

required throughout — and that means, both have a right of veto — naturally, up to the moment when pregnancy in a uterus is achieved," he said.

However, in the view of Ruti's lawyer, Ziv Gruber, Ruti is already a pregnant woman. "Pregnancy at the end of the twentieth century is not the same as it was before, it doesn't have to be in the abdomen," he said. "Just [as] no one has a right to extract a day-old embryo from a womb because the husband has changed his mind, by the same token

you can't destroy Ruti's pregnancy."

Each of Ruti's frozen embryos has about a five percent chance of leading to the birth of a baby, according to Shlomo Mashiach, president of the Israeli Society of Obstetrics and Gynecology and Ruti's physician. The chances are lower than with regular embryos, partly because at least twenty percent of frozen embryos disintegrate when defrosted.

But beyond the medical odds of having a baby from the embryos, a new legal cloud is gathering over Ruti's intentions:

She may need Danny's permission to go ahead with surrogacy arrangements in Israel. The country's new surrogacy law, passed in March 1996, stipulates consent of both designated parents at every stage of this process. Therefore, Ruti faces either another legal battle, or she will have to take her embryos abroad. Thus, in the long run, she may not benefit from the law for which she and her now-estranged husband paved the way.

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Visible Human Project gets greater exposure

In 1966, a microscopic Raquel Welch and her equally diminutive colleagues travelled through the human arterial system in the movie, *Fantastic Voyage*. Three decades later, their fictional journey could become a commonplace reality, thanks to the Visible Human Project. The brainchild of the National Library of Medicine (NLM), the project is a database of three-dimensional (3-D) digitized images of the human body, now available free of charge on the Internet (www.nlm.nih.gov/research/visible/visible_human.html).

A recent National Institutes of Health international conference, convened to discuss the innovative applications and technologies that have been developed using the Visible Human datasets, was attended by several hundred delegates and scores of press, a testimony to the broad public interest that the project has generated. There are now more than 650 dataset licensees in 26 countries, including universities that use them as anatomical teaching aids and computer animators that are designing surgical simulators to train surgeons (akin to the flight simulators used to train pilots).

For example, Richard Robb, of the Mayo Clinic in Rochester, Minnesota, explained to conference attendees that "we are now able to perform patient-specific virtual modeling of a planned prostate surgery, the day before the real operation, by incorporating CT and MRI images from prostate cancer patients into the Visible Man dataset." This rehearsal is an asset to surgeons because prostate gland

removal is notoriously difficult because of the proximity of other vital organs, and carries a reasonable risk of impotence or incontinence.

Muriel Ross's team at the National Aeronautics and Space Administration's Ames Research Center has used the datasets combined with patient-specific CT scans to help Stanford surgeons rehearse for difficult craniofacial reconstructions in newborn babies with congenital abnormalities and in adult

car crash victims. Ross says this approach will be invaluable for training craniofacial surgeons and should prove cost-effective because long training periods will be reduced, and with careful planning, patients should have to endure fewer operations. She adds that "we will need datasets from individuals of all different ages and races to complement the existing Visible Human database."

According to Mark Wax of the State University of New York at Stony Brook, the datasets have helped in developing and refining virtual colonoscopy, which may eventually replace the real invasive procedure in the diagnosis of colon cancer. CT scans of the patient's large intestine are computed into 3-D images that enable gastroenterologists to navigate interactively through the entire length of the colon in search of polyps and other abnormalities. A video provided conferees with the opportunity to "fly" through a gastrointestinal tunnel of iridescent blue complete with sharp turns, convolutions and fissures — an experience more reminiscent of an amusement ride than a medical procedure.

University of Colorado

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As exciting as they are, these are just a few of the applications flowing from the Visible Human Project. "It has opened up the door to virtual medical science," proclaims Steven Phillips, chairman of the NLM Board of Regents and a heart surgeon. "The applications of this new medical tool are limited only by the user's imagination."

ORLA SMITH