CASPIAN's new report, **Microchip-Induced Tumors in Laboratory Rodents and Dogs: A Review of the Literature 1990–2006**, is a definitive review of research showing a causal link between implanted radio-frequency (RFID) microchip transponders and cancer in laboratory rodents and dogs. It was written in part to correct industry misstatements and misinformation circulating about the studies. (See bottom of this page for more.) The report evaluates eleven articles previously published in toxicology and pathology journals. In six of the articles, between 0.8% and 10.2% of laboratory mice and rats developed malignant tumors around or adjacent to the microchips. Two additional articles reported microchip-related cancer in dogs. See Original Research Articles section below for details.

" Electronic microchip technology as a means of animal identification may affect animal moribundity and mortality [i.e., illness and death rates], due to the large size and rapid growth of microchip-induced tumors as well as the occurrence of metastases."

- Elcock, et al., 2001

In almost all cases, the malignant tumors, typically sarcomas, arose at the site of the implants and grew to surround and fully encase the devices. These fast-growing, malignant tumors often led to the death of the afflicted animals. In many cases, the tumors metastasized or spread to other parts of the animals. The implants were unequivocally identified as the cause of the cancers.

The report reviews the relevant research and concludes with a series of recommendations for physicians, policy makers, pet owners, and researchers, including the following:
1) Further microchipping of humans should be immediately discontinued; (2) Implanted patients should be informed in writing of the research findings and offered a procedure for microchip removal, and (3) Policy makers should reverse all animal microchipping mandates.

Background

- CASPIAN's September 9, 2007 Press Release:
  "Microchip Implants Cause Fast-Growing, Malignant Tumors in Lab Animals"
- Original AP Article:
  "Chip Implants Linked to Animal Tumors," by Todd Lewan, Associated Press
- French Bulldog is Catalyst for Investigation of Microchip-Cancer Connection:
  Spychips blog entry by Liz McIntyre explains how the research first came to light

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The Original Research Articles

The tables below provide details on the 11 articles reviewed by the Associated Press and examined in detail in CASPIAN's new report. For each article, a 2-paragraph summary and a 1-3 page detailed overview, along with the original published article, can be accessed by clicking the links beneath each author's name.

TABLE 1: Studies in which microchip-induced cancer was found

Author(s)	Species	# of animals	Length of Implant Exposure	Developed Cancer
Le Calvez et al., 2006 summary overview article	mice	1,260	2 years	4.1%
Vascellari et al., 2006 summary overview article	dog	N/A	7 months (at age 9)	1 dog
Vascellari et al., 2004 summary overview article	dog	N/A	18 months (at age 11)	1 dog

Elcock et al., 2001 summary overview article	rats	1,040	2 years	0.8%
Blanchard et al., 1999 summary overview article	mice	177	6 months	10.2%
Palmer et al., 1998 summary overview article	mice	800	2 years	2.0%
Tillmann et al., 1997 summary overview article	mice	4,279	lifespan	0.8%
Johnson, 1996 summary overview article	mice	2,000	2 years	~1.0%

TABLE 2: Studies in which microchip-induced cancer was not found

Author(s)	Species	# of animals	Length of Implant Exposure	Developed Cancer
Murasugi et al., 2003 summary overview article	dogs	2 2 2 2 1	3 days 3 months 1 year 3 years 6 years	none observed
Ball et al., 1991 summary overview article	rats	10 10 10 10	2 weeks 3 months 6 months 1 year	none observed
Rao & Edmondson, 1990 summary overview article	mice	10 10 74 39	3 months 15 months 2 years < 2 years	none observed

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Recent Industry Misstatements about Implant-Cancer Research

Misstatement:
"The majority of tumors [in the 1997 Tillmann study] were benign fibrosarcomas..." - Destron Fearing, makers of the HomeAgain pet implant Source: "Tissue Reactions to Microchip Implantation in Laboratory Animalsand Pets," page 2, column 2, paragraph 2.

Fact:
There is no such thing as a "benign fibrosarcoma." All of the tumors found in the 1997 Tillmann study were malignant cancers. A fibrosarcoma is a type of sarcoma, a malignant tumor of soft tissue that connects, supports or surrounds other structures and organs of the body. Dr. Timothy Jennings, an expert on implant-induced cancers in humans, said he was "not aware of any nosology incorporating an entity of 'benign fibrosarcoma'" and agreed that "any tumor classified as sarcoma should be viewed as malignant."

Misstatement:
Time Magazine writes: "In an exclusive interview with TIME, [Scott] Silverman [VeriChip CEO] provided [one of the studies] mentioned in the AP article, which showed that less than 1% of 4,279 chipped mice developed tumors "clearly due to the implanted microchips" but were otherwise healthy, and that "no clinical symptoms except the nodule on their backs were shown." - Time Magazine, "Are Microchip Tags Safe?" by Siobhan Morrissey October 18, 2007. Online at: http://www.time.com/time/health/article/0,8599,1672865,00.html

Fact:
The 1997 Tillmann study, to which this passage refers, reported that laboratory mice developed malignant cancers

around the microchips that involved "extensive local invasion of the surrounding tissues" and "zones of necrosis and high mitotic activity." (p. 198) These mice can hardly be referred to as "healthy."

Misstatement:
Time Magazine goes on to say, "The second study, conducted in France in 2006, two years after VeriChip's FDA application was approved, found that while 4% of the 1,260 mice in the study developed tumors, none of them were malignant."

Fact:
The 2006 Le Calvez study, to which this passage refers, found that 4% of mice developed tumors surrounding or adjacent to the microchip implants. All tumors found were classified as sarcomas-- a malignant form of cancer. Not only were the tumors malignant, but the often infiltrated nearby muscle tissue, and several metastasized (spread) to the lungs, liver, stomach, or pancreas. Even more disturbingly, many of the implants migrated from the original implantation site on the backs of the mice to cause cancer at other locations in the body. Nineteen percent of the cancers found involved microchips that had migrated from the back to the limbs, abdomen, or head of the mice.

Misstatement:
Time Magazine also writes: "As for the third study, Silverman says it was conducted in mice specifically bred to produce tumors, and was therefore omitted from the sheaf of studies included in the FDA application."

Fact:
This statement was referring to genetically modified mice used in the 1999 Blanchard study. The p53+/- mouse is genetically modified to have an increased susceptibility to cancer only when exposed to genotoxins, or substances that damage genetic material. It is not known to develop spontaneous tumors in the absence of genotoxins within the first six months of life, when the microchip-induced tumors in this study arose.

The high rate of cancer development in these mice (10.2%) in just six months suggests that implanted microchips may have genotoxic attributes or give rise to the production of genotoxins in the host. The researchers stated that, "the presence of the foreign body [microchip implant] may elicit tissue reactions capable of generating genotoxic byproducts." This raises a serious red flag about the microchip. The data from this study