



Hope Funds for Cancer Research

Press Release

Hope Funds for Cancer Research Announces Hope Fund Fellow's publication in Nature Cell Biology

For Immediate Release
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Newport, RI - December 30, 2016 - Hope Funds announces that fellow Peter Ly is the lead author in an article in Nature Cell Biology 17, published online December 5, 2016 and scheduled for physical publication on January, 2017. The article is entitled "Selective Y centromere inactivation triggers chromosome shattering in micronuclei and repair by non-homologous end joining." After working for four years at the Ludwig Institute for Cancer Research at UC San Diego, in the laboratory of Don Cleveland, Ph.D., Hope Funds for Cancer Research fellow Peter Ly is the lead author of an article observing that Y centromere inactivation triggers chromosome shattering in micronuclei and repair by non-homologous end joining.

Accurate segregation of chromosomes during mitosis is essential for proper cell division. Disruptions in such precisely regulated processes can trigger genomic instability, one of the central hallmarks of cancer. Dr. Ly is interested in decoding the mechanisms by which mitotic errors contribute to genomic instability through the generation of localized, complex chromosomal rearrangements.

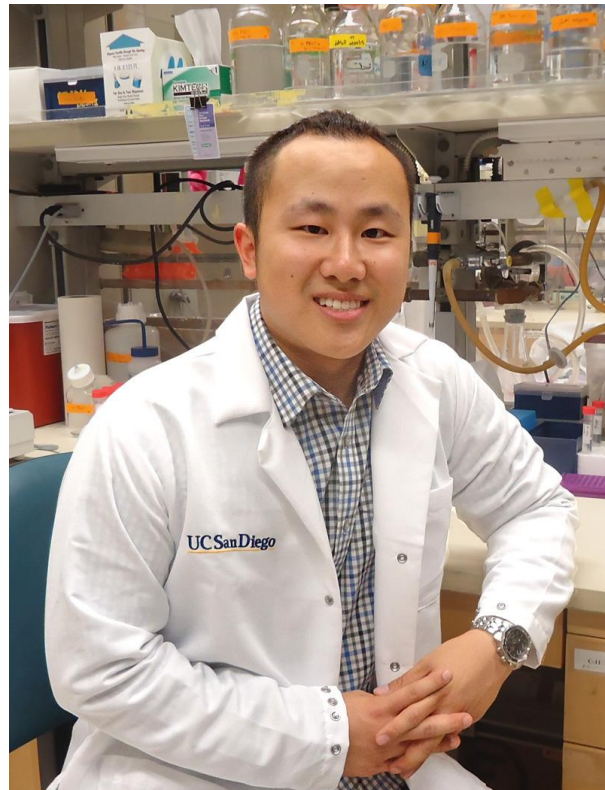
"We are delighted to learn of Dr Ly's continued success" said Leah Rush Cann, Chair of the Executive Committee for the Hope Funds for Cancer Research. "The Hope Funds believes that Dr. Ly's recent research success is just the beginning of a long and fruitful career in science."

When the Hope Funds started our immediate goal was to support important cancer research in the most challenging and understudied cancers. The organization believed that funding outstanding post-doctoral researchers was the most productive and cost effective way to do that and that hypothesis has proven correct. What the Hope Funds discovered along the way was that the Hope Funds fellowships have become a critical bridge for these outstanding scientists to stay in research during a time when research is extremely scarce and help them do not only three years of research but to help facilitate them making a lifetime of discoveries.

About Peter Ly, Ph.D.

Peter Ly, Ph.D., works at the Ludwig Institute for Cancer Research at UC San Diego, in the laboratory of Don Cleveland, Ph.D. He defines mitosis as the highly regulated process by which a cell divides to form two genetically identical daughter cells. During cell division, complex safety mechanisms exist to ensure that replicated chromosomes segregate equally to each daughter cell with a high degree of accuracy. Cancer cells, however, often times make mistakes in properly distributing their chromosomes during mitosis. This is

evident by the large majority of human tumors that harbor an incorrect number of chromosomes (a condition known as aneuploidy). Occasionally, segregation errors during mitosis can also lead to a single chromosome mistakenly left behind from the main chromosomal mass. This chromosome then recruits its own nuclear membrane, forms into a micronucleus, and remains in isolation adjacent to the primary nucleus. Evidence dating back half a century ago remarkably demonstrated that chromosomes in micronuclei replicated their DNA slowly and some eventually shattered into many pieces. These shattered fragments can presumably become stitched together in random order to form a rearranged chromosome. Advancements in DNA sequencing technologies have recently identified such complex rearrangements within the genomes of a diverse range of cancer patients, ranging from solid to hematological malignancies, in a process known as chromoanagenesis (or chromothripsis, Greek for "chromosome shattering"). This startling discovery



Dr. Peter Ly, Ph.D.

challenged existing paradigms of gradual cancer development to an alternative possibility that numerous mutations can be acquired during a single catastrophic event, which is hypothesized to be initiated by a single mitotic error. In order to better understand how chromoanagenesis occurs in cancer patients, Dr. Ly is developing novel tissue culture models using human cells to delineate the mechanisms by which these rearranged chromosomes are produced. Specific types of difficult-to-treat cancers to which project relates: Complex genomic rearrangements affecting one or a handful of chromosome(s) can be detected in a broad range of solid and hematological malignancies, including osteosarcoma, neuroblastoma, and leukemia.

Dr. Ly received his Bachelor of Arts from Baylor University in 2008, and his Ph.D. from University of Texas Southwestern Medical Center in 2012. He is the recipient of the Hope Funds for Cancer Research Fellowship from 2014-2017 and the NCI/UCSD Cancer Cell Biology Postdoctoral Training Grant Award from 2013 to 2014

The results of Dr. Ly's work were recently published in the journal *Nature Cell Biology* in December 2016. [Click here to see the paper.](#)

About the Nature Cell Biology

Nature Cell Biology is a leading peer reviewed journal of science. The journal publishes papers of the highest quality from all areas of cell biology, encouraging those that shed light on the molecular mechanisms responsible for fundamental cell biological processes. The mission of *Nature Cell Biology* is to publish high-impact research that is relevant to a broad range of cell biologists. Manuscripts selected for publication in the journal are intended to contain data of exceptional quality that provides a striking conceptual advance and an in-depth understanding of the processes under study. The journal places a high priority on maintaining an open, active dialogue with the scientific and research communities.

About Hope Funds for Cancer Research

The Hope Funds for Cancer Research was formed in 2006 by a group of concerned individuals who have experience in oncology, intellectual property law, investment banking, philanthropy, sociology, and the arts to establish a funding vehicle that would take a rational scientific, medical, and investment approach to granting money to the most interesting and promising research efforts to address the most difficult-to-treat cancers, including pancreatic, lung, liver, sarcomas, esophageal, brain, gastric, and ovarian cancers, and rare lymphomas, leukemias and

MDS. These cancers are insidiously aggressive illnesses that kill most of their victims within months, even with aggressive chemotherapy. The Trustees of the Hope Funds for Cancer Research believe that funding research that could lead to breakthroughs in these areas and increase life expectancy in these types of cancers is at the core of our mission. The Hope Funds for Cancer Research is a 509 (a)(1) charity under 501(c)(3) of the Internal Revenue Service's code. For additional information about the organization, please visit <http://www.Hope-Funds.org> or call 401-847-3286.

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