

Prof. Pilar Catalan, Professor in Botany

1) Dept. Agricultural and Environmental Sciences, High Polytechnic School of Huesca, University of Zaragoza, Ctra. Cuarte km 1, 22071 Huesca (Spain), pcatalan@unizar.es

2) Institute of Biology, Tomsk State University, Lenin Av 36, 634050 Tomsk (Russia)

Education and degrees:

Degree in Biology, University of Navarra (Spain), 24.October.1980

PhD in Biology (Botany), Basque Country University (Spain), 27.April.1987

Appointments

Postdoctoral Researcher, University of Leicester (UK), 1989-1991

Assistant Professor in Botany (University of Zaragoza), 1992-1995

Associate Professor in Botany (University of Zaragoza), 1996-2011

Professor in Botany (University of Zaragoza), 2012-present

Professor in Botany (Tomsk State University, Russia), 2014-present

Research Profile

My group focuses on plant evolutionary biology, speciation, hybridization, polyploidization, ecological adaptation, landscape genetics and comparative genomics of monocots, specially temperate grasses (Pooideae, *Brachypodium*, *Loliinae*). Our lab has implemented new approaches in analyses of genomic inheritance in plant polyploids. I was one of the coauthors proposing *Brachypodium distachyon* as model plant for monocots and grasses in the early 90's. Since then, we have conducted phylogenetic, genetic and phenotypic analysis within the *B. distachyon* complex, describing the three currently accepted annual species (*B. distachyon*, *B. stacei*, *B. hybridum*), and of the whole genus, providing the first genus-wide phylogenetic framework for the 20 annual and perennial species of *Brachypodium*. I am part of the international *Brachypodium* research group that is conducting comparative genomics and phylogenomic analysis of the sequenced *Brachypodium* species and of the pangenomes of annual *B. distachyon* and perennial *B. sylvaticum*.

Supervision of PhD students: 9

Current PhD Ruben Sancho. Genome annotation, comparative genomics and phylogenomics of the *Brachypodium* model complex (Poaceae). Expected 2017

Current PhD Valeria Shiposha. Systematics and evolution of Eurasian and Mediterranean *Brachypodium* grass species. Expected 2018.

Current PhD Diana Lopez-Alvarez. Evolution, phylogeography and ecology of the model species of the *Brachypodium distachyon* complex (Poaceae). Expected 2016.

2015. PhD Miguel Minaya. A multigenomic approach to the phylogeny, evolution and biogeography of the grass subfamily Pooideae with an emphasis on the subtribe *Loliinae*.

2014. Juan Viruel. Evolutionary biology and conservation genetics of the endemic plant group *Epipetrum* (Dioscoreaceae) (co-supervisor).

2013. Antonio Diaz-Perez. Evolution, genetics and phylogeography of temperate grasses (*Loliinae*, *Gramineae*) and other model organisms.

2005. Ernesto Perez-Collazos. Population-genetics, phylogeography and conservation of five rare and endangered Iberian steppe plants.

2004. Jose Gabriel Segarra-Moragues. Genetics, evolution and conservation of the endemic Pyrenaean genus *Borderea* Miègeville (Dioscoreaceae).

2002. Pedro Torrecilla. Phylogenetic relationships of *Festuca* L. and other related genera of tribe Poeae R. Br. (Pooideae, Poaceae). Philosophy Doctor with Honor.

Trained postdocs and research fellows: 30 from 9 countries

Postdocs: Isabel Marques (Portugal), Alexander Betekhtin (Poland), Liliana Giusanni (Argentina), Osvaldo Morrone (Argentina), Mary Namaganda (Uganda), Pedro

Torrecilla (Venezuela), Teresa Garnatje (Spain), Carmen Acedo (Spain), Felix Llamas (Spain), Manuel Pimentel (Spain), Ana Ortega (Spain), Josefa Lopez (Spain), Emma Aronson (USA). **Research fellows:** Evgene Baiakhmetov (Russia), Natalia Mezina (Russia), Valeria Shiposha (Russia), Irene Villa (Spain), Adam Bisaga (Poland), Itziar Arnelas (Spain), José Ortega (Spain), Raul Gonzalo (Spain), Verónica Girón (Spain), Francisco Pina (Spain), Majid Sharifi (Iran), Ma Luisa Rodríguez (Spain), Jara Cano (Spain), Monica Martins (Portugal), Manuel Pimentel (Spain), Alejandro Quintanar (Spain).

External PhD examiner: 23, since 1998

International committees: 2

International Organization of Plant Biosystematists (IOPB). Council member. 1998-2010. International Brachypodium Steering Committee. Interim committee. 2015.

International and national grant panels: 19

Spanish National Agency of Evaluation and Prospective (ANEP). 2006-2010.

Fellowship and Grant Evaluations: Spanish National Agency of Evaluation and Prospective (ANEP) 2001-2015; Portuguese National Agency for Science and Technology (FCT), 2003; USA National Science Foundation (NSF), 2003-2004; Argentinian National Agency for the promotion of Science, technology and Innovation (FONCyT), 2005, 2008; Austrian Science Fund (FWF), 2006; Spanish CSIC research Foundation, 2010; Spanish Aragon CAI Foundation, 2006-2010; BARD. The United States - Israel Binational Agricultural Research and Development Fund, 2011, 2013.

Editorial Boards, Scientific Journals:

Associate Editor, Turkish Journal of Botany (since 2014); Associate Editor, New Journal of Botany (UK) (since 2009); Associate Editor, Anales del Jardín Botánico de Madrid (Spain) (since 2006).

Reviews for Scientific Journals:

American Journal of Botany, AoB Plants, Biochemical Systematics and Ecology, Biological Journal of the Linnean Society, Botanical Journal of the Linnean Society, Chromosoma, International Journal of Plant Sciences, Journal of Agricultural Science, Journal of Molecular Evolution, Journal of Systematics and Evolution, Molecular Ecology, Molecular Phylogenetics and Evolution, New Phytologist, New Zealand Journal of Botany, Nordic Journal of Botany, Plant Biology, Plant Biosystems, Plant Systematic and Evolution, PlosOne, Taxon, Systematic Biology, Weed Research.

Publications (141 total publications of which 61 peer-reviewed SCI articles, incl. Trends in Plant Science (1), Systematic Biology (1), New Phytologist (1), Molecular Ecology (3), Genetics (1); 44 peer-reviewed Scopus articles; 32 books or book chapters, 3 publications aimed at Biodiversity and environmental agencies, 1 doctoral dissertation.

Metrics: 13941 total publications, 61 articles, 1349/1085 citations, 22.9/16.69 cites/publication, h-index= 24/16 (Google/web of knowledge) 22.06.15).

Selected publications:

Catalan P, Chalhoub B, Chochois V, Garvin DF, Hasterok R, Manzaneda AJ, Mur LAJ, Pecchioni N, Rasmussen SK, Vogel JP, Voxeur A. 2014. Update on genomics and basic biology of *Brachypodium*. *Trends in Plant Science* 19:414-418.

López-Alvarez D, López-Herranz ML, Betekhtin A, **Catalán P**. 2012. A DNA barcoding method to discriminate between the model plant *Brachypodium distachyon* and its close relatives *B. stacei* and *B. hybridum* (Poaceae). PLoS ONE 7(12): e51058.

Díaz-Pérez A, Sequeira M, Santos-Guerra A, **Catalán P**. 2012. Divergence and biogeography of the recently evolved Macaronesian red *Festuca* (Gramineae) species inferred from coalescence-based analyses. *Molecular Ecology* 21: 1702-1726.

Catalán P, Müller J, Hasterok R, Jenkins G, Mur LAJ, Langdon T, Betekhtin A, Siwinska D, Pimentel M, López-Alvarez D. 2012. Evolution and taxonomic split of the model grass *Brachypodium distachyon* (L.) P. Beauv. *Annals of Botany* 109: 385–405.

Mur L., Allainguillaume J., **Catalán P.**, Hasterok R., Jenkins G., Lesniewska K., Thomas I., Vogel J. 2011. Exploiting the *Brachypodium* Tool Box in cereal and grass research. *New Phytologist* 191: 334-347.

Díaz-Pérez A, Sequeira M, Santos-Guerra A, **Catalán P.** 2008. Multiple colonizations, in-situ speciation, and volcanism-associated stepping-stone dispersals shaped the phylogeography of the Macaronesian red fescues (*Festuca* L., Gramineae). *Systematic Biology* 57: 732-749.

Catalán P., Segarra-Moragues J.G., Palop-Esteban M., Moreno C., Gonzalez-Candelas F., 2006. A Bayesian approach for discriminating among alternative inheritance hypotheses in plant polyploids: the allotetraploid origin of genus *Borderea* (Discoreaceae). *Genetics* 172: 1939-1953.

Catalán, P., Olmstead, R.G. 2000. Phylogenetic reconstruction of the genus *Brachypodium* P.Beauv. (Poaceae) from combined sequences of chloroplast ndhF gene and nuclear ITS. *Plant Systematics and Evolution* 220: 1-19.

Catalán, P., Kellogg, E.A., Olmstead, R.G. 1997. Phylogeny of Poaceae subfamily Pooideae based on chloroplast ndhF gene sequencing. *Molecular Phylogenetics and Evolution* 8: 1-18.

Catalán, P., Shi, Y., Amstrong, L., Draper, J. & Stace, C.A. 1995. Molecular phylogeny of the grass genus *Brachypodium* P. Beauv. based on RFLP and RAPD analysis. *Bot. Jour. Linnean Soc.* 177: 263-280.

Catalán P, López-Alvarez D, Sancho R, López-Herranz ML, Díaz-Pérez A. 2015. Phylogeny, evolution and environmental niches of *Brachypodium*. In Vogel J (ed.). Genetics and genomics of *Brachypodium*. Springer (in press).

López-Alvarez D, Draper D, Manzaneda A J, Rey PJ, Giraldo P, Benavente E, Allainguillaume J, Mur LAJ, Caicedo AL, Hazen SP, Breiman A, Ezrati S, **Catalán P.** 2015. Environmental niche variation and evolutionary diversification of the *Brachypodium distachyon* grass complex species in their native circum-Mediterranean range. *American Journal of Botany* 102: 1-16.

Funding: 21 research grant projects (PI in 12), 11 applied research grant projects (PI in 6), consecutively since 1995.

Current: Comparative genomics, biogeography and floral and adaptive evolution of model grasses.(CGL2012-39953-C02-01). Spanish Ministry of Science and Innovation. PI: P.Catalan

Brachypodium adaptation to drought stress across different geographic and ecological clines. European Plant Phenotyping Network – EPPN. PI: P.Catalan.

Research stays: University of Leicester, 1989-1991; University of Colorado, 1993; Harvard University, 1994; Natural History Museum of London, 1997; University of Aas, Natural History Museum of Oslo, 2008; Indiana University, 2008; Botanical Institute Darwinion – CONICET, 2008; Tomsk State University, 2014, 2015.

Invited conferences: 32

Organized international conferences: 3

Teaching experience: International, 5 postgraduate courses on plant systematics and evolution; domestic: 3 undergraduate courses per year on Biology, Plant Biology and Management and conservation of endangered flora, and 2 Master courses per year on Phylogeny and evolution and Biodiversity and population genetics since 1992/2006.