Models for Spontaneous Metastasis

To the Editor:

In the Introduction of a recent review entitled “Exploring a New Twist on Tumor Metastasis,” Yang et al. state that, to understand the complex nature of the pathogenesis of cancer metastasis, “it is important to use experimental metastasis models that can recapitulate, at least in outline, the physiologic and pathologic conditions observed in human cancer patients.” The authors then state that experimental models for spontaneous metastasis (using human tumor cells) in murine models rarely spread from the implanted primary tissue, and therefore, investigators have relied on the “introduction of tumor cells directly into the systemic circulation to establish metastases in distant organs” (1). However, adequate models for spontaneous metastases that recapitulate the clinical reality do exist.

To produce spontaneous metastasis, tumor cells with metastatic potential must be implanted into orthotopic organs. Although tumor cells produce large lesions in the subcutis, the growth in an ectopic environment generally fails to produce metastasis (2). Clinically, metastases are often diagnosed months or years after the resection of a primary neoplasm (3). Although dissemination of tumor cells from the primary tumor can occur at an early stage of disease (4), growth into grossly visible distant lesions requires weeks or months in the mouse (2). The implantation of tumor cells into orthotopic tissues often yields large local tumors that can be fatal. The primary neoplasm must therefore be surgically resected to allow sufficient time for development of distant metastases and prevent the mice from succumbing to the local tumor burden. This is certainly the case for murine melanoma implanted into the skin or foot pad followed by surgical excision (5), human colon cancer implanted into the cecum followed by cecectomy (6), human renal cancer implanted into the kidney followed by nephrectomy (7), human pancreatic cancer implanted into the pancreas followed by pancreatectomy (8), etc.

By definition, a model is an approximation of reality. Animal models for spontaneous metastasis were established decades ago. These models are certainly more demanding and complicated but do include all the steps in the pathogenesis of metastasis.

Isaiah J. Fidler
Department of Cancer Biology,
The University of Texas,
M.D. Anderson Cancer Center,
Houston, Texas

References
Models for Spontaneous Metastasis

Isaiah J. Fidler


Updated version
Access the most recent version of this article at:
http://cancerres.aacrjournals.org/content/66/19/9787

Cited articles
This article cites 6 articles, 3 of which you can access for free at:
http://cancerres.aacrjournals.org/content/66/19/9787.full.html#ref-list-1

Citing articles
This article has been cited by 3 HighWire-hosted articles. Access the articles at:
/content/66/19/9787.full.html#related-urls

E-mail alerts
Sign up to receive free email-alerts related to this article or journal.

Reprints and Subscriptions
To order reprints of this article or to subscribe to the journal, contact the AACR Publications Department at pubs@aacr.org.

Permissions
To request permission to re-use all or part of this article, contact the AACR Publications Department at permissions@aacr.org.