

Meeting report: EpiXchange II brings together European epilepsy research projects to discuss latest advances

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Dear Editor,

Cooperation and coordination are fundamental to modern scientific endeavour and an important mechanism for accelerating epilepsy research. Recent examples include the genetics and brain imaging consortia such as Epi25 and ENIGMA, where pooling cases and analysis expertise has resulted in major advances in the discovery of epilepsy genes and the effects of seizures on the brain. Three years ago, in Brussels, an event called EpiXchange was held to support cooperation and coordination among European epilepsy research by bringing together several large-scale epilepsy research projects along with key stakeholders (epixchange.eu). The projects were called Desire, EpimiRNA, EpiSTOP and EpiTarget. They had been funded by the EU under the FP7 work programme to deliver important advances in understanding the causes, diagnosis and treatment of epilepsy (under call HEALTH.2013.2.2.1-4: Pathophysiology and therapy of epilepsy and epileptiform disorders). Each were multi-disciplinary in nature, bringing together scientists and clinicians as well as other technical experts from outside the epilepsy world, blending basic and translational research, animal models and clinical studies and trials. Projects also featured significant participation from SMEs and larger industry partners. The primary objective of EpiXchange was to share the results of these different projects but an important secondary objective was to foster inter-project collaboration, define the key scientific challenges of the future, and ensure that the momentum and infrastructures were not lost. Joining the FP7 projects were other European epilepsy research projects, including EpiPGX and Epixchange, and EpiCARE, the European reference network for rare and complex epilepsies.

EpiXchange I showcased the outstanding achievements from these projects and led to a position paper from the leadership of the event (Pitkanen et al., 2019). Important

breakthroughs and advances continue to emerge from the projects including new genes identified, the mechanisms by which mutations cause disease, disease-modifying treatments proven in preclinical models and advances in biomarkers.

That could have been the end of the road but then a call was announced by the European Brain Research Area (EBRA) to form research “clusters” as a mechanism to support the cooperation and coordination of European brain research. Inspired by EpiXchange, EBRA funded EPICLUSTER (<https://www.ebra.eu/epi-cluster-2/>) in late 2019. The leadership came from the organisers of EpiXchange and expanded to include representatives from ILAE Europe and IBE. The goal was to ensure that by working together we would sustain the momentum and continue to inform the European epilepsy research agenda and promote further investment in brain research broadly and epilepsy in particular. As part of a series of planned activities, EpiXchange II was held – slightly delayed by COVID - on December 2nd 2020. The meeting had more than 100 attendees with talks and discussions, organised into a series of thematic sessions, each chaired by a clinician and a basic scientist from the different projects. The presenters covered the core research topics that were originally addressed by the different EU projects (and remain highly topical) - Biomarkers, Genetics, Therapeutics, Co-morbidities and Databases and Biobanks. The conference showcased the wide-ranging progress made by the different consortia and included not only new discoveries about epilepsy but also developing and refining technologies, establishing and expanding bio-resources such as tissue banks, creating new databases that can transform the power of pathway discovery, and (significantly for future success) the development of new partnerships. Speakers from industry were among the presenters, drawing

attention to projects helped and supported by small and medium enterprises in Europe, increasingly vital for accelerating translation of research to patients and the broader European economy.

EpiXChange II was important because it reinforced the existing collaborations and created new ones that should lay the foundations for success in delivering transformative research findings to people with epilepsy. EPICLUSTER has two further planned activities. The third, recently held in October 2021, was a workshop focused on public and patient involvement in research, “Accelerating patient involvement in European epilepsy research” (<https://www.ebra.eu/news-and-events/patient-involvement-epilepsy/>). Planning of the final event, to be held in 2022, is underway.

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Pitkanen, A., Henshall, D.C., Cross, J.H., Guerrini, R., Jozwiak, S., Kokaia, M., Simonato, M., Sisodiya, S., Mifsud, J., 2019. Advancing research toward faster diagnosis, better treatment, and end of stigma in epilepsy. *Epilepsia* 60, 1281-1292.