

Student topics:

1. What is the genetic history of the world-wide consumed **Banana** clone?

- D'Hont A, Denoeud F, Aury JM, Baurens FC, Carreel F, et al. (2012) The banana (*Musa acuminata*) genome and the evolution of monocotyledonous plants. *Nature*. 488(7410):213-7.
- Hippolyte I, Bakry F, Seguin M, Gardes L, Rivallan R, et al. (2010) A saturated SSR/DArT linkage map of *Musa acuminata* addressing genome rearrangements among bananas. *BMC Plant Biol*. 10:65.

2. What is the genetic make-up of modern **Wheat** elite cultivars?

- International Wheat Genome Sequencing Consortium (IWGSC) (2018) Shifting the limits in wheat research and breeding using a fully annotated reference genome. *Science*. 361(6403). pii: eaar7191.
- Marcussen T, Sandve SR, Heier L, Spannagl M, Pfeifer M, et al. (2014) Ancient hybridizations among the ancestral genomes of bread wheat. *Science*. 345(6194):1250092.

3. What is the genetic evolution of **Grapes**?

- Zhou Y, Massonnet M, Sanjak JS, Cantu D, Gaut BS (2017) Evolutionary genomics of grape (*Vitis vinifera* ssp. *vinifera*) domestication. *Proc Natl Acad Sci USA*. 114: 11715-11720.
- Liang Z, Duan S, Sheng J, Zhu S, Ni X, et al. (2019) Whole-genome resequencing of 472 *Vitis* accessions for grapevine diversity and demographic history analyses. *Nat Commun*. 10: 1190.

4. What are the genetic changes that adapted **Maize** for world-wide consumption?

- Condon BJ, Elliott C, González JB, Yun SH, Akagi Y, et al. (2018) Clues to an Evolutionary Mystery: The Genes for T-Toxin, Enabler of the Devastating 1970 Southern Corn Leaf Blight Epidemic, Are Present in Ancestral Species, Suggesting an Ancient Origin. *Mol Plant Microbe Interact*. 31: 1154-1165.
- da Fonseca RR, Smith BD, Wales N, Cappellini E, Skoglund P, et al. (2015) The origin and evolution of maize in the Southwestern United States. *Nat Plants*. 1:14003.

5. What is the role of genetic modification in the evolution of **Rice** cultivars?

- Gross BL, Zhao Z. (2014) Archaeological and genetic insights into the origins of domesticated rice. *Proc Natl Acad Sci USA*. 111(17):6190-7.
- Wang W, Mauleon R, Hu Z, Chebotarov D, Tai S, et al. (2018) Genomic variation in 3,010 diverse accessions of Asian cultivated rice. *Nature*. 557(7703):43-49.

6. What is the genetic relationship between cultivated **Potato** and **Tomato**?

- Tang X, Datema E, Guzman MO, de Boer JM, van Eck HJ, Bachem CW, et al. (2014) Chromosomal organizations of major repeat families on potato (*Solanum tuberosum*) and further exploring in its sequenced genome. *Mol Genet Genomics*. 289(6):1307-19.

- Peters SA, Bargsten JW, Szinay D, van de Belt J, Visser RG, et al. (2012) Structural homology in the Solanaceae: analysis of genomic regions in support of syntenic studies in tomato, potato and pepper. *Plant J.* 71(4):602-14.

7. What is the genomic architecture of ***Phytophthora infestans***, the causal agent of the famous Irish potato famine?

- Dong S, Raffaele S, Kamoun S. (2015) The two-speed genomes of filamentous pathogens: waltz with plants. *Curr Opin Genet Dev.* 35:57-65. Review.
- Haas BJ, Kamoun S, Zody MC, Jiang RH, Handsaker RE, et al. (2009) Genome sequence and analysis of the Irish potato famine pathogen *Phytophthora infestans*. *Nature.* 461(7262):393-8.

8. What is the genomic architecture of **Powdery mildews**, a pathogen of staple and cash crops?

- Parlange F, Oberhaensli S, Breen J, Platzer M, Taudien S, et al. (2011) A major invasion of transposable elements accounts for the large size of the *Blumeria graminis* f.sp. *tritici* genome. *Funct Integr Genomics.* 11(4):671-7.
- Spanu PD, Abbott JC, Amselem J, Burgis TA, Soanes DM, et al. (2010) Genome expansion and gene loss in powdery mildew fungi reveal tradeoffs in extreme parasitism. *Science.* 330(6010):1543-6.

9. What are the genetic principles of diversification in the domestication of **Mustard** plants?

- Yang J, Liu D, Wang X, Ji C, Cheng F, et al. (2016) The genome sequence of allopolyploid *Brassica juncea* and analysis of differential homoeolog gene expression influencing selection. *Nat Genet.* 48(10):1225-32.
- Hofberger JA, Lyons E, Edger PP, Chris Pires J, Eric Schranz M. (2013) Whole genome and tandem duplicate retention facilitated glucosinolate pathway diversification in the mustard family. *Genome Biol Evol.* 5(11):2155-73.

10. What are the genetic improvements in **Yeast** used in food processing?

- Gallone B, Steensels J, Prah T, Soriaga L, Saels V, et al. (2016) Domestication and Divergence of *Saccharomyces cerevisiae* Beer Yeasts. *Cell.* 166: 1397-1410.e16.
- Steensels J, Meersman E, Snoek T, Saels V, Verstrepen KJ. (2014) Large-scale selection and breeding to generate industrial yeasts with superior aroma production. *Appl Environ Microbiol.* 80: 6965-75.