

## Clarity Pharmaceuticals

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# Developing personalized theranostic solutions

Clarity Pharmaceuticals leverages a powerful imaging technique called positron emission tomography (PET), and the perfect pairing of copper isotopes, to develop next-generation radiopharmaceuticals for diagnosing and treating cancer and other life-threatening diseases. This approach allows development of innovative 'theranostic' products.

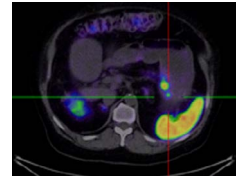
The Sydney-based life sciences company takes advantage of PET imaging, which provides powerful information on the targeting, clearance and distribution of drug candidates. The ability to actually see where these products go inside the body allows scientists to make informed predictions of treatment responses and potential side effects (Fig. 1). This information can then be used to progress targeted therapies, determine which patients are most likely to respond, and narrow in on the optimal dose for individual patients.

"This precision medicine approach is at the forefront of drug development," said Clarity's managing director Matt Harris. "The personalization enhances drug efficacy while minimizing side effects, assisting in making the most optimal treatment decision possible for the patient."

### Perfect pairing

Clarity's personalized-medicine approach is based on the company's proprietary SAR Technology, which allows peptides and antibodies to be radiolabeled and visualized with PET imaging. SAR Technology enables next-generation theranostics through the perfect pairing of radioactive copper isotopes, which have a number of benefits in comparison to other isotopes. Whereas copper-64 has the optimal half-life for diagnostic applications and for tailoring doses to individual patients, the half-life of the copper-67 isotope makes it ideal for repeated delivery of the right amount of localized radiation to a tumor site, while minimizing off-target effects. Importantly, these isotopes can be made centrally under good manufacturing practice (GMP) conditions and distributed to clinical sites as a finished product.

By leveraging SAR Technology, Clarity has developed its first drug, SARTATE, which combines the pairing of copper radionuclides with the targeting of somatostatin receptor type 2 (SSTR2). Because SSTR2 is expressed at high levels in neuroendocrine



tumors, neuroblastoma and other children's cancers, SARTATE has potential for the diagnosis and treatment of a range of cancers. The drug will enter a phase 2 clinical trial for neuroendocrine tumors and is entering phase 1 trials in children with neuroblastoma.

The success of SARTATE will pave the way for the broad use of SAR Technology to improve the diagnosis and treatment of prostate cancer, breast cancer and other types of solid tumors, and theranostics for these indications are currently in preclinical development. "Our personalized-medicine approach promises to increase the safety and effectiveness of drugs and ultimately improve patients' quality of life," Harris said.

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