



PRESS RELEASE

Cancer Scientists Discover New Type of Immune Cell That Helps Tumors to Grow

Immune cells that encourage blood vessel growth in tumors could be a possible new target for anti-cancer drugs

FOR IMMEDIATE RELEASE:

December 10, 2013 — Albuquerque, NM (UNM Cancer Center) — One way to defeat an opponent is to cut off its supply lines. Tumors are no different. The supply lines for tumors are the blood vessels that ferry oxygen and nutrients to the cells. Restricting the blood vessels that feed tumor cells can shrink the tumor. A cross-institutional international team of scientists recently discovered a new, important step of the process that grows new blood vessels, a discovery that could lead to a new way to combat cancer.

Wadih Arap, MD, PhD, and Renata Pasqualini, PhD, now at the University of New Mexico Cancer Center, are the leaders of the team of scientists that recently discovered a new type of immune cell called “CD13+ myeloid cells.” These cells gather around tumors and release an enzyme called CD13. The team’s previous studies showed that CD13 spurs a natural process called angiogenesis, which grows new blood vessels, and they report identification of the cell that makes the CD13 in their new study recently published in the “Proceedings of the National Academy of Sciences.”

Dr. Arap is the Deputy Director at the UNM Cancer Center and a UNM Professor and Division Chief of Hematology/Oncology, in the Department of Internal Medicine at the UNM School of Medicine. His wife, Dr. Pasqualini, is also a UNM Professor and is the Chief of the Division of Molecular Medicine in the Department of Internal Medicine. They are experts in vascular biology — the study of blood vessels — and in drug development. The discovery of CD13+ myeloid cells as part of the complex process of angiogenesis could make them a possible target in disrupting a cancer tumor’s supply line.

Says Dr. Pasqualini, “the far-reaching biological principle emphasized in this study is that the several types of cells in a given normal or pathological organ are highly interactive. They receive and deliver molecular signals with their neighbors, such that each of them appears to be unable to sustain its usual functions in isolation.”

“These findings could have relevance also for bone metastasis or other cancers featuring angiogenesis (such as multiple myeloma, a blood cell cancer in which there is prominent angiogenesis in the bone marrow itself),” says Angelo Corti, one of the co-authors. “CD13+ bone marrow-derived cells residing in the marrow might contribute strongly to angiogenesis in this context.”

Co-author Richard Sidman adds, "Tumor cells depend for their nutrition and growth on blood that reaches them through vessels composed of several types of cells, but also, as is less commonly recognized, on interactions of cancer and blood vessel cells with special types of non-tumor cells that are formed in the bone marrow. These cells migrate through the blood to populate the cancer tissue, where their direct interplay promotes the cancer cells to grow and even to metastasize. We identify in this paper a previously unknown subclass of these bone marrow-derived cells that represent new plausible targets for anti-cancer therapy."

Paper reference

"CD13-positive bone marrow-derived myeloid cells promote angiogenesis, tumor growth, and metastasis" was published online, ahead of print, on Dec 2nd 2013 in *PNAS*. Authors include: Renata Pasqualini (now at the UNM Cancer Center, formerly at the David H. Koch Center, The University of Texas MD Anderson Cancer Center, Houston); Wadih Arap (now at the UNM Cancer Center, formerly at the David H. Koch Center, The University of Texas MD Anderson Cancer Center, Houston); Eleanora Dondossola (David H. Koch Center, The University of Texas MD Anderson Cancer Center, Houston); Angelo Corti (San Raffaele Scientific Institute, Milan, Italy); and, Richard Sidman (Harvard Medical School and Beth Israel-Deaconess Medical Center, Boston).

About the UNM Cancer Center

The UNM Cancer Center is the Official Cancer Center of New Mexico and the only National Cancer Institute-designated Cancer Center in the state. One of just 68 premier NCI-Designated Cancer Centers nationwide, the UNM Cancer Center is recognized for its scientific excellence, contributions to cancer research, the delivery of high quality, state of the art cancer diagnosis and treatment to all New Mexicans, and its community outreach programs statewide. Annual federal and private funding of over \$71 million supports the UNM Cancer Center's research programs. The UNM Cancer Center treats more than 60 percent of the adults and virtually all of the children in New Mexico affected by cancer, from every county in the state. It is home to New Mexico's largest team of board-certified oncology physicians and research scientists, representing every cancer specialty and hailing from prestigious institutions such as M.D. Anderson Cancer Center, Johns Hopkins University, and the Mayo Clinic. Through its partnership with Memorial Medical Center in Las Cruces, the UNM Cancer Center brings world-class cancer care to the southern part of the state; its collaborative clinical programs in Santa Fe and Farmington serve northern New Mexico and it is developing new collaborative programs in Alamogordo and in Roswell/Carlsbad. The UNM Cancer Center also supports several community outreach programs to make cancer screening, diagnosis and treatment available to every New Mexican. Learn more at www.cancer.unm.edu.

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