Comparative Oncology Background

The COP is a core resource for CCR investigators who are interested in the use of comparative cancer models. In 2003, the National Cancer Institute's Center for Cancer Research (CCR) launched the Comparative Oncology Program (COP) to help researchers better understand the biology of cancer and to improve the assessment of novel treatments for humans by treating pet animals—primarily cats and dogs—with naturally occurring cancer, giving these animals the benefit of cutting-edge research and therapeutics.

Companion animals will be provided the opportunity to participate in Clinical Trials to evaluate new treatment options for cancer. Results from these trials will support the further development of human clinical trials. In many ways, pet animals will be taking the lead in the fight against cancer.

What is Comparative Oncology?

Comparative oncology is the study of naturally developing cancers in animals as models for human disease. Spontaneous cancers in dogs and cats are an underused group of naturally occurring malignancies that share many features with human cancers such as osteosarcoma, prostate and breast cancers, non-Hodgkin's lymphoma, melanoma, soft tissue sarcoma, head and neck carcinoma, and virally induced lymphomas (see Disease Information).

Benefits for Researchers

Characterized validated models. The COP complements translational research efforts through the characterization and use of relevant and naturally occurring cancer models that develop in pet animals.

Clinical Trials are being designed to include pet animals with naturally occurring cancers that give researchers relevant information on toxicity, response, pharmacokinetics, pharmacodynamics, dose, regimen, schedule, biomarkers, and responding histologies.

Benefits for Pets and Pet Owners
The COP designs and implements clinical trials in collaboration with academic veterinary institutions across the United States. Pet animals will receive treatment under the care of board-certified veterinary oncologists who share our goal of alleviating the suffering of companion animals with cancer. (For more information, see What is Comparative Oncology?)

Information gained by the clinical trials conducted through the Comparative Oncology Trials Consortium will be used to benefit both animals and humans with cancer.

**Initial Program Goals**

   - The availability of species-specific reagents has limited opportunities to maximally use comparative cancer models in cancer research.
   - Advances in genetics, molecular biology, and protein chemistry have lowered the hurdles associated with developing and efficiently producing canine-specific reagents.
2. Develop a multcenter, collaborative network with extramural comparative oncology programs. Within this network, design, implement, and manage preclinical trials involving pet animals that will evaluate novel therapeutic strategies for cancer.
3. Increase the awareness of naturally occurring cancer models in the cancer research community.
   - Like human cancers, these initially respond to several therapeutic approaches, but many of these approaches fail at the primary tumor site or at distant sites.
   - Comparative studies show a pattern of predictable progression similar to that seen in human cancers but nearly impossible to achieve in conventional mouse models.

**Models for Human Cancer**

Factors that contribute to relevant models for human cancer from spontaneous animal cancers include the following:

- Humans and pet animals share aspects of tumor biology.
- Humans and pet animals share many environmental risk factors.
- Animal cancer prevalence is sufficient to initiate and complete clinical trials rapidly.
- Multimodality protocols are feasible due to the size of dogs and cats-this includes novel approaches to canine patient imaging.
- Lack of gold standard treatments allows early and humane evaluation of novel therapies.

**COP preclinical trials are underway in collaboration with University Veterinary teaching hospitals**

For more information on the Comparative Oncology Program contact Christina Mazcko

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