THE DOSSIER

The Digest on CCR Staff Scientists and Staff Clinicians: Information, Employment and Research

June 2015 Issue 20

From the Editor

Welcome to the June issue of The Dossier, a newsletter dedicated to the Staff Scientists and Staff Clinicians (SSSC) of the CCR!

This issue contains important messages from the Director's Office and a special article by William Douglas Figg, Sr., Pharm.D., M.B.A. A summary of the 2015 SS SC Retreat is presented by our Co-Chairs, Anu Puri, Ph.D., and Sergey Tarasov, Ph.D., while a summary of this year's SS Quadrenninal Review is provide by Cynthia Masison, Ph.D. In our SSSC Corner, we feature Smitha Antony, Ph.D., and the published work of Anu Puri, Ph.D., is highlighted in our Author's Corner. In addition, Myung-Hee Sung, Ph.D., and Bao Tran describe their collaborative efforts at the CCR Sequencing Facility.

We hope to continue to provide pertinent information to aid in the success of SSSCs. Please send your contributions, suggestions, and comments to budhua@mail.nih.gov.

Anuradha Budhu, Ph.D. (SS)
Editor-in-Chief
Laboratory of Human Carcinogenesis

In This Issue

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From the Office of the Director

Improving Diversity in the Scientific Workplace

For creative enterprises, such as biomedical research, having input from as wide an array of individuals as possible increases the likelihood of solving the field's most difficult challenges. Unfortunately, as you are all well aware from your roles as Staff Scientists and Staff Clinicians, the biomedical workforce, both intramural and extramural, has traditionally lacked substantial contributions from key groups. To identify ways of including more members of underrepresented groups, the leaderships of NIH and NCI have established a working group and task force, respectively, and are in the process of implementing the groups' recommendations.

After the publication by Ginther *et al.* in *Science*, documenting the disparities in RO1 funding between White and Black applicants during fiscal years 2000-2006, NIH Director Francis Collins, M.D., Ph.D., charged the Advisory Committee to the NIH Director to form a Working Group on Diversity in the Biomedical Research Workforce (WGDBRW). Composed of intramural and extramural researchers, the WGDBRW would develop concrete recommendations for improving the recruitment and retention of underrepresented groups across all stages of biomedical research from graduate training through acquisition of tenure or the equivalent position in a non-academic setting. Following in-person meetings, a review of available literature, and additional analyses, the WGDBRW issued a final report in 2012 of 13 recommendations for improving the "leaky pipeline" from kindergarten through graduate and postgraduate training, enhancing the mentoring of scientists from underrepresented groups, and increasing diversity at NIH. Therefore, Dr. Collins appointed Hannah Valantine, M.D., to the position of Chief Officer for Scientific Workforce Diversity in January 2014 to work with the NIH institutes and centers, the NIH grantee community, and community stakeholders to ensure engagement on this critical issue.

Also in January 2014, NCI established a Diversity Task Force, made up of intramural and extramural researchers and trainees, including myself, Lee Helman, M.D., Jonathan Wiest, Ph.D., Mary Custer, and Ofelia Olivero, Ph.D., who is heading up CCR's efforts to increase workforce diversity, to work with Dr. Valantine in improving the recruitment of underrepresented tenure-track and tenured scientists to NCI. The task force proposes to build a community that embraces diversity by developing a recruiting event for senior-level graduate students to fill NCI postdoctoral positions, providing extra postdoctoral slots to recruit and place additional fellows from diverse backgrounds, developing a transition program for members of the diverse population, and increasing mentoring in the workforce. The task force acknowledges that sustained effort will be necessary to guarantee long-term application of the interventions.

If you are interested in learning more about or participating in the ongoing diversity efforts at NCI, please consider subscribing to the NCI-Diversity Initiatives listserv. By joining you will receive announcements about activities, initiatives, interventions, programs, and positions that would support increasing the diversity in the NCI intramural workforce. Help us make NCI and NIH the kind of inclusive environment we need to continue making important strides in improving human health.

Robert Wiltrout, Ph.D.
Director, Center for Clinical Research

The Quadnrennial Review Corner

Quadrennial Review of Staff Scientists

While a Laboratory's research program is evaluated on a four-year cycle by an external Site Visit Committee and the Board of Scientific Counselors, a Staff Scientist's performance is evaluated on a four-year cycle by the CCR Quadrennial Review Committee. The two reviews do not always coincide. Quadrennial Reviews are required by the NIH and are used by CCR leadership in considering salary adjustments and renewals.

A Quadrennial (Quad) Review package consists of three parts: the recommending memo from the PI, the Staff Scientist's CV, and at least two letters of recommendation from collaborators, who know the Staff Scientist and his/her work. This year a new cover sheet has been added to help the Committee conduct their reviews. The cover sheet asks the PI to list the activities of the Staff Scientist so that the reviewers have a clearer picture of the role the Staff Scientist plays in the laboratory. Performance is assessed in the following categories: **scientific productivity (publications, MTAs, EIRs, patents), collaborations, participation in Special Interest Groups and scientific community activities, presentations (talks, posters), teaching/mentoring, continuing education/training, and awards.** Staff Scientist quad reviews are greatly facilitated when information is clearly conveyed in the recommending memo from the PI, the Staff Scientist's CV, and letters of recommendation. Specific details should be provided about the Staff Scientist's involvement in the lab and the greater scientific community. Some PI's have even provided information on the success of the SS's mentees (publications, posters, educational opportunities) and which University, College, Medical or Graduate School are they attending. It is also helpful to provide a brief description of the Staff Scientist's contributions to each collaboration and resulting publications.

This year 36 Staff Scientists underwent Quad Review and 72% of them received an outstanding in their descriptor. Although the responsibilities of each Staff Scientist were as varied as the individuals, the information provided to the committee for those receiving top ratings all clearly conveyed the significant role and positive impact they had to the Laboratory/ Branch and to CCR, and gave examples of their excellent performance across all categories of evaluation.

NCI Staff Scientists are highly accomplished scientists who play an important role not only in their Laboratory/Branch, but also in the greater NIH community, and extramural and international scientific communities. It cannot be overemphasized that their impact and contributions to their laboratory and NCI should be presented clearly and strongly so they can be easily appreciated by the review committee. Please visit the CCR SSSC Organization website for more information related to the SS Quad Review (https://ccrod.cancer.gov/confluence/display/CCRSSSCArchive/Home).

Cynthia Masison, Ph.D.
Scientific Program Analyst, Office of the Director

The SSSC Corner

Section Editor: Takashi Furukawa, Ph.D. (*SS*)

I first visited NCI in 2000 as a graduate student from India and was fascinated by the research and work culture at the NIH. Upon graduating from the Indian Institute of Science a couple years later, it seemed natural to pursue my research interests on DNA repair, checkpoints and DNA-targeting drugs at the NIH and to be a part of its research community. In May 2002, I joined the lab of Yves Pommier, M.D., Ph.D. as a postdoctoral fellow. He is a leading force on DNA topoisomerase (TOP) biology and biochemistry, and their relevance to cancer.

Working with Yves for the next 5 years was indeed a TOP-notch experience. Our aims have been threefold: discover novel TOP inhibitors, rationalize the use and combination of these inhibitors with other anticancer agents, and understand the molecular determinants of cellular responses to these drugs. We discovered and optimized a novel family of Top1-targeted drugs, the indenoisoquinolines. Two derivatives are in clinical trials at the NIH with histone **γ**-H2AX and Top1 levels being used as pharmacodynamic biomarkers. TOPping this, on the home front there were two additions to our family (Mark & Alicia) .

To broaden my interest in molecular pharmacology, I was very excited to become part of the newest addition to our branch in 2007, James Doroshow, M.D., who specialized in oxidative signaling and molecular therapeutics. Together for the past 8 years, now as a Staff Scientist, we have seen the lab grow both in numbers and productivity. Our laboratory has made noteworthy observations regarding the presence, function, and regulation of members of a recently discovered family of NADPH oxidase (NOX) genes in human malignancies. We are actively engaged in the development of novel small molecule inhibitors of these proteins both as chemical probes and as potential therapeutic agents.

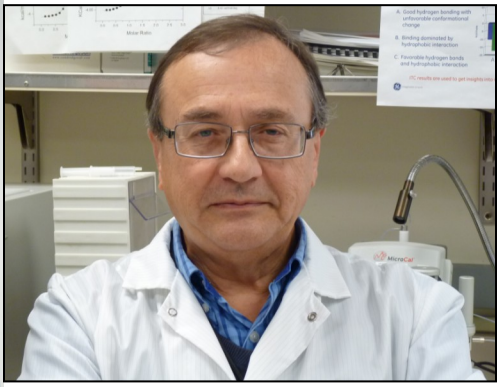
As a Staff Scientist, I was also interested in creating an opportunity to meet, interact and socialize with peers to foster friendships and facilitate scientific collaborations. This led to the inception of the SSSC Networking Committee in 2012. Ever since, the committee and participation in SSSC socials has grown and we are very happy to invite all SSSC to our next coffee/tea break social on Wednesday, June 3, from 3 pm - 4 pm in Bldg. 35 at Starbucks.

"At home jammin' with my children, Mark and Alicia; chaotic, but we call it FAMILY…"

Outside the lab, my greatest joy is my family. My 9- and 10-year olds are constant reminders that NIH, known for turning discovery into health, is also a place of fun and learning; hiding in the dark room, shivering in the cold room, seeing your eyelashes through the microscope, creating dry-ice fogs, and always getting "scientist candy" from the boss. Having the tropical gene, we love the outdoors; from gardening to biking, skiing to swimming, soccer to skating, we're game for it. On calmer days, music and books bond us. I am so thankful for what I have and to be able to work at a job I love. If I were to do it all over again, I wouldn't change a thing.

Smitha Antony, Ph.D. *(SS)*
Oxidative Signaling and Molecular Therapeutics Section, Developmental Therapeutics Branch

The SSSC Retreat



The 11th CCR and DCEG SSSC Annual Retreat was held on May 1, 2015, for the second time at the new NCI building at Shady Grove, that is perfectly suited for the purpose. The theme for this year's Retreat was "**From Cancer Genomics to Therapeutics**." The retreat was well attended with over 130 participants who shared their science, networked, and took part in open discussions at the interactive forum. Given the significance of genomics research and its implications to our understanding of carcinogenesis and mechanisms of tumor resistance to therapies, it was a rare opportunity to hear directly from a cohort of outstanding experts about the cutting-edge research in this field.

The retreat began with a welcome address by the retreat co-chairs and an introduction of newly elected officers of the SSSC organization. The keynote speaker, **Raghu Kalluri**, M.D., Ph.D. (MD Anderson Cancer Center) began the retreat's scientific session with an extraordinary presentation describing the history of exosome research and current highly promising research activities in this field. The highlights of his presentation included how microRNA in the exosomes defines a cancer *vs.* normal cell and how DNA shedded by tumor cells into circulation inside exosomes can be utilized for personalized medicine with a component of diagnostics/biomarker potential.

This led to open the interactive forum "From Cancer Genomics to Therapeutics" moderated by Nadya Tarasova, Ph.D. The elite panel members included top experts in the field of cancer genomics: Dr. Raghu Kalluri, Stephen J. Chanock, M.D., Louis Staudt, M.D., Ph.D., Javed Khan, M.D., Glenn Merlino, Ph.D., and Michael Dean, Ph.D. Some of the provocative and unassuming questions included:

- *Are genome-wide association studies worth the effort?*
- *Does the absence of drugs targeting non-druggable drivers impede the use of genetic analysis in the clinics?*
- *Does tumor heterogeneity preclude the effective use of genetic analysis in the clinic?*
- *How important is "genomic junk" the non-coding genome?*

Panel members presented brief, but succinct summaries on etiology of cancer, oncogene addiction and targeted therapies, pediatric cancers and precision medicine, tumor heterogeneity, the ENCODE project, etc. The forum discussions were concluded by Dr. Merlino who outlined CCR's perspectives on the cancer genomics field. Dr. Merlino also highlighted the significant contributions made by our fellow SSSC toward the mission of CCR. Following the conclusion of the forum, the oral mini-symposium included presentations by authors of best submitted abstracts by our fellow scientists Christina Bergamachi, Ph.D., Jason Stagno, Ph.D., Uma Shankyaram, Ph.D., and Liqiang Xi, M.D.

The afternoon session included 58 poster presentations by SSSCs. The categories included (i) Basic Research (BR), (ii) Translational, Clinical and Epidemiology Research (TCER) and (iii) Technological and Methodological Development (TMD). The poster sessions provided an exciting collegial atmosphere to exchange ideas and learn about research activities of our SSSCs. The posters were judged by experts in their respective fields. Cynthia Pice-Masison, Ph.D. (BR), Tomas Vilimas, Ph.D. (TCER) and Chin-Hsien (Emily) Tai, Ph.D. (TMD) were selected for travel awards for the best poster presentations. The special DCEG reward was given to Hannah Yang, Ph.D.

Following the conclusion of the poster session, updates on various aspects of SSSC Organization activities were provided by the sub-committee chairs and representatives Anuradha Budhu, Ph.D. (DOSSIER), Aleksandra Michalowski, M.Sc., Ph.D. (website), Swati Choksi, Ph.D. (Social Networking Sub-Committee) and David Davies, Ph.D. (Professional Development Sub-Committee). This year the retreat was also attended by the Office of the CCR Director representatives Cynthia Masison,

The SSSC Retreat Con't

Ph.D. (Bethesda Liaison) and Gretchen White, M.S. (Frederick Liaison). Cynthia also provided a comprehensive overview of the quad review process and displaced SSSCs issues.

Our closing remarks this year were by CCR Deputy Director Lawrence Samelson, M.D. Dr. Samelson provided an in-depth view point on the quad review process and took questions from the audience. This led to very interesting discussions and clarifications on some very important issues and general concerns faced by the SSSC. In all of that, the input of our leadership and of our intramural and extramural partners is absolutely invaluable to us and serves in the best way to improve the ability to accomplish our mission.

We thank all the attendees and especially the judges who made the trip to Shady Grove from Bethesda, Frederick, or wherever their workplace may be. We are thankful again this year to Jonathan Wiest, Ph.D., CCR Director for Cancer Training and Education, for his support and to The Center for Cancer Training Staff Assistant LaTasha Beasley. This Retreat would not be possible without their invaluable help. We also thank Doug Nichols (NCI at Frederick Computer and Statistical Services specialist), who, like every year, set up an excellent website for us.

Anu Puri, Ph.D. ***(SS)***
and Sergey Tarasov, Ph.D. (SS)
2015 SSSC Retreat Co-Chairs

The PI Corner

Section Editor: Lakshmi Balagopalan, Ph.D. (*SS*)

The roles of the CCR Staff Scientist and the CCR Staff Clinician has clearly evolved over the years, and today the success of the intramural program is highly dependent on these exceptionally talented, bright and dedicated individuals. I'm fortunate in my position as both a PI with an independent research laboratory within the Genitourinary Malignancies Branch and Head of the Clinical Pharmacology Program (CPP) within the Office of the Clinical Director to have two Staff Scientists working with me (Douglas Price, Ph.D., and Tristan Sissung, Ph.D.).

Within the CPP I also have the opportunity to collaborate closely with many CCR Staff Clinicians who are conducting some very innovative clinical trials asking fundamental questions about new anticancer agents in patients. These individuals are thought leaders in their field, highly respected in the extramural community and devoted physicians. The CPP provides the pharmacokinetic and pharmacogenetics support for most of the trials being conducted within CCR. Dr. Tristan Sissung is the Staff Scientist who leads the pharmacogenetics efforts within the CPP. Dr. Sissung completed his Ph.D. in pharmacogenetics at George Washington University and has quickly gained an international reputation in the field. As precision medicine has moved into the forefront, his knowledge and talents have been tapped throughout the NIH Clinical Center. Dr. Sissung is one of the leaders of an effort to adopt genomic testing into clinical care at the NIH. These efforts will allow some therapeutics to be administered more accurately and safely.

In 2000 I was fortunate to recruit my first Staff Scientist, Dr. Douglas Price, who has been the foundation of my Molecular Pharmacology Section for the past 15 years. Dr. Price completed his Ph.D. in molecular and cell biology at Penn State and did a Howard

The PI Corner Con't

Section Editor: Lakshmi Balagopalan, Ph.D. (*SS*)

Hughes post-doctoral fellowship at Emory. He became PI of his own laboratory at the Carolinas Medical Center in Charlotte. Due to family reasons he moved to the DC area and I was able to convince him to take a Staff Scientist position. We have often talked about the differences in the two positions and in his opinion, having the opportunity to fully devote his time and energy to science, training young scientists and not having the administrative pressure is ideal.

There is no doubt that both of these outstanding scientists (Drs. Price and Sissung) could be extremely successful PIs if they were to choose to pursue it. Nonetheless, I am honored and humbled to have them work with me as Staff Scientists. I learn from them daily and they have clearly elevated the quality and quantity of the science we are able to produce. Their dedication to science and their desire to make important discoveries is having direct impact on patients. At the end of the day, saying you have improved the quality of life of those with cancer is the ultimate goal.

William Douglas Figg, Sr., Pharm.D., M.B.A.
Senior Investigator and Head, Clinical Pharmacology Program, Office of the Clinical Director
Head, Molecular Pharmacology Section
Deputy Branch Chief, Genitourinary Malignancies Branch

The Core Corner

Section Editor: Anne Gegonne, Ph.D. (*SS*)

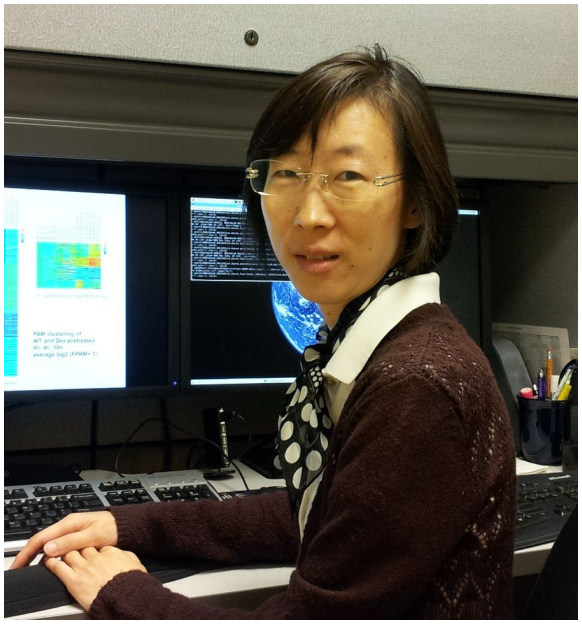
Global Views of Chromatin Regulation using High-Throughput Sequencing

Our group in the Laboratory of Receptor Biology and Gene Expression (Chief: Gordon Hager, Ph.D.) studies the mechanisms of transcription and regulatory factor interactions with chromatin *in vivo*. Since the CCR sequencing facility commenced about six years ago, we have frequently been utilizing their Illumina (previously Solexa)-based sequencing services. Through the years, we have generated a remarkable amount of high-quality datasets and numerous publications based on the information gleaned from these data. For example, a recent research report (Overlapping chromatin-remodeling systems collaborate genome wide at dynamic chromatin transitions. Morris SA, Baek S, Sung MH, John S, Wiench M, Johnson TA, Schiltz RL, Hager GL. Nat Struct Mol Biol. 2014 Jan;21(1):73-81. doi: 10.1038/nsmb.2718. PMID: 24317492) came out of a project which relied heavily on a large set of ChIP-seq and DNase-seq samples processed and sequenced at the core facility. This study revealed a surprising extent of overlap among genomic loci upon which different chromatin remodeling factors exert their effects.

In another study, we are characterizing the chromatin landscape of macrophages, an important immune cell type, during an inflammatory challenge and steroid intervention. As part of an early innate response during microbial infection, macrophages recognize molecular patterns such as lipopolysaccharides, via Toll-like receptors (TLRs). TLR activation initiates a complex signaling network which ultimately modifies the epigenome. We are investigating whether the timing of steroid treatment with respect to the onset of inflammation is important for an anti-inflammatory outcome. For this project, it was critical to process a large number of chromatin samples uniformly to minimize technical variability. The sequencing facility ensured quality processing and sequencing of our samples and delivered us data that are reproducible and reliable.

We have chosen to use the CCR sequencing facility, rather than to obtain a sequencer and set up a necessary operational system in our own laboratory, for several reasons. First, high-throughput sequencing

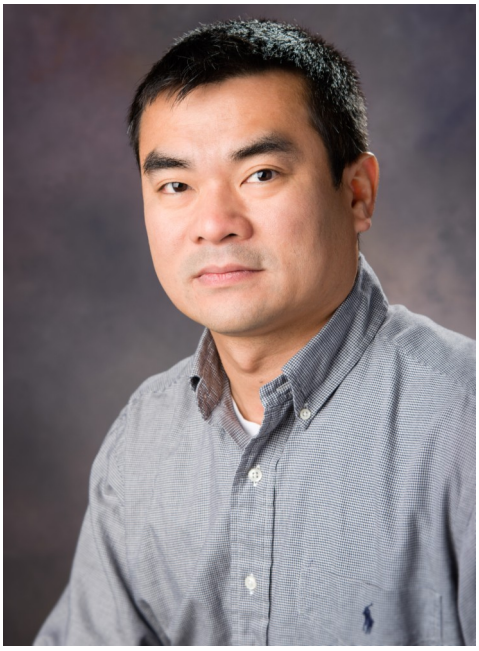
represents a constantly evolving complex technology which is better handled by dedicated technical staff. Collaborating with the facility gives us peace of mind and assurance that our samples are handled with consistency and all the quality checks. In addition, the history of previous sample sequencing activities is well documented and can be reviewed at any time. Such a professional service allows us to focus on the biological problem at hand and achieve higher productivity. Second, since the facility staff receive our samples in batch and process them using standard operating procedures regardless of the sample identity, the data generation process is completely objective, with no special handling of the 'target samples' versus control samples. Third, thanks to the CCR subsidy, the sequencing price is unmatched by other alternatives. We look forward to continued collaboration with the facility and to many more years of productive research!



Myong-Hee Sung, Ph.D. (SS)
Laboratory of Receptor Biology and
Gene Expression

The CCR-Sequencing Facility

The CCR-Sequencing Facility (https://ostr.cancer.gov/resources/fnl-cores/sequencing-facility) is a second- and third-generation high-throughput sequencing core laboratory established by CCR. The Sequencing Facility's (SF's) primary mission is to utilize high-throughput sequencing technologies to enrich cancer research and ensure that the NCI community can remain at the leading edge of next-generation sequencing technology. At the Sequencing Facility, NCI researchers are provided access to the latest technologies, with consultation and Q&A services available throughout the design and execution of sequencing projects. The SF offers sequencing services on both the Illumina and Pacific Biosciences platforms. These two platforms have complementary strengths and can be used separately or in a combined approach to answer many genomics questions.



Bao Tran
Director, Sequencing Facility
Frederick National Laboratory for Cancer Research

The Author's Corner

Section Editor: Cristina Bergamaschi, Ph.D. (*SS*)

Photo Activation of HPPH Encapsulated in "Pocket" Liposomes Triggers Multiple Drug Release and Tumor Cell Killing in Mouse Breast Cancer Xenografts

Sine J, Urban C, Thayer D, Charron H , Valim N, Tata DB, Schiff R, Blumenthal R, Joshi A, and Puri A., Inter. J. Nanomed. 10:125-145 (2015)

The field of cancer nanomedicine is considered a promising area for improved delivery of bioactive molecules including drugs, pharmaceutical agents and nucleic acids. Nanoparticulate systems comprising unique lipid assemblies (primarily liposomes) are currently in use for patient care. However, development of viable methods for on-demand spatial and temporal release of entrapped drugs is likely to have significant impact on the clinical suitability of the nanomedicine. One such approach utilizes *light* as the external stimulus to selectively disrupt and/or destabilize drug-loaded nanoparticles in the tumor area. However, the success of light-guided therapy is dependent on the choice of adequate light sources that can penetrate the tissues (≥ 1 cm depth)[1,2]. This study is an effort towards the development of novel lipid-based nanoparticles for on-demand drug delivery.

In this article, we have developed nano-formulations for *in vivo* phototriggering and dual drug delivery therapy[3]. The design rationale shown in Figure 1 includes a red absorbing photosensitizing agent (drug A) and a polymeric lipid $DC_{8,9}PC$ in the liposomes. Drug A is expected to promote phototriggering of liposomes in a wavelength-specific manner while executing its own therapeutic effect. 2-[1-hexyloxyethyl]-2-devinyl pyropheophorbide-a (HPPH) was chosen as drug A as it possesses a large and sharp absorption peak at 665 nm (red region) utilized for its photodynamic therapy (PDT) effects. HPPH is currently in Phase II clinical trials (brand name Photochlor) for several cancer types including esophageal, non-small lung and head and neck cancer. As shown in Figure 1, we hypothesized that HPPH (red) would preferentially partition into the boundary regions ("pockets") of the lipid bilayer containing DPPC (cyan) and pockets of $DC_{8,9}PC$ (brown). Photoactivation of HPPH (modified molecule in orange) will cause destabilization of the pockets (dark brown circles) resulting in disruption of the liposome bilayer and release of the cargo on site. To monitor the release of contents, a fluorescent dye, calcein, was used as a reporter drug (Drug B, green in Figure 1) as its fluorescence substantially increases upon dilution.

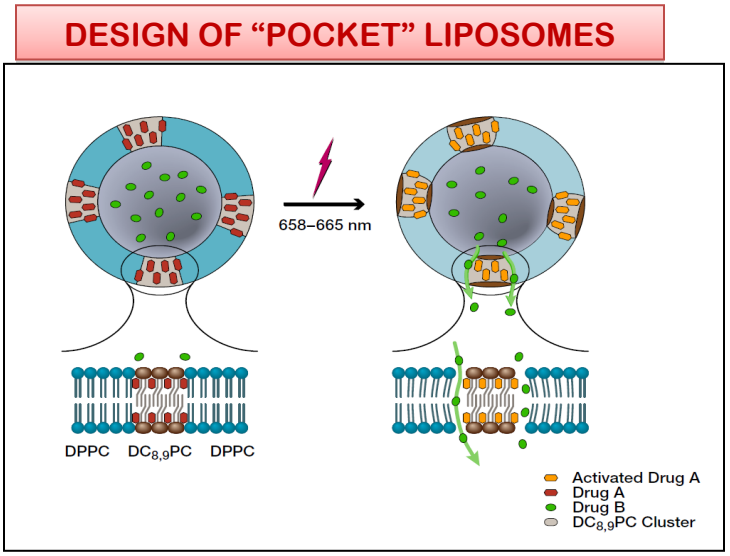


Figure 1. **Design consideration and components of POCKET Liposomes.** Drug A represents HPPH (red), whereas calcein (green) was used as model Drug B. Photoactivated drug upon laser treatment is shown in the right panel (orange). Laser treatment results in activation of HPPH, destabilization of liposomes and release of calcein. The phenomena of Drug B release (right panel) is shown from one of the $DC_{8,9}PC$ clusters for clarity.

Exposure of liposomes with a cw-diode 660 nm laser (90 mW, 0-5 minutes) results in calcein release only when HPPH is incorporated into the liposomes. The concurrent release of the HPPH provides an additional advantage in the treatment of cancer, suggesting this system can be used as a dual drug delivery platform. The article discussed here presents, for the first time, a successful demonstration of *in vivo* phototriggering of light-activable liposomes leading to the release of loaded drug and resulting in tumor regression in mouse breast cancer xenografts. Phototriggering of liposomes is selective to the liposomes containing HPPH for both *in vitro* and *in vivo* studies.

To assess *in vivo* efficacy, we implanted MDA-MB-231-LM2 cells containing the luciferase gene along

the mammary fat pads on the ribcage of mice. For biodistribution experiments, trace amounts of a near infra-red lipid probe DiR (Ex/Em 745/840 nm) were included in the liposomes. Liposomes were injected intravenously and laser treatments (90 mW, 0.9 cm diameter, for an exposure duration ranging from 5-8 minutes) were done 4 hours post injection (only one tumor per mouse was treated, keeping the second flank tumor as control). The increase in calcein fluorescence from laser treated tumors demonstrated the *in vivo* tumor-specific phototriggering of the liposomes and cargo release, validating the use for therapeutic purposes.

The animals were observed up to 15 days post injections, and tumor volume and luciferase expression were measured. A significant decrease in luciferase expression and reduction in tumor volume was observed only in laser-treated animal groups injected with liposomes containing HPPH. Histopathological examination of tumor tissues indicated tumor necrosis resulting from laser treatment of the HPPH-encapsulated liposomes that were taken up into the tumor area (Figure 2). These observations warrant investigation for future clinical applications of the Pocket liposomes. It can be predicted that the treatment of organs such as bladder and prostate will have better outcome by light-triggered drug delivery technology.

The study described here has opened up avenues for further development of clinically suitable formulations for improved delivery of drugs and biologicals to treat cancers. Future plans include adapting this technology to RNAi-based cancer therapy.

Acknowledgements: Histopathology images were taken by Roberta Smith and Dr. Diana Haines (Pathology/Histotechnology Laboratory, Leidos Biomedical Research, Inc., Frederick National Laboratory for Cancer Research), and electron microscopy analysis of the liposomes was done by Dr. Ulrich Baxa (Leidos Biomedical Research, Inc., Frederick National Laboratory for Cancer Research). HPPH was synthesized by Gary Pauly, Chemical Biology Laboratory, CCR.

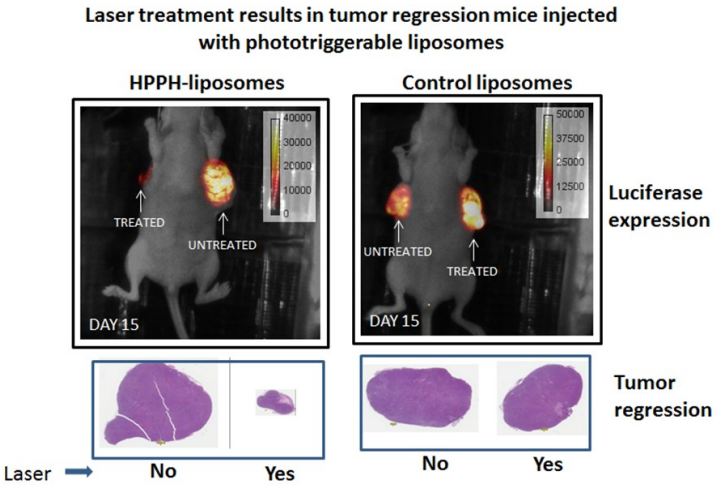


Figure 2. **Effect of laser treatments on luciferase expression and tumor regression in mice injected with liposomes.** Liposomes were injected in the mice and the animals were monitored for tumor regression up to 15 days. Top Panel: loss of luciferase expression as indicated. Bottom Panel: Histopathology analysis of tumors.

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2. Puri, A. Phototriggerable Liposomes: Current Research and Future Perspectives (Invited Review). *Pharmaceutics*. 6: 1-15, 2014.

3. Sine J, Urban C, Thayer D, Charron H , Valim N, Tata DB, Schiff R, Blumenthal R, Joshi A, Puri A. Photo Activation of HPPH Encapsulated in "Pocket" Liposomes Triggers Multiple Drug Release and Tumor Cell Killing in Mouse Breast Cancer

The Author's Corner Con't

Section Editor: Cristina Bergamaschi, Ph.D. (*SS*)

Anu Puri, Ph.D. (Staff Scientist in the RNA Structure and Design Section, Gene Regulation and Chromosome Biology Laboratory, CCR, NCI) devotes her research efforts to develop Intelligent Drug Delivery platforms to improve therapeutic index of anticancer agents and nano-scale diagnostic tools for detection of pathogens and cancer biomarkers. She has developed nanoparticles by utilizing light-sensitive lipids in combination with photodynamic therapy drugs. Her role as a Staff Scientist includes supervising ongoing projects in the lab as well as providing both scientific and technical training to Postdoctoral Fellows and students. She has developed her own line of research and serves as the Principal Investigator on two international grants, and is actively involved in seeking, establishing and maintaining collaborations within other NIH or extramural labs.

Anu Puri, Ph.D. *(SS)*
RNA Structure and Design Section
Gene Regulation and Chromosome Biology Laboratory

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Announcements

Congratulations!

Join us in congratulating this year's travel award winners at our SSSC Retreat!

Cynthia Pice-Masison, Ph.D.

Tomas Vilimas, Ph.D.

Chin-Hsien (Emily) Tai, Ph.D.

Hannah Yang, Ph.D.

Attend!

SSSC Social

Please come join us for an opportunity to meet, interact and socialize with your peers!

Coffee/tea break on June 3, 2015, 3-4pm

Bldg 35, Starbucks

Looking for Editorial Experience?

The Dossier is looking for SSs or SCs to participate as Section Editors. If interested, please contact Anuradha Budhu at budhua@mail.nih.gov

A Call for Content

We need your input! Send your articles or suggestions with subject title "The Dossier" to budhua@mail.nih.gov.

This newsletter is an avenue for you to express your ideas and thoughts on being a Staff Scientist or Staff Clinician at CCR and to make pertinent announcements.

Your contribution is very important to the success of The Dossier. Please send us your commentary, announcements, and suggestions for topics/subject matter and we will do our utmost to include your material in upcoming issues.

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