pharmacology, structural biology, and geriatrics all work together in the same space and on the same diseases.

Another recent effort for collaboration is the Massachusetts Neuroscience Consortium, which was initiated in June 2012. Their goal is to accelerate preclinical research, facilitate industry-academic partnerships, and create "a pioneering new model that is designed to leverage the rich research environment in Massachusetts," says **Susan Windham-Bannister**, president and CEO of the Massachusetts Life Sciences Center. The consortium brings together seven major industry partners who are willing to collaborate to develop significant advances in major neurological disorders such as Alzheimer's, Parkinson's, multiple sclerosis, and neuropathic pain. The companies contributing to the consortium are Abbott, Biogen Idec, EMD Serono, Janssen Research & Development, Merck, Pfizer, and Sunovion Pharmaceuticals (see sidebar on page 144) for more information about this consortium).

For young scientists interested in translational neuroscience, pursuing research in the pharmaceutical industry is particularly rewarding and challenging, says Pfizer's Ehlers, and "offers the real potential to make discoveries that make medicines." His advice for young scientists is to think broadly and look outside of traditional career paths. "Training programs for graduate students and postdocs can be quite one-dimensional, exposing trainees to the academic world but little else," he says. "There is a universe of scientific opportunities outside of the university."

At Pfizer Neuroscience, Ehlers says, they look specifically for young scientists with a combination of strong quantitative skills and deep knowledge in a specific area, but also with a broad curiosity about all areas of biology. "We also look for people with strong communication skills and an ability to work well collaboratively in teams," he says.

Graduate students and postdocs interested in a career in this field should also be on the alert for global opportunities, as these diseases will afflict any modernized nation where lifespans are long. In Europe, says Heinz Reichmann, president elect of the European Neurological Society, each country has its own funding sources, both from industry and government, and there are many foundations that support research in this area.

NEW TECHNOLOGIES PROVIDE HOPE

Neurodegenerative diseases are among the most difficult to understand and treat, says **Doug Williams,** executive vice president of research and development (R&D) at Biogen Idec, a company that focuses on neurodegenerative diseases, including multiple sclerosis, Alzheimer's, and ALS. However, we are living in an era where new technologies such as genomic sequencing and advanced imaging will rapidly increase what we know about these diseases, he says. "By investing in translational medicine, including better neuroimaging and biomarker strategies, we will be able to make better decisions earlier in clinical development and improve the productivity of our R&D efforts." This type of investment, he says, "will also enable us to identify which patients may be more likely to benefit from a particular therapy, to determine if a compound is having the intended biological effect on its target, and to detect the progression of a disease even in the absence of new symptoms." Specific types of scientists who will be most sought after, says Williams, include computational biologists, cell biologists who understand modeling of human diseases, and stem cell biologists.

Jonathan Brotchie is founder and president of Atuka, Inc., a company with offices based in Canada, the United Kingdom, and China, that provides contract research and consultancy services for the biopharmaceutical industry, specifically to assist larger companies in developing novel therapeutics and diagnostics for Parkinson's disease.

According to Brotchie, advances may be slowed down not so much by a lack of ideas about drug targets and new therapies, but rather by a lack of understanding of the technologies and methodologies required to develop and validate these ideas. "There is a need to develop better animal models, to recapitulate and predict effects of agents on the molecular pathology of the disease process, and also to develop better imaging and biomarker technologies to assess, as early and precisely as possible, drug effects in clinical studies," he says.

According to Brotchie, job opportunities are likely to be plentiful at small companies that develop and use cutting-edge technology and capabilities. For example, a PET imaging company, Molecular Neuroimaging, in New Haven, Connecticut, which provides neuroimaging research services to the pharmaceutical and biotech industries, has sprung out of academia to support drug discovery in the field. "These approaches are not available within the pharmaceutical industry and are typically beyond the capabilities of academic groups," Brotchie says. The picture is very different now than before, he adds, when industry and academia rarely overlapped, but now "convergence, overlap, and cross-fertilization are all part of the environment today for anyone who wants to define a career with a mix of both approaches," he says.

The challenge now, says Biogen Idec's Williams, is to go beyond marginal improvements to making transformational changes in how we think about and treat neurodegenerative diseases. "We believe we are at the cusp of a new era when these advances will be possible, but they will require persistence, collaboration, and passion," he says.

Featured Participants

Alzheimer's Association
www.alz.org

Atuka
www.atuka.com

Biogen Idec
www.biogenidec.com

Brandeis University
www.brandeis.edu

British Neurological Association
www.bna.org.uk

European Neurological Society
www.ensinfo.org

Massachusetts Life Sciences Center
www.masslifesciences.com

Molecular NeuroImaging
www.mnimaging.com

Pfizer Neuroscience
www.pfizerneuroscience.com

Pittsburgh Institute for Neurodegenerative Diseases
www.neurology.upmc.edu/pind

Emma Hitt is a freelance medical and science writer residing in Marietta, Georgia.

DOI: 10.1126/science.opms.r1200124