

Professor Alejandra BRAVO

Institute of Biotechnology, Universidad Nacional Autonoma de Mexico, Cuernavaca
MEXICO

A. Professional Experience

1988 - 1989	Associated Researcher "B". Full time. Biotechnology Institute. University of Mexico.
1989 - 1993	Associated Researcher "C". Full time. Biotechnology Institute. University of Mexico.
1993 - 1996	Titular Researcher "A" Full time. Biotechnology Institute, University of Mexico.
1996 - 2000	Titular Researcher "B" Full time. Biotechnology Institute, University of Mexico.
2000 – to date	Titular Researcher "C" Full time. Biotechnology Institute, University of Mexico.

Research Activity

My laboratory has two principal research areas: one is the isolation and characterization of novel insecticidal Cry toxins from a Mexican collection of *Bacillus thuringiensis* strains, that could be used to control important insect pests in health and agriculture in Mexico. In this regard we are engaged in a social program to substitute chemical insecticides, that are extremely harmful to humans, by Bt based products for the control of mosquitoes, vectors of human diseases as malaria and dengue. The second is the study of the mode of action of insecticidal Cry and Cyt toxins produced by these bacteria and the intracellular responses of insect cells to these toxins. This research aims to gain a molecular understanding of how these toxins interact with cell membranes, and kill the larvae. Cry toxins have a complex mechanism of action and we proposed an integrative model of the action of these proteins that involves the sequential interaction with two receptors. The study of the mechanism of action let us to propose some modifications in the Cry toxins that allow to skip interaction with the first receptor and kill insects that lack this receptor and are resistant to Cry toxins. The modified toxins have an important future as a novel alternative to control insect resistance in the field. Finally we are interested in understand at the molecular level the synergism between Cry and Cyt toxins that is observed in Bt strains that kill mosquitoes. With this knowledge we will be able to improve other toxins that kill other insect orders and propose additional strategies to insect control and to cope with future resistance problems.

NATIONAL HONORS AND AWARDS

- Honor Award for the Bachelors Degree studies. UNAM.1984
- Honor Award in for Ph.D. studies. UNAM.1989
- Researcher I, in the National System for Research. July 1992.
- Member of the Mexican Academy of Sciences. October 1996.
- Researcher II, in the National System for Research. July 1998
- 1998 Annual Award, in the Natural Sciences, of the Mexican Academy of Science. October 1998.
- National University Award to young academics 2000 in Natural Sciences. UNAM November 2000.
- AgroBIO Mexico Award 2003 to Agricultural Biotechnology. August 2003.
- Member of Ethics Commission of the National Health Institute. February 2004 to 2008
- Member of the Jury for the Annual Award AgroBio Mexico Since 2004 to date.
- Researcher Level III, in the National System for Research. October 2004.
- President of the Bioethics Committee of the Biotechnology Institute UNAM. Since 2006 to date
- Sor Juana Ines de la Cruz Award of the National University of Mexico. UNAM 2008

International Honors and awards

- Fellowship from the European Commission for Postdoctoral studies at Plant Genetic Systems. 1990-1991.

- Vice-president of the Bacteria Division of the Society of Invertebrate Pathology. October 1998.
- Member of the International *cry* Gene Nomenclature Committee from 1990 to date.
http://epunix.biols.susx.ac.uk/Home/Neil_Crickmore/Bt/index.html
- Editor of Journal Invertebrate Pathology from 1999 to date.
- President of the Bacteria Division of the Society of Invertebrate Pathology 1999-2001.
- Trustee of the Society of Invertebrate Pathology. 2002-2006
- Roster of Experts on Biosafety under the Cartagena Protocol on Biosafety and the Convention on Biological Diversity. 2003 to date
- Editor of “Revista Colombiana de Entomología” Since 2003 to date.
- Member of International Society for Pest Information Since 2003 to date
- Editor in Journal of Biological Sciences Since 2004 to date
- Member of the UNU-BIOLAC Scientific Advisory Committee of the United Nations University Program for Biotechnology. Since 2003 to date
- Member of the American Society for Biochemistry and Molecular Biology (ASBMB) 2007
- Editor of Bioengineered Bugs. Since 2008 to date