Deciphering the genetic architecture of developmental disorders

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I will describe our UK-wide study of thousands of parent-offspring trios with undiagnosed developmental disorders, the Deciphering Developmental Disorders (DDD) study (www.ddduk.org). Using genome-wide genetic assays (array-CGH and exome sequencing) we are currently able to provide genetic diagnoses for 35% of these children, most of which are new mutations causing dominant diseases. We have also identified more than 50 novel developmental disorders, and described the relative contributions of different classes of genetic disease to the overall genetic architecture of these disorders. Most recently, we have analysed exome sequences in over 31,000 trios as part of an international collaboration and I will describe the results of that study, and how it informs our perspective on the likely genetic causes in the patients that remain undiagnosed.