



above: VM2M provides virtual microscopy data alongside microarray data. Once a desired sample has been found, the reviewer can inspect the corresponding digital image using a Web-based image viewer, which can zoom and pan across the image. At the same time, the reviewer will be able to access the microarray data corresponding to the same tissue sample.

Bridging the worlds of pathology, genetics and cancer treatment

The story unfolds all too frequently. Parents, worried about their baby's fever and severe abdominal pain, visit the emergency room — then learn their precious child has neuroblastoma, a debilitating pediatric cancer. As little as two years ago, all children with neuroblastoma received the exact same treatment: Chemotherapy, bone marrow transplant, surgery and radiation. But today, treatments can be tailored to the individual, delivering effective, targeted and less toxic treatments. This approach, one component of

Nationwide Children's Hospital developed custom computer software that allows multiple pathologists to simultaneously and securely review, via the Internet, digital, diagnostic-quality microscopy scans of diseased tissue with the corresponding molecular expression data. Virtual microscopy scans are paired with each sample's genetic code, or microarray, created by Children's Hospital Los Angeles, while OSC provided a secure repository and hosted the development platform during the project's first phase.

VM2M will provide two currently unavailable requirements for creating personalized treatment plans: 24/7 access to both the pathology of specific cancer tumors and the genetic information of the tumors.

"personalized medicine," requires quick identification of the specific cancer type and access to genetic information about the tumor.

Virtual Microscopy to Microarray, or VM2M, will make this access a reality. An effort by the Research Institute at Nationwide Children's Hospital, Children's Hospital Los Angeles and the Ohio Supercomputer Center, VM2M will give physicians and cancer researchers a comprehensive repository of tumor tissue samples and their corresponding genetic markers.

To empower quick and accurate access, the Center for Childhood Cancer at The Research Institute at

"OSC's powerful, memory-intensive data management and networking resources enabled storing, organizing and retrieving this information," said David Billiter, director, research informatics core, Nationwide's Center for Childhood Cancer. "We are now poised to explore the next phase of development for VM2M by producing value-added functionality and moving into a production-supported environment."

That means the VM2M project, when fully implemented, will help children and adults fight all cancer with the best treatment option possible — one customized for the individual. ■

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