News from the University of Arizona Cancer Center

Our mission is to prevent and to cure cancer.

Summer 2017
Dear Members of the University of Arizona Cancer Center,

I would like to take this opportunity to announce the establishment of a new core facility in the Cancer Center that we hope will enhance your research. The facility is called the Genome Editing Facility (GEF), and this facility creates cell line models using CRISPR/Cas9 technologies.

At the present time, we are offering two standard, core services. With the gene knock-out service, we remove a sequence, such as an exon or a promoter region, by introducing double-strand breaks flanking the sequence to be removed. We do this by transfecting two guide RNAs and Cas9 protein and then we let the cells repair the breaks by non-homologous end joining. We typically get both heterozygous and homozygous deletions through the process.

With the gene knock-in service, we change one to several specified bases in the genome by transfecting one guide RNA, Cas9 protein, and a repair template. Some of the cells repair the break by homologous recombination using the repair template. In the process, we also get mutants that repair by non-homologous end joining, which is an error-prone repair mechanism.

We can provide this service for any cell line that can be cloned. For specialized cells, the GEF will work with the PI’s lab to ensure the culturing methods are appropriate for the cells. In our experience so far, we have not needed to use selectable markers for the knock-out and knock-in technologies. We clone the cells and screen for the DNA changes by standard PCR assays.

The introductory cost of these services is between $2,200 and $2,500. If you check the price commercial outfits charge, you will find this to be a very competitive price.

We plan to introduce new services in the GEF incrementally. The new services will include adding tags, such as fluorescent or inducible degradation tags, to gene products; creating inducible knock-out gene models for studying genes that are essential; using Cas9 as a scaffold protein to deliver other proteins to a site in the genome; and the use of libraries for genetic screening experiments.

At this time, costs do not include (i) whole genome sequencing of selected cell clones, (ii) sequencing deletion breakpoints in knock-outs, and (iii) validation of cell line identification by genotyping. We ask the PI to validate the line by some form of secondary analysis, such as Western blot analysis.

We are also prepared to transfer technology to laboratories that wish to learn the technique. Finally, we are willing to cost-share projects, i.e., we do all the upfront steps and deliver the PI single cells in 96-well plates. The PI takes responsibility for clone management and screening.
The next time you're headed north, keep your eyes peeled for the colossal image of Daniel Persky, MD, which currently greets motorists at Interstate 10 and Sunset Road from its perch high atop a billboard. The signage, which was erected last week, pays tribute to the Leukemia & Lymphoma Society's 2017 honorees -- Woman of the Year Barbara Anderson, Student of the Year Alysana Castaneda, and the University of Arizona Cancer Center's very own Dr. Persky, 2017 Man of the Year.

"It's a great honor," Dr. Persky tells us. "It cements my commitment to help LLS in its missions."

Dr. Persky competed for this recognition during a 10-week fundraising campaign, in which each dollar counted as a vote. The campaign ended on June 17, when the winners were celebrated at a gala event at the Hilton El Conquistador in the foothills of Tucson. Collectively, the contestants running for the various Person of the Year honors raised more than $150,000 for the Leukemia & Lymphoma Society.

Dr. Persky ran for Man of the Year "to give back to a prominent organization which has supported both my patients with copay assistance, and my colleagues with research grants," as well as "to highlight the tremendous clinical team we have at the U of A Cancer Center taking care of hematologic malignancies. We are the people taking care of all adult acute leukemias in Tucson, and all pediatric cancers."

Dr. Persky wears many hats at UACC, where he is the associate director of clinical investigations. He is a prolific principal investigator for the lymphoma clinical research
team, heading numerous clinical trials to find better treatments for lymphoma, chronic lymphocytic leukemia, and other lymphoid malignancies. Dr. Persky also serves as an associate professor of medicine at the University of Arizona College of Medicine in Tucson.

UACC excels at both patient care and medical research. As a physician-scientist, Dr. Persky is especially excited about the Cancer Center's research into epigenetic therapy for both B- and T-cell lymphomas, which he is conducting in collaboration with laboratory colleagues. Additionally, he is involved in research into marginal zone lymphoma, which he describes as "an often-neglected slow-growing B-cell lymphoma." Looking to the future, Dr. Persky tells us, "We are also hoping to increase our focus on delivering better care to our older lymphoma patients."

The Leukemia & Lymphoma Society's Southern Arizona office opened in July 2016, and in its year of existence the chapter has already doubled its fundraising, offering hope to patients and families impacted by leukemia and lymphoma by supporting research and programming in Arizona. Money raised by the Leukemia & Lymphoma Society has a direct local impact -- in the last fiscal year, the organization gave $176,000 in copay assistance to families in Pima, Cochise, and Santa Cruz counties. Here at UACC, the Leukemia & Lymphoma Society is funding $675,000 of research, which is being carried out by George Watts, PhD, and Emmanuel Katsanis, MD.

Jing Liu Joins the UACC Team as Assistant Director of Finance

Jing Liu joined the University of Arizona Cancer Center as the assistant director of finance on May 22, 2017. She is responsible for the Cancer Center's financial operation, accounting, budgeting, and post-award grant management to ensure financial integrity, efficiency, and customer satisfaction.

Jing gained a bachelor's degree in finance from Nankai University of China, and a master of accounting with a 4.0 GPA from the University of Arizona's Eller School of Management. She also obtained a graduate certificate in business administration from Harvard University. Jing is an Arizona state-licensed certified public accountant who achieved the highest score on the CPA exam in Arizona in the fall of 2003. Prior to joining the Cancer Center, Jing worked 13 years for the University of Arizona's Sponsored Project Services and six years for Harvard University’s Office for Sponsored Programs. Her experience includes financial accounting, cost analysis, indirect cost (F&A) rate development, service center rate studies, post-award grants management, financial compliance, and audit management.

Jing joins the Cancer Center with enthusiasm and she looks forward to working with everyone at the Center.

She is located in Room 1950 and can be reached at 520-626-6873 or via email at jingliu@email.arizona.edu.
A Novel Way to Tackle Sun Damage: UA Nurse-Scientist to Teach Massage Therapists about Reducing Skin Cancer Risk

Arizona is home to 10,000 actively licensed massage therapists, each of whom averages 12 clients per week or roughly 7,000 client encounters a year. What if in addition to soothing cramped muscles those massage therapists could be enlisted and trained to help reduce skin cancer risk?

University of Arizona College of Nursing associate professor and a member of the UA Cancer Center, Lois J. Loescher, PhD, RN, FAAN, aims to answer that question thanks to a three-year $750,000 award from Arizona Biomedical Research Commission (ABRC) to train massage therapists, with their unique access to skin, to effectively communicate sun safety, identify and recognize suspicious skin lesions, and provide resources for appropriate health-care follow-up for their clients.

H-H. Sherry Chow Receives 2017 Sydney E. Salmon Award

H-H. Sherry Chow, PhD, is the recipient of the Distinguished Investigator Award, presented at the 15th Annual Sydney E. Salmon Award Lectures. Dr. Chow is Co-Director of the UACC’s Cancer Prevention and Control Program. Her lecture, titled Clinical Development of Cancer Preventive Agents: Lessons Learned and Future Opportunities, was presented to a full audience at the Kiewit Auditorium on May 18, 2017.
REQUEST FOR APPLICATIONS
Basic/Clinical Partnerships to Promote Translational Research Supported by the Cancer Center Support Grant

Purpose
Funding is available from The University of Arizona Cancer Center Support Grant for collaborative translational research pilot projects. Of particular interest are projects focused on the development of translational cancer therapies that may lead to preliminary data with a clinical endpoint or that propose correlative biomarker studies of prospective or of completed targeted cancer therapy clinical trials intended to generate data in support of external grant submission(s). Projects that address the basic science of a clinically relevant problem are also encouraged.

Guidelines/Eligibility
Applications must include partnerships between one basic science faculty member (can include behavioral scientists or epidemiologists) and one clinical sciences faculty member. Both must be members of the University of Arizona Cancer Center. Faculty at any level are eligible to apply. Tenure track and/or research track assistant, associate, or full professor are all eligible. Postdocs and research scientists are not eligible. Faculty who are interested in applying but who are not currently Cancer Center members are encouraged to apply for membership.

Funding
Two projects will be funded through this RFA. Budget requests may not exceed $50,000 in direct costs per year (for 2 years maximum). An initial $50,000 will be awarded, followed by a one-year review to determine if the project is progressing sufficiently to award the second $50,000.

Funding can be used for research supplies, etc. Some restrictions on budgetary items apply. Use of funds for PI salary is not allowed.

Applications will be reviewed based on the following criteria:
Impact (34%): the translational potential for the work.
Scientific merit (33%): at both the basic and clinical science level.
Potential for future funding as large multi-investigator grant (33%).

Deadline for Application Proposals are due on Wednesday, July 5, by 5 p.m. Applications and NIH Biosketch (limit: 5 pages) should be emailed to Deboragh McDonnell (dmcdonnell@uacc.arizona.edu) by the deadline.

For more information, contact Deboragh McDonnell at dmcdonnell@uacc.arizona.edu or 520-626-7033.

For More Information:
RFA
Application form
Allowable budget items
The Genomics Shared Resource (GSR) is co-sponsored by the UA Cancer Center and the Southwest Environmental Health Science Center. The Shared Resource serves members of the funding centers by providing genomics services based on microarray, next-generation sequencing, and polymerase chain reaction (PCR) technology platforms. Applications include transcriptome expression profiling, exome sequencing, re-sequencing panels, epigenetic analysis, and quantitative real-time PCR applications.

The Core serves the research community with priority given first to members of our funding centers, then to other federally funded investigators at the University of Arizona, and then all other research investigators.

The Core provides complete support for genomics applications as follows:

**Services**

- Sample quality control
- Experiment design and analysis
- Sequence analysis
- DNA analysis
- RNA expression
- RNA regulation

**Equipment**

- Agilent Bioanalyzer/Nandrop
- Ion Torrent Sequencers
- Illumina HiSeq, MiSeq and NextSeq sequencers
- ABI Sequencers
- Affymetrix GeneChips
- Agilent Arrays
- Real-Time PCR and RT-PCR
- Sequenom's MassARRAY
The Core is continually updating and expanding its services to keep up with advances in microarray and sequencing application. Please contact George Watts to see if the Genomics Core can help you with your research goals.

**Read more about the Genomics Shared Resource here.**

### Shared Resources to Enhance Research Efforts

The University of Arizona Cancer Center supports eight Shared Resources funded by the Cancer Center Support Grant and two other resources funded by other sources, intended to provide access to technology that enhances the research productivity of the Cancer Center and provides a basis for scientific interaction and consultation, as well as access to services that facilitate the research and strengthen the administrative and organizational cohesion of the center.

### The University of Arizona Cancer Center Shared Resources:

- Analytical Chemistry
- Behavioral Measurement and Interventions
- Bioinformatics
- Biostatistics
- Cancer Imaging
- Experimental Mouse
- Flow Cytometry
- Genomics
- Proteomics
- Tissue Acquisition and Cellular/Molecular Analysis

### National Conversation

- **Science Magazine, "Why it might be a good time to start a career in science":** Could the Baby Boomers' impending retirement open up more jobs and grant opportunities for younger scientists, heralding a new "golden period" for science?
- **New York Times, "Cancer Drug Proves to Be Effective Against Multiple Tumors":** FDA approves the anti-PD-1 monoclonal antibody pembrolizumab, aka Keytruda, for treating tumors with a certain genetic mutation, regardless of location in the body.
• **Science Daily, ”Publicly funded cancer trials save more than 3 million years of life“**: Between 1956 and 2016, Phase III randomized SWOG trials gave cancer patients an extra 3.34 million years of life, at a cost of $125 per life year to taxpayers.

• **U.S. News & World Report, ”As Government-Funded Cancer Research Sags, Is U.S. Losing its Edge?“**: Will funding cuts to the NCI translate to the United States stepping down from its leading role in scientific and medical research?

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**Call for Collaborations**

This section is intended to provide a platform for UACC Members to propose collaborative efforts with each other. Any and all ideas are welcome. Contact **Cody Cassidy** with your proposal to be posted here.

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**Share Your Stories and Ideas**

Please send news items, announcements, calls for collaboration, upcoming events, comments, and anything else that you can think of to **Cody Cassidy**, ccassidy@uacc.arizona.edu.

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**Current Funding Opportunities**
NCI Funding Opportunities

If you are interested in pursuing any of these funding opportunities, please contact Deborah McDonnell at dmcdonnell@uacc.arizona.edu.

Department of Defense DURIP BAA
https://www.grants.gov/web/grants/view-opportunity.html?oppId=292128
Application due date: July 7, 2017

Genomic Community Resources (U24)
(PAR-17-273)
Application due date: July 13, 2017

Tobacco Regulatory Science (R21)
(RFA-OD-17-009)
Application due dates: August 17, 2017; February 13, 2018, July 17, 2018; February 13, 2019

Tobacco Regulatory Science Small Grant Program for New Investigators (R03) (RFA-OD-17-008)
Application due dates: August 17, 2017; February 13, 2018, July 17, 2018; February 13, 2019

Tobacco Regulatory Science (R01)
(RFA-OD-17-007)
Application due dates: August 17, 2017; February 13, 2018, July 17, 2018; February 13, 2019

Limited Competition for NIH-Industry Program: Discovering New Therapeutic Uses for Existing Molecules (UG3/UH3)
(RFA-TR-17-002)
Application due date: September 15, 2017

(R21) Innovative Technologies for Cancer-Relevant Biospecimen Science
(RFA-CA-17-012)
Application due dates: September 26, 2017

(R01) Program to Assess the Rigor and Reproducibility of Exosome-Derived Analytes for Cancer Detection
(PAR-16-276)
Application due dates: October 13, 2017; June 13, 2018; October 15, 2018; June 13, 2019

(R21) Program to Assess the Rigor and Reproducibility of Exosome-Derived Analytes for Cancer Detection
(PAR-16-277)
Application due dates: October 13, 2017; June 13, 2018; October 15, 2018; June 13, 2019

Program to Assess the Rigor and Reproducibility of Exosome-Derived Analytes for Cancer Detection (R01)
(PAR-16-276)
Application due dates: October 13, 2017; June 13, 2018; October 15, 2018; June 13, 2019; LOI 30 days before due date
Program to Assess the Rigor and Reproducibility of Exosome-Derived Analytes for Cancer Detection (R21)  
(PAR-16-277)  
Application due dates: October 13, 2017; June 13, 2018; October 15, 2018; June 13, 2019; LOI 30 days before due date

Oncology Co-Clinical Imaging Research Resources to Encourage Consensus on Quantitative Imaging Methods and Precision Medicine (U24)  
(PAR-16-385)  
Application due date(s): November 17, 2017; June 14, 2018

**PHS 2017-02 Omnibus Solicitation of the NIH, CDC, and FDA for Small Business Innovation Research Grant Applications (Parent SBIR [R43/R44])**  
(PA-17-302)  
Application due date: September 5, 2017; January 5, 2018, April 5, 2018

**PHS 2017-02 Omnibus Solicitation of the NIH for Small Business Technology Transfer Grant Applications (Parent STTR [R41/R42])**  
(PA-17-303)  
Application due date: September 5, 2017; January 5, 2018, April 5, 2018

(U01) Biological Comparison in Patient-Derived Models of Cancer  
(PAR-16-344)  
Application due dates: September 6, 2017; March 7, 2018; September 6, 2018; March 6, 2019

Limited Competition for NIH-Industry Program: Discovering New Therapeutic Uses for Existing Molecules (UG3/UH3)  
(RFA-TR-17-002)  
Application due date: September 15, 2017

(P01) National Cancer Institute Program Project Applications  
(PAR-16-457)  
Application due date (standard): September 25, 2017

(R33) Advanced Development and Validation of Emerging Molecular and Cellular Analysis Technologies for Basic and Clinical Cancer Research  
(RFA-CA-17-011)  
Application due dates: September 26, 2017

Academic-Industrial Partnerships to Translate and Validate in vivo Cancer Imaging Systems (R01)  
Synopsis 1  
(PAR-17-093)  
Application due date: October, 3, 2019

Leveraging Population-based Cancer Registry Data to Study Health Disparities (R01)  
(PA-17-289)  
National Cancer Institute  
Application due date: October 5. 2017; February 5, 2018; June 5, 2017

Reducing Health Disparities among Minority and Underserved Children (R01)  
(PAR-17-118)  
Application due date: October 5, 2017
**Fundamental Mechanisms of Affective and Decisional Processes in Cancer Control (R01)
(PAR-16-380)**
Application due date(s): October 10, 2017; April 11, 2018; October 10, 2018; April 11, 2019, October 11, 2019

**U.S. Tobacco Control Policies to Reduce Health Disparities (R01)
(PAR-17-217)**
Application due date: October 11, 2017; June 13, 2018; October 11, 2018; June 13, 2019; October 11, 2019; June 15, 2020

**U.S. Tobacco Control Policies to Reduce Health Disparities (R21)
(PAR-17-218)**
Application due date: October 11, 2017; June 13, 2018; October 11, 2018; June 13, 2019; October 11, 2019; June 15, 2020

**Administrative Supplements for Research on Dietary Supplements (Admin Supp)
(PA-17-307)**
Application due date: October 15, 2017; January 15, 2018; or April 15, 2018

**Leveraging Population-based Cancer Registry Data to Study Health Disparities (R21)
(PA-17-288)**
Application due date: October 16, 2017, February 16, 2018; June 16, 2018

**Oncology Co-Clinical Imaging Research Resources to Encourage Consensus on Quantitative Imaging Methods and Precision Medicine (U24)
(PAR-16-385)**
Application due date(s): November 17, 2017; June 14, 2018

**Centers of Excellence in Genomic Science (CEGS) (RM1)
(PAR-16-436)**
National Human Genome Research Institute
Application Receipt/Submission Date(s): May 21, 2018; May 20, 2019, by 5:00 PM local time of applicant organization. All types of non-AIDS applications allowed for this funding opportunity announcement are due on these dates. Applicants are encouraged to apply early to allow adequate time to make any corrections to errors found in the application during the submission process by the due date.

**NCI Mentored Patient-Oriented Research Career Development Award to Promote Diversity (K23)
(PAR-16-399)**
No LOI required
Application due date(s): Standard

**NCI Mentored Clinical Scientist Research Career Development Award to Promote Diversity (K08)
(PAR-16-400)**
No LOI required
Application due date(s): Standard

**NCI Mentored Research Scientist Development Award to Promote Diversity (K01)
(PAR-16-401)**
No LOI required
Application due date(s): Standard
Gateway for Cancer Research
https://www.gatewaycr.org/research/apply-for-a-grant/
Applications accepted on rolling basis

Pancreatic Cancer Action Network - NCI, Frederick National Laboratory for Cancer Research KRAS Travel Scholarship
2017 research funding opportunities
Application due date: rolling

If you are interested in pursuing any of these funding opportunities, please contact Deboragh McDonnell at dmcdonnell@uacc.arizona.edu.

Visit the UACC Website

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