Microphthalmia, anophthalmia and coloboma are part of a spectrum of developmental eye anomalies referred to as MAC. They are etiologically heterogeneous and can occur as an isolated anomaly or part of a syndrome. In the last 10 years the number of eye development genes that have been identified increases daily and the spectrum of the more common disorders have broadened significantly. At Einstein Medical Center Philadelphia we have been collecting data and DNA on patients with MAC for 20 years now. Patients who were in our initial cohort for whom there were 2 genes for testing in 2001, are now getting much improved testing with whole exome sequencing both in our research and clinically. We now make a diagnosis in 80% with bilateral and about 40% with unilateral anophthalmia. The progress and pitfalls of our work will be discussed!