

Short CV

Leandro Quadrana obtained his PhD in 2013, where he investigated the genetic determinants of vitamin E content in Tomato. After a post doc in the team of Vincent Colot at the Institut de Biologie de l'Ecole Normale Supérieure (France) working on population genomics of transposable elements in *A. thaliana* (2013-2017), he obtained in 2017 a permanent research position at the CNRS to continue working in the same team. Leandro's main research interests focus in understanding the role of transposable element mobilization in the generation of intra-specific diversity. He is now establishing his own team at the Institute of Plant Science Paris-Saclay.

Title and Abstract

Transposon-induced loss of DNA methylation: Some new kids on the block

Transposable elements (TEs) are typically silenced by epigenetic mechanisms, including DNA methylation in plants and mammals. In response, some TEs have evolved sophisticated mechanisms to counteract this epigenetic silencing. Kakutani's lab (the University of Tokyo) uncovered two such anti-silencing systems in *Arabidopsis thaliana*, which are based on VANC proteins encoded by DNA transposons belonging to the *VANDAL* superfamily (Fu et al, EMBO J 2013; Hosaka et al, Nat Commun 2017). Here, I will describe our recent collaborative efforts to characterize the complete set of VANC-dependent anti-silencing systems and their target sequences in *A. thaliana*. I will also discuss the evolutionary history of this anti-silencing systems and their implications for the invasive success of this class of TEs.

Selected publications

- Baduel P, Leduque B, Ignace A, Gy I, Gil Jr. J, Loudet O, Colot V, Quadrana L. Genetic and environmental modulation of transposition shapes the evolutionary potential of *Arabidopsis thaliana*. 2021 **Genome Biology** 22, 138
- Baduel P, Quadrana L. Jumpstarting evolution: How transposition can facilitate adaptation to rapid environmental changes. **Current Opinion in Plant Biology**. 2021 Apr 28;61:102043
- Domínguez M, Dugas E, Benchouaia M, Leduque B, Jiménez-Gómez JM, Colot V, Quadrana L. The impact of transposable elements on tomato diversity. **Nat Comm**. 2020 Aug 13;11(1):4058.
- Quadrana L, Etcheverry M, Gilly A, Caillieux E, Madoui MA, Guy J, Bortolini Silveira A, Engelen S, Baillet V, Wincker P, Aury JM, Colot V. Transposition favors the generation of large effect mutations that may facilitate rapid adaptation. **Nat Comm** 2019 Jul 31;10(1):3421.
- Quadrana L, Colot V. Plant Transgenerational Epigenetics. **Annu Rev Genet**. 2016 Nov 23;50:467-491.
- Quadrana L, Bortolini Silveira A, Mayhew GF, LeBlanc C, Martienssen RA, Jeddeloh JA, Colot V. The *Arabidopsis thaliana* mobilome and its impact at the species level. **Elife**. 2016 Jun 3;5:e15716.