stage Breast Cancer; **Larissa Korde, MD,** Cancer Therapy Evaluation Program; October 10, 2017.

Kids First Pediatric Research Program Moves Forward; **Malcolm Smith, MD, PhD,** Cancer Therapy Evaluation Program; September 29, 2017.

FDA Approves Olaparib as Maintenance Therapy for Recurrent Ovarian Cancer; **Elise Kohn, MD,** Cancer Therapy Evaluation Program; September 14, 2017.

Forgoing Conventional Cancer Treatments for Alternative Medicine Increases Risk of Death; **Jeffrey White, MD,** Office of Cancer Complementary and Alternative Medicine; September 12, 2017.

Crizotinib Shows Promise for Childhood Cancers; **Malcolm Smith, MD, PhD**, Cancer Therapy Evaluation Program; September 5, 2017.

Bringing the Investigational Breast Cancer Drug Endoxifen from Bench to Bedside with NCI Support; **Igor Kuzmin, PhD,** Translational Research Program; August 31, 2017. Watch a related video from the Mayo Clinic.

Two New Therapies Approved for Acute Myeloid Leukemia; **Rich Little, MD,** Cancer Therapy Evaluation Program; August 28, 2017.

Interviews, Press, and Social Media

NIH Initiative Aims to Improve Immunotherapy; **James Doroshow, MD**, Cancer Discovery; November 9, 2017.

Cancer Imaging Archive at UAMS Bolstered by $8.3 Million NCI Grant; The Cancer Letter, In Brief; November 3, 2017.

next page ...

On October 25, 2017, **Malcolm Smith, MD, PhD,** Cancer Therapy Evaluation Program, participated in a briefing focused on childhood cancer immunotherapy research, organized by St. Baldrick's Foundation. The event was hosted by Senators Marco Rubio (R-FL) and Michael Bennet (D-CO).

Twitter Chat: Lymphoma Treatment and Trials for Children and Young Adults; **Nita Seibel, MD,** Cancer Therapy Evaluation Program and Nirali Shah, MD, CCR; September 20, 2017.

Unleash the T-cells; Enrolling the Immune System in the Fight against Cancer; **Elad Sharon, MD, MPH,** Cancer Therapy Evaluation Program; The Economist; September 16, 2017.

Children and Cancer: An Atlantic Forum; **Nita Seibel, MD,** Cancer Therapy Evaluation Program; The Atlantic; September 15, 2017

A Fuller Picture: The Transformative Potential of Total-body PET; **Paul Jacobs, PhD,** Cancer Imaging Program; MD News; September 1, 2017.

Reproducibility: Check Your Chemistry; **Joel Morris, PhD,** Developmental Therapeutics Program; Nature; August 23, 2017.

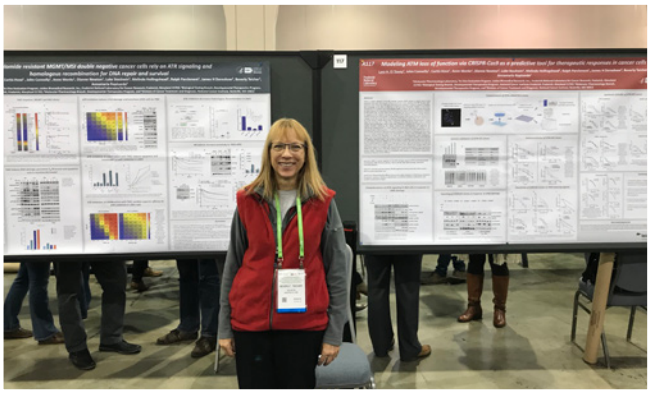
Meeting Participation

Several TCIA (The Cancer Imaging Archive)-sponsored sessions are planned at the Radiological Society of North America's 2017 annual meeting (November 26 – December 1, 2017; Chicago, IL). The sessions include:

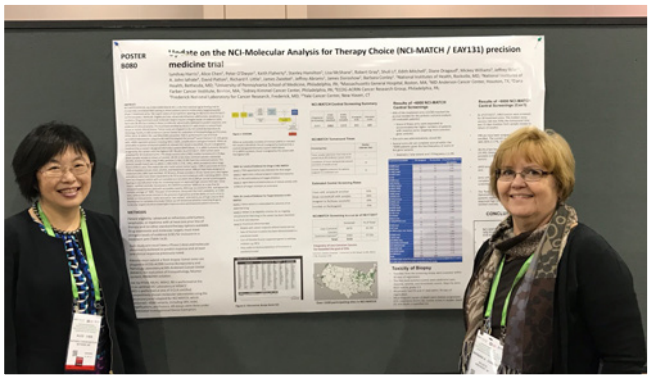
- Crowds Cure Cancer: Help Annotate Data from The Cancer Imaging Archive
- Research Opportunities Using the NIH The Cancer Imaging Archive (TCIA) That Links Cancer Imaging to Clinical Data, Genomics, Proteomics, Quantitative Imaging and Deep Learning
- Deep Learning—An Imaging Roadmap
- Using Publicly Accessible 'Big Data' from the NIH/NCI's Cancer Imaging Archive (TCIA) to Research Quantitative Radiomics, Proteomics, Genetics and Pathology (Hands-on)

DCTD Staff presented at the AACR-NCI-EORTC International Conference on Molecular Targets and Cancer Therapeutics: Discovery, Biology, and Clinical Applications (Philadelphia, PA; October 26-30, 2017). **Alice Chen, MD,** Developmental Therapeutics Clinic, presented updates on NCI-MATCH in the meeting's press program (see AACR Press Release).

Toby Hecht, PhD, James Doroshow, MD, Alice Chen, MD



Beverly Teicher, PhD



Alice Chen, MD, Barbara Conley, MD

next page ...

DCTD's Cancer Therapy Evaluation Program convened its 2017 Early Drug Development Meeting, September 25-26, 2017. The Michaele C. Christian Oncology Drug Development Award and Lectureship to honor a mid-career oncology investigator was given to Dr. Michelle Rudek of Johns Hopkins University.

DCTD's Translational Research Program convened a workshop Translational Research in Head & Neck and Thyroid Cancers, August 29-30, 2017.

Leah Hubbard, PhD, TRP
and Jennifer Grandis, MD, UCSF

New Funding Opportunities

NCTN renewals are open - FOAs are listed on CTEP's website. New awards are expected to be made in March 2019.

DCTD-related cancer health disparities FOAs

TITLE	ANNOUNCEMENT NUMBER	OPENING DATE	EXPIRATION DATE	ACTIVITY CODE
Minority Patient-Derived Xenograft (PDX) Development and Trial Centers (M-PDTCs)	RFA-CA-17-032	December 18, 2017	January 19, 2018	U54
Feasibility and Planning Studies for Development of Specialized Programs of Research Excellence (SPOREs) to Investigate Cancer Health Disparities	RFA-CA-17-033	December 18, 2017	January 19, 2018	P20

next page ...

DCTD-related Cancer Moonshot FOAs

TITLE	ANNOUNCEMENT NUMBER	OPENING DATE	EXPIRATION DATE	ACTIVITY CODE
Pediatric Immunotherapy Discovery and Development Network (PI-DDN)	RFA-CA-17-050	November 19, 2017	December 20, 2017	U54
Pediatric Immunotherapy Discovery and Development Network (PI-DDN)	RFA-CA-17-051	November 19, 2017	December 20, 2017	U01
Mechanism of Cancer Drug Resistance and Sensitivity: Coordinating Center	RFA-CA-17-044	December 5, 2017	January 6, 2018	U24
Immuno-Oncology Translation Network (IOTN): Cancer Immunotherapy Research Projects	RFA-CA-17-045	December 16, 2017	January 17, 2018	U01
Immuno-Oncology Translation Network (IOTN): Cellular Immunotherapy Data Resource (CIDR)	RFA-CA-17-048	December 16, 2017	January 17, 2018	U24
Gene Fusions in Pediatric Sarcomas	PA-16-251	September 15, 2017	May 8, 2019	R01
Gene Fusions in Pediatric Sarcomas	PA-16-252	September 16, 2017	May 8, 2019	R21
Discovery of Small Molecule Immunomodulators for Cancer Therapy	PAR-17-331	September 5, 2017	September 8, 2020	R01