



The Nanobiotix leadership team believes that the nanoXray™ platform has the potential to treat a variety of cancers with an injection of patented nanoparticles that are activated by an X-ray.



"NanoXray is not toxic in animals, so we expect very good patient tolerance and an increase in efficacy that will kill more tumor cells."

Kader Boussaha
Co-Founder and COO
Nanobiotix



"NanoXray offers a new modality of cancer care: a breakthrough allowing destruction of cancer cells by physical, not chemical, mechanisms."

Elsa Borghi, MD
Chief Medical Officer
Nanobiotix



"A new approach to treating cancer is needed. NanoXray is the first product in its class that, by itself, will play the pivotal therapeutic role."

Christophe Douat
Maignon Technologies
Nanobiotix investor



"The company has mastered the critical synthesis issues related to nanoXray—reproducibility, scalability, and stability."

Patrick Langlois
PjL CONSEILS
Nanobiotix Chairman



"NanoXray has demonstrated outstanding safety in preclinical tests, with even a single dose making possible significant tumor growth delay."

Paras N. Prasad, PhD
SUNY
Nanobiotix science adviser

Tiny Science, Big Time Cure

Groundbreaking nanoXray™ cancer therapy may enable the precise 'on/off' and selective extermination of cancer cells practically anywhere in the body:

TREATING CANCER WITH ONE INJECTION AND AN X-RAY?

Nanomedicine is the medical application of nanotechnology. Nanotechnology allows the manufacturing of matter at any scale, ranging from single atoms and molecules to micrometer-sized objects. Its application in biology is potentially very large: from new diagnostic tests *in vitro* or *in vivo* to novel delivery methods that improve the efficacy of pharmaceutical therapy; from reducing drug- and radiation-therapy side effects to making drug administration much more convenient. These applications exploit nanotechnology to improve the quality and sensitivity of a wide variety of different technologies in order to create new approaches for drug delivery and imaging, with novel targeted agents too. In fact, for the most part, nanotechnology in medicine has an *enabling* function in many different areas.

Nanobiotix has explored other fields, enabling the use of nanomaterials as the "active product" with therapeutic purposes. The Company has successfully integrated two worlds, the promising nanotechnology industry and medicine. It is developing **Nbtxr3** (its patented nanoparticle) as a non-drug agent able *on its own* to kill tumor cells. *Nbtxr3* nanoparticles can be injected into cancer patients at a tumor site and taken up by cancer cells—but *not normal cells and tissue*. Then patients would undergo a standard X-ray procedure that would "switch on" the destructive capability of the *nbtxr3* nanoparticles, causing the membranes of cancer cells to rupture. "NanoXray, in short, allows for the *controlled* generation of *physical* reactions in targeted cells triggered by the application of an *external* energy source—a standard X-ray. This may have significant ramifications for cancer therapy in the not-too-distant future," says **Paras N. Prasad, PhD**, executive director of the Institute for Lasers, Photonics and Biophotonics at SUNY (Buffalo) and one of the world's leading authorities on nanotechnology.

Early Data Impress Oncologists

"Preclinical data involving nanoXray are very impressive," says **Dr. Jean Bourhis**, MD, PhD, Head of the Radiation-Oncology Department at Institut Gustave-Roussy, one of the largest cancer centers in Europe. "To date, we have evaluated the pharmacodynamic of nanoXray in mice bearing colon tumors after intravenous injection of nanoXray nanoparticles. Their accumulation takes place principally in the tumor, between 8 and 16 hours after injection. This active overloading in the tumor compared to healthy organs demonstrates the specificity of nanoXray as a cancer treatment. The selective biodistribution and rapid clearance of the nanoparticles suggest that nanoXray could be very suitable for selectively fighting a wide variety of cancer.

"Between 50 and 60 percent of cancer patients are treated with radiotherapy, which is used to treat *localized* solid tumors, including breast, head and neck, bladder, lung and skin cancers," adds Dr. Bourhis. "Radiation therapy, of course, requires a stream of high-energy gammas rays, for example, to kill cancer cells, which, unfortunately, affects *both* cancer and normal cells. Wouldn't it be wonderful if we could selectively treat *only* cancer cells, while avoiding destruction of normal cells?" ■



"Our platform technology, nanoXray, will allow the precise destruction of cancer cells via the controlled application of an outside-the-body energy source—an X-ray,"

says Laurent Levy, PhD,
co-founder and CEO
of Nanobiotix, and
co-inventor of nanoXray™.