Personalized medicine triumvirate

By Michael J. Haas, Senior Writer

Three Florida-based institutions are pooling resources in the Personalized Medicine Partnership of Florida, which is tasked with discovering markers that could predict individual responses to drugs for cancer, metabolic diseases and cardiovascular diseases.

PMP Florida combines preclinical research capabilities and technology platforms from the **Sanford-Burnham Medical Research Institute**, **Florida Hospital's** clinical research expertise and patient population, which is one of the largest in the state, and the **H. Lee Moffitt Cancer Center & Research Institute's** established protocols for obtaining and storing patient samples and data.

Sanford-Burnham and Florida Hospital already have a collaboration in personalized medicine. In 2008, they founded **The Translational Research Institute for Metabolism and Diabetes (TRI)** to identify preclinical and clinical markers that reflect subsets of heterogeneous metabolic and cardiovascular diseases.¹ PMP Florida will enable the two institutions to expand their efforts to include cancer and will add Moffitt's unique resources to their existing capabilities in personalized medicine research, Deborah Robison, director of communications at Sanford-Burnham, told *SciBX*.

Indeed, Moffitt was looking to apply its resources beyond cancer, said John Reed, CEO of Sanford-Burnham and professor at Sanford-Burnham's NCI-Designated Cancer Center.

Moffitt has "protocols for educating patients about participation in clinical trials and obtaining patients' consent to take DNA samples and gain access to their medical records and other data" that enables personalized medicine research, Reed said.

Additionally, "Moffitt has one of the world's largest biospecimen banks and robotic technology to aid sample storage and retrieval," he said.

Moffitt's protocols and technologies were developed for the center's Total Cancer Care program, which started in 2003 to aid the development and design of individualized cancer treatment regimens based on the genetic profile of a given tumor and the patient's lifestyle, medical history and other factors.

Exempli gratia

Although PMP Florida's steering committee has not yet selected specific projects, "we would like to conduct a number of small, focused pilot studies and then expand those to larger studies," said Reed.

As an example of a type of project PMP would pursue, Reed cited a

study by a team from Sanford-Burnham and other academic institutions that sought to identify markers of response to β -blockers to treat heart failure in patients with diabetes.

Poor therapeutic response to those drugs is a major cause of relapse in patients with heart failure, "and re-admission to the hospital due to heart failure relapse is a problem that has a major healthcare cost," he said. "So the question was: could we find candidate genes that predict the risk of relapse and rehospitalization?"

The team focused on a SNP on *uncoupling protein 2 mitochondrial proton carrier (UCP2)* that is associated with increased risk of coronary artery disease (CAD) and diabetes. Because β -blockers decrease *UCP2* expression, the team hypothesized the presence or absence of the SNP could predict treatment responses in diabetic patients who received β -blockers following a diagnosis of myocardial infarction (MI) or unstable angina.

Indeed, in patients with diabetes who harbored the *UCP2* SNP, compared with patients who did not have diabetes, β -blocker therapy was associated with an 11-fold increase in the rate of rehospitalization due to cardiovascular issues. In patients with diabetes who did not have the SNP, β -blocker therapy resulted in an 80% decrease in the rate of rehospitalization compared with no β -blocker therapy.²

"So, one idea for PMP Florida is to expand this to a larger validation study to predict treatment outcomes and, ultimately, decrease healthcare costs" in this population of patients, Reed said.

This summer, the partners plan to identify a handful of pilot projects for PMP Florida from the research portfolio of each institution. Reed said the partnership expects to begin with two or three projects in cancer and two or three in metabolic and cardiovascular diseases. Cancer projects would probably focus on response to targeted therapies, he added.

Robison said each partner will fund its own activities within PMP Florida and that the partners will share any IP generated by PMP Florida.

Additionally, "the partnership will be a vehicle to attract revenue," she said. "We will pursue collaborative grant opportunities at the state and federal levels, and we hope to attract the interest of biotech and pharma." Robison noted that PMP Florida has not yet determined when to apply for grants or at what stage to seek corporate partners for a given project.

She added that the respective projects of PMP Florida and TRI will be complementary rather than overlapping.

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COMPANIES AND INSTITUTIONS MENTIONED

Florida Hospital, Orlando, Fla.

H. Lee Moffitt Cancer Center & Research Institute, Tampa, Fla.

Sanford-Burnham Medical Research Institute, La Jolla, Calif.

The Translational Research Institute for Metabolism and Diabetes, Orlando, Fla.