Developing tools for precision genome editing in commodity and consumer crops

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As CRISPR therapies advance through clinical trials, genome editing tools are also enabling significant innovation in agriculture. Gene editing in crops can use modified tools developed for human therapeutics, but plants present unique challenges and opportunities. Pairwise rapidly screens new tools in human cells to focus in on efficient designs, then transfers those learnings to screening in plant protoplasts and stable transformation systems, before using the best versions for trait development. Using these optimized CRISPR-based gene editing tools, Pairwise is transforming major row crops and consumer-facing fruits and vegetables. Our Fulcrum™ Platform relies on efficient cytosine base editors, nucleases, and templated editing tools developed through iterations of this testing. As an example, we were able to use our optimized nuclease and base editing tools to tune the amount of disruption of FEA2 and achieve greater kernel row number in corn. The immediate future promises the direct application of gene editing tools to improve plant yield, performance, and health. Pairwise is excited to be leading the way to a healthier world through better fruits and vegetables.