

# Using Novel Models to Identify and Target Metastasis



Andrew J. Ewald

Associate Professor of Cell Biology, Oncology, and Biomedical Engineering

## CURRENT RESEARCH

Understanding how cancer cells spread enables the development of novel antimetastatic therapies

More than 90 percent of all cancer deaths are attributable to metastasis, rather than growth of the original tumor. Metastasis—the spread of cancerous cells from a primary tumor to colonize distant organs—is the most clinically significant and least scientifically understood aspect of cancer. Currently, the majority of cancer research focuses on the early steps of tumor formation. Dr. Andrew J. Ewald, Associate Professor of Cell Biology, Oncology, and Biomedical Engineering at Johns Hopkins University, School of Medicine is a pioneer in metastasis research, and has developed innovative microscopy, genetic, and real-time analysis methods to understand metastasis.

Through his leading-edge cancer models and molecular techniques, Dr. Ewald and his team have identified the complex process of how cancer cells in the breast acquire the ability to leave the primary tumor, spread throughout the body, and form new metastatic tumors in vital organs, such as the lungs, brains, and bones. His models show the distinct steps in the metastatic process, enabling him and his team to understand the molecular drivers of each of these cell behaviors. His goal is to first understand how metastasis works, and then identify weaknesses in the cancer cell to target therapeutically. By understanding how disseminated cancer cells arrive in distant organs, he can identify the key factors that determine if those cells have the ability to grow into life-threatening metastasis, and whether they can be kept dormant or eliminated therapeutically.

Dr. Ewald and his team of Ph.D. students, dual M.D./Ph.D. students, postdoctoral fellows, undergraduate researchers, and staff collaborate extensively with geneticists, cell biologists...

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## AFFILIATION



Johns Hopkins University

## EDUCATION

- Ph.D., Biochemistry and Molecular Biophysics, 2003, California Institute of Technology (Caltech)

## AWARDS

- Great Valley High School Alumni Wall of Fame, 2014
- American Cancer Society Research Scholar 2011-2016
- Breast Cancer Research Foundation Grantee 2013-present
- Fellow, Keith R. Porter Endowment: for exceptional contributions to cell biology, 2014-17
- Keynote Speaker, Gordon Research Seminar, Directed Cell Migration, 2015
- and 3 more...

## RESEARCH AREAS

Life Science, Genomics / Congenital, Oncology / Cancer, Regenerative Medicine

## FUNDING REQUEST

Your contributions will help fund Dr. Ewald's continued research to identify high-risk patients for metastasis and develop novel treatment approaches for prevention. \$100K is necessary for equipment, \$150K funds a two-year high-risk/high-reward project in breast cancer metastasis, and \$325K fully funds a graduate student and their experiments for five years. \$1M/year would enable a doubling of the scale of his lab's work on metastasis, enabling them to expand their research to the lung and liver.