Foundation Opens $2-Million Competition for Alpha-Synuclein PET Tracer

On June 13 at the SNMMI Annual Meeting in San Diego, CA, representatives from the Michael J. Fox Foundation (MJFF; New York, NY) announced the creation of a $2-million prize for development of a PET tracer to visualize the protein alpha-synuclein, a therapeutic target and biomarker candidate for Parkinson disease. The prize is intended to motivate the field toward identification and development of such a tracer, which could allow earlier and more precise diagnosis and progression tracking and lead to more effective interventions. “The ability to image alpha-synuclein in the brain would be a game changer for Parkinson’s translational research and would rapidly accelerate testing of therapies to slow or stop disease progression,” said Jamie Eberling, PhD, MJFF director of research programs, who announced the prize at an SNMMI plenary session.

Academic and industry researchers are eligible to apply for the prize. Contestants must provide preclinical and clinical data showing selectivity and viability of their alpha-synuclein agents. The winning contestant must demonstrate that the radiotracer binds with relatively high selectivity to alpha-synuclein according to prespecified criteria and must demonstrate proof of concept in human subjects, including individuals with Parkinson disease and/or another synucleinopathy. Contestants must also agree to make radiotracers available for use by the foundation and MJFF awardees through a nonexclusive license or other foundation-approved mechanism. There is no deadline for submission; the prize will go to the first team that shows compelling evidence. If no award is made by mid-2018, the foundation “will evaluate the state of the field and utility of such a prize.”

The current prize, easily the largest private initiative in nuclear medicine to date, builds on earlier support from MJFF for alpha-synuclein PET research. In 2011, the foundation established the public–private Alpha-Synuclein Imaging Consortium to begin work toward identification of a suitable tracer. In a press release accompanying the announcement of the current prize, MJFF noted that “If the foundation consortium is the first to build compelling evidence of a viable, selective tracer, members of the team excluding MJFF staff will be awarded the prize.” The foundation also continues to fund a number of independent studies exploring alpha-synuclein radiotracers. The foundation has funded more than $600 million in Parkinson-related research to date.

Supporting data submitted on candidate radiotracers will be assessed by a panel of subject matter–expert judges, who may request additional data. Judges include Hartmuth Kolb, PhD, Janssen Pharmaceuticals (Titusville, NJ); Satoshi Minoshima, MD, PhD, University of Utah (Salt Lake City); Julie Price, PhD, University of Pittsburgh (PA); Gil Rabinovici, MD, University of California, San Francisco; and Henry VanBrooklin, PhD, University of California, San Francisco. “This not only attests to the importance of molecular brain imaging in Parkinson’s disease, it also makes scientists so excited about making alpha-synuclein imaging possible in humans,” said Minoshima, who is also chair of the SNMMI Scientific Program Committee. “I would like to sincerely thank the Michael J. Fox Foundation.”

Detailed submission requirements are outlined on the prize website at https://www.michaeljfox.org/research/imaging-prize.html and include:

**Preclinical Evidence**
1. Radiosynthesis method enabling feasible radiolabeling with $^{11}$C or $^{18}$F (or both) at $>$20% yield, high specific activity;
2. Selective binding to alpha synuclein–rich brain tissue (versus amyloid beta– or tau-rich tissue); and
3. Proof of concept in alpha-synuclein preclinical models (preferred but not required).

**Human Studies**
1. Acceptable biodistribution with adequate brain uptake;
2. Acceptable metabolite profile;
3. Demonstrated proof-of-concept evidence of robust in vivo kinetics that enable quantification of alpha-synuclein binding (e.g., by kinetic modeling);
4. In vivo binding patterns consistent with the expected distribution of alpha-synuclein pathology per population (e.g., Parkinson disease, dementia with Lewy bodies, multiple system atrophy); and
5. Demonstrated selective in vivo binding to alpha-synuclein pathology (little nonspecific uptake, no binding to other pathologies [e.g., amyloid-beta, tau]).