The Development of a Parkinson's Disease Biomarker Inventory Dashboard

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Objective:

There is an urgent need for validated biofluid biomarkers in Parkinson's disease (PD) drug development. Under the auspices of the Critical Path for Parkinson's Consortium (CPP) in collaboration with the Michael J. Fox foundation, initial steps are taken to take inventory and create a user-friendly dashboard that catalogs biofluid biomarkers and samples across PD clinical trial cohorts.

Background:

Biomarkers for early diagnosis and disease progression in PD are urgently needed as clinical assessment alone cannot sufficiently reflect target engagement. To facilitate the identification of candidate biomarkers several large longitudinal PD cohorts have been established and collect cerebrospinal fluid (CSF), blood, and saliva, however, the biomarkers sampled across these cohorts are not standardized. The goal of this PD Biomarker Inventory and Dashboard is to create a unified dashboard to query across PD cohorts as an initial step to accelerate the identification of the most promising biomarkers.

Methods:

An initial inventory was constructed using PPMI PD cohort as a framework for variables and results to capture. Using this framework data has been tabulated to provide an overview of each cohort including which biofluid samples were collected, how many PD patients were included in the cohort, and PD disease stage. On the resulting publications, the biospecimens were examined, biomarkers measured, inflammatory mediators measured, and key findings and conclusions from the study were also documented (Figure 1). The data was then collected to display into an interactive dashboard to make it searchable and user-friendly.

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Results:

Progress to date includes the development of an inventory of 16 PD cohorts. Among the 16 cohorts, early-stage PD patients were the most sampled, and whole blood and CSF were the most commonly sampled. CSF, serum, and plasma were most commonly reported on in publications, with alpha-synuclein the most prevalent biomarker. This data has all been categorized into an interactive searchable dashboard (Figure 2).

Conclusions:

A biomarker inventory for PD is an important first step to evaluating the data and samples available across global PD cohorts. An open-access user-friendly interactive dashboard will make it simpler to find existing data on PD cohorts and research on PD biomarkers. Future plans include expanding the inventory to include additional PD cohorts and neuroimaging biomarker data.

Next Steps:

Additional work will be done to incorporate data from other PD cohorts into the inventory and dashboard. More functionality will be added to allow users to further explore the data.

FIGURE 1. Example of dashboard output providing information on main study outcomes.

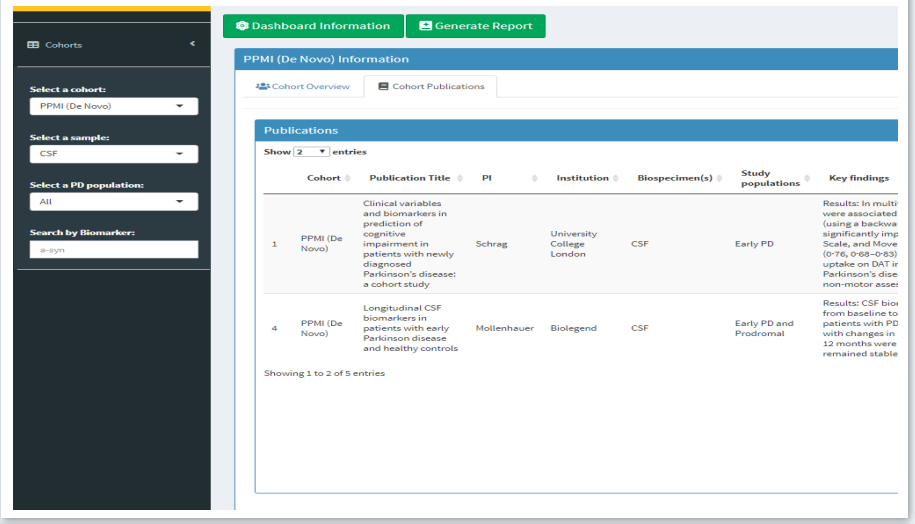
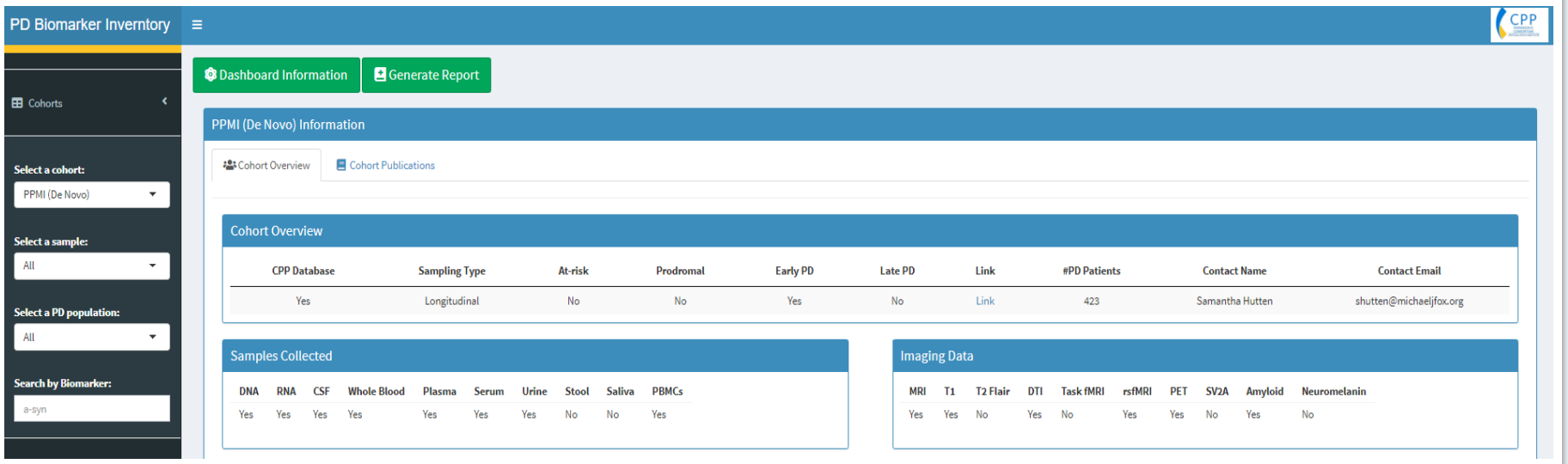


FIGURE 2. Screenshot of interactive searchable dashboard that can be queried for biomarkers across selected studies.



Acknowledgments: The Critical Path Institute's Critical Path for Parkinson's (CPP) Consortium is funded by Parkinson's UK and the following industry members: AbbVie, Bioclinica, Biogen, Cerevel, Denali, GSK, IXICO, Lundbeck, Merck Sharp and Dohme, Roche, Sanofi, Takeda, and UCB. We also acknowledge additional CPP member organizations, including Cure Parkinson's Trust, Davis Phinney Foundation, International Parkinson and Movement Disorder Society, Michael J. Fox Foundation, Newcastle University, Parkinson's Canada, Parkinson's Foundation, PMD Alliance, Radboud University, University of Cambridge, University of Glasgow, University of Oxford, University of Plymouth, NINDS, FDA, and EMA. We acknowledge all those who contributed data to the CPP integrated database including academic leaders, industry, NINDS and acknowledge the Michael J Fox foundation and industry partners for funding the PPMI study. *Critical Path Institute is supported by the Food and Drug Administration (FDA) of the U.S. Department of Health and Human Services (HHS) and is 56.5% funded by FDA/HHS, totaling $16,749,891, and 43.5% funded by non-government source(s), totaling $12,895,366. The contents are those of the author(s) and do not necessarily represent the official views of, nor an endorsement by, FDA/HHS or the U.S. Government. For more information, please visit FDA.gov.*