Excerpt from "Microchip-Induced Tumors in Laboratory Rodents and Dogs: A Review of the Literature 1990–2006"
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Full report and additional information is available at www.antichips.com/cancer

Elcock et al., 2001

Tumors in long-term rat studies associated with microchip animal identification devices. *Experimental and Toxicologic Pathology*. 2001;52:483—491.

Author(s)	# of Animals	Species	Study Length	Developed Cancer
Elcock et al., 2001	1,040	rats	2 years	0.8%

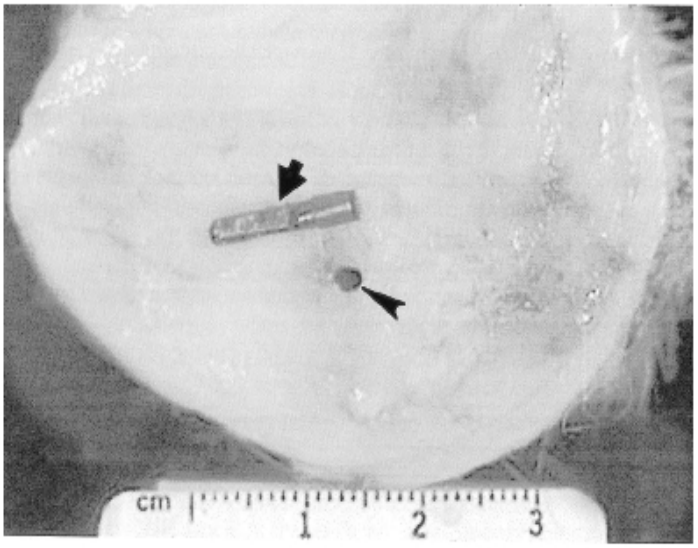
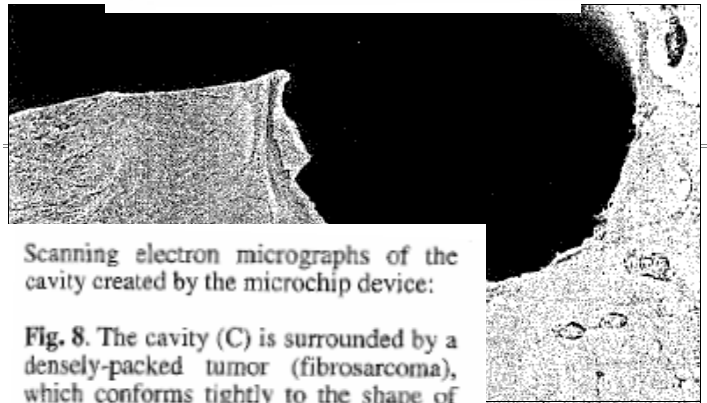


Fig. 2. Gross appearance of a microchip-associated tumor. The microchip (arrow) has been removed from the cavity where it resided in-situ (arrow-head) (female #3102).



Scanning electron micrographs of the cavity created by the microchip device:

Fig. 8. The cavity (C) is surrounded by a densely-packed tumor (fibrosarcoma), which conforms tightly to the shape of the microchip device (female #3102) (×35).

"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." (p. 491)

"Most tumors arising from foreign bodies are malignant . . . and have a rapid growth rate, killing the animal in a matter of weeks." (p. 491)

Summary of Study

1,040 rats were implanted with microchip implants for identification purposes. After two years, just under 1% developed malignant tumors (malignant schwannoma, fibrosarcoma, anaplastic sarcoma, and histiocytic sarcoma) surrounding the implants. The researchers attributed the tumors to the presence of the microchip, and referred to them as "microchip-induced."

Study design and key findings

1,040 rats[1] were implanted with a microchip transponder then divided into two random groups. Half were exposed to an ingested chemical compound at high, medium, and low doses; the other half received no compound. By the end of the second year, eight of the rats that received the compound, or 0.77%,

1 The study originally involved 1,200 rats, but various factors reduced the final count to 1,040.

had developed malignant tumors at the site of the microchip implant.

Though the affected rats had all been dosed with a test substance, the tumor incidence was distributed across dose groups and showed no test-substance-related trends. Stated slightly differently, higher levels of chemical compounds in the animals' feed did not correspond to higher tumor rates.

Further clarifying that the tumors had arisen in response to the microchips, not the test compound, theinvestigators wrote: "the process of differentiating microchip-induced tumors from suspected compound-related tumors was fairly easy in the cases described here, for all contained the embedded microchip device." (p. 491)

Additional findings

- The microchip-induced tumors were identified as malignant schwannoma, fibrosarcoma, anaplastic sarcoma, and histiocytic sarcoma. All diagnoses were confirmed with immunohistochemistry.
- All masses were confined to the area of microchip implantation and contained embedded microchips.
- Some masses were extremely fast-growing, enlarging as much as 1 cm. per week. Several tumors metastasized to regions including the lungs, thymus, heart, lymph nodes, and musculature.
- Five of the eight affected animals died as a direct result of the microchips.
- All tumors occurred in the second year of the study. The average age at tumor onset was 585 days, or approximately one year and seven months. (The average life span of a rat is two to three years.)
- The researchers write that: "Although the resulting tumor rate was observed to be low, the overall health of the affected rats was compromised due to tumor size and the occurrence of metastases, leading to early sacrifice." (p. 484) In other words, the animals' health was so poor due to large, malignant tumors spreading through their bodies that researchers were forced to kill them prematurely.

Study Details

- The study was conducted by Laura E. Elcock of Bayer Corporation in Stilwell, Kansas. Other investigators were Barry Stuart, Bradley Wahle, Herbert Hiss, Kerry Crabb, Donna Millard, Robert Mueller, Thomas Hastings and Stephen Lake. The results were peer-reviewed by an independent pathologist.
- Animals used were Fischer 344 laboratory rats.
- Microchip implants were from BioMedic Data Systems Inc.
