Expanding the ASXL Research Network

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Background

The ASXL Rare Research Endowment (ARRE) Foundation is a family-led patient advocacy organization with the mission to improve the quality of life for individuals living with ultra-rare neurodevelopmental disorders caused by pathogenic variants in one of the ASXL genes: Bohring-Opitz Syndrome (ASXL1), Shashi-Pena Syndrome (ASXL2), and Bainbridge-Ropers Syndrome (ASXL3).

Common clinical features of ASXL syndromes include developmental delay and intellectual disability, absent speech, seizures, hypotonia, feeding difficulties, severe constipation, and self-injury. It is thought that approximately 500 individuals are diagnosed with ASXL-related disorders world-wide and that many more remain undiagnosed. There are no known treatments for ASXL-related disorders other than providing supportive care for symptoms.

The body of medical knowledge to guide the care of individuals living with ASXL-related disorders is very limited, as is the basic research understanding of what the ASXL genes do and how they work. The ARRE Foundation is working to change that by growing the network of doctors and researchers who are studying these disorders and the genes that cause them to build the body of research to better support families and lead to treatments.

Methodology

Growing the number of clinician-scientists and bench scientists with a research interest in ASXL-related disorders has been a top priority of the ARRE Foundation since its founding in 2018. At that time, there were 10 individuals with a known research interest in ASXL-related disorders.

Methods to grow the research network have included hosting the ASXL Research Symposium, which was held in person in 2018, 2019, 2022, and 2023 and held virtually in 2021. In August 2022, the ARRE Foundation launched a quarterly series of virtual meetings called the Research Roundtables (i.e., Basic and Clinical). The purpose of the Research Roundtable gatherings is to provide a regular opportunity for updates from members of the research community and to have a near-term opportunity available to invite prospective members of the research community who may have interest in aspects of the ASXL genes or ASXL-related disorders.

The ARRE Foundation uses social media alerts to flag publications and authors of related interest. Twitter alerts include searches for ASXL1/2/3, syndrome names, and basic research terms including “H2AK119Ub” (histone mark) and “PR-DUB” (epigenetic complex). Google Alerts and PubMed alerts are also utilized. ARRE Foundation staff reach out to authors with an invitation to join a future roundtable discussion.

Figure 1: Cumulative growth of ASXL Research Network

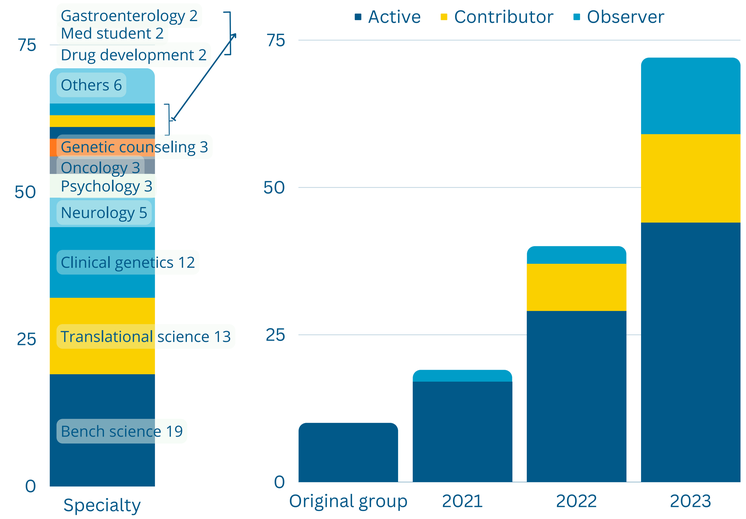

Figure 2: Research progress attributed to 2022 ASXL Research Symposium and Family Conference

Results

The ASXL Research Network has grown 630%; from 10 members in 2018 to 73 members in 2023. Membership within the network can be classified as active members (N=36), defined as individuals who are a primary investigator on an ASXL-related project within last 24 months, contributing members (N=24), defined as individuals who contribute to discussions or are a trainee under the mentorship of an active member, and observers (N=13), defined as those who participate occasionally in a listening role (Figure 1).

Significant growth in the network is attributed to the in-person ASXL Research Symposium and Family Conference in July 2022, the first in-person meeting of the ASXL research and family community since 2019 due to the COVID-19 pandemic, and the 2023 ASXL Research Symposium in July 2023. At the 2022 meeting, 6 studies recruited participants and/or collected data at this meeting and 3 new collaborations began at this meeting, resulting in 9 current and planned studies (Figure 2).

Conclusion

In-person and virtual engagement opportunities have contributed to the growth of the ASXL Research Network and ASXL-related research projects, particularly with clinical research-related projects.

Future efforts include growing engagement in the basic research community.