

15th ISTT Prize
Dr. Phil Soriano

TT2023, Houston, Texas, USA



Dr. Soriano earned two Ph.D. degrees from the University of Paris, France in 1978 and 1982 where he conducted research in Professor Giorgio Bernardi's laboratory in the area of DNA cloning and fractionation technologies. He completed post-doctoral studies with Dr. Claude Nicolau at the Center for Molecular Biophysics in the French National Center for Scientific Research and with Dr. Rudolf Jaenisch at the Whitehead Institute for Biomedical Research, in the Massachusetts Institute Technology. In the Jaenisch lab he used retroviruses to make transgenic mice by infecting mouse embryos with the viruses (1). He started his own lab as a Howard Hughes Investigator at the Baylor College of Medicine where he pioneered gene trap technology by transfecting mouse ES cells with promotorless beta-geo retroviruses (2). In the course of his studies he discovered the ROSA26 gene. ROSA26 is important because it is expressed in every cell in the mouse. Dr. Soriano developed a gene targeting vector for the ROSA26 allele and demonstrated that it was highly efficient for the production of ROSA26 knockin alleles (3). He widely shared the ROSA26 targeting vector with the mouse genetics community (4). At last count there were 1,062 mouse strains carrying genes targeted to the ROSA26 allele (5). His pioneering work contributed to the establishment of transgenic technology as a field of endeavor.

Dr. Soriano was generous in sharing his specialized expertise in mouse genetics. He has organized and taught numerous training courses in mouse genetics and transgenesis around the world. He edited and contributed to the second edition of Guide to Techniques in Mouse Development, Part A: Mice, Embryos, and Cells, and Part B: Mouse Molecular Genetics (6). Dr. Soriano works in the Department of Cell, Developmental, and Regenerative Biology at the Icahn School of Medicine at Mount Sinai, New York, NY. His current research interests are mouse molecular genetics and understanding how signaling pathways operate during embryonic development. His engagement with transgenic technologies has continued through his career to this day (7).

1) Soriano, P., R.D. Cone, R.C. Mulligan, and R. Jaenisch. 1986. Tissue-specific and ectopic expression of genes introduced into transgenic mice by retroviruses. *Science* 234: 1409-1413. <https://pubmed.ncbi.nlm.nih.gov/3024318/>

2) Friedrich G, Soriano P. 1991. Promoter traps in embryonic stem cells: a genetic screen to identify and mutate developmental genes in mice. *Genes Dev.* 5:1513-1523. <https://pubmed.ncbi.nlm.nih.gov/1653172/>

3) Soriano P. 1999. Generalized lacZ expression with the ROSA26 Cre reporter strain. *Nat Genet.* 21:70-71. <https://pubmed.ncbi.nlm.nih.gov/9916792/>

4) https://www.addgene.org/Philippe_Soriano/

5) Blake JA, Baldarelli R, Kadin JA, Richardson JE, Smith CL, Bult CJ; Mouse Genome Database Group. 2021. Mouse Genome Database (MGD): Knowledgebase for mouse-human comparative biology. *Nucleic Acids Res.* 49(D1):D981-D987. <https://pubmed.ncbi.nlm.nih.gov/33231642/>

6) Wassarman, Paul. Soriano, Philippe M. 2010. Guide to techniques in mouse development. Part A, Mice, embryos, and cells. Part B, Mouse molecular genetics. Amsterdam; Boston: Elsevier

7) Clark JF, Dinsmore CJ, Soriano P. 2020. A most formidable arsenal: genetic technologies for building a better mouse. *Genes Dev.* 34:1256-1286. <https://pubmed.ncbi.nlm.nih.gov/33004485/>

Phil Soriano's Laboratory WEB page: <https://labs.icahn.mssm.edu/sorianolab/>