

## Curriculum Vitae Gustavo C. MacIntosh, Ph.D.

2214 Molecular Biology Bldg.  
BBMB  
Iowa State University  
Ames, IA 50011

e-mail: [gustavo@iastate.edu](mailto:gustavo@iastate.edu)  
phone: (515)-294-2627

### Education

- 1997 Ph.D. in Biological Chemistry  
Universidad de Buenos Aires, Argentina.
- 1993 Master in Biological Sciences.  
Universidad Nacional de Mar del Plata, Argentina.

### Awards

- 2000 Award for most outstanding oral presentation at the Fourth Annual Meeting of the Michigan RNA Society. East Lansing, Michigan.
- 1993 Award for highest academic achievement in class. M.S. degree, Universidad Nacional de Mar del Plata, Argentina.

### Fellowships and travel awards

- 1996 Fellowship of the University of Buenos Aires (Advanced). Institute of Genetic Engineering and Molecular Biology (INGEBI-CONICET), Argentina.
- 1994 Fellowship of the University of Buenos Aires. Institute of Genetic Engineering and Molecular Biology (INGEBI-CONICET), Argentina.
- 1993 Fellowship of the Commission of Scientific Research of Buenos Aires Province (CIC). Institute of Genetic Engineering and Molecular Biology (INGEBI-CONICET), Argentina.
- 2002 Recipient of competitive travel fellowship from organizers of the 6<sup>th</sup> International Conference on Ribonucleases. Bath, UK.
- 2002 Recipient of competitive travel fellowship from NAASC/NSF to attend the XIII International Conference on Arabidopsis Research, Sevilla, Spain.
- 2000 Recipient of competitive travel fellowship from organizers of the 13<sup>th</sup> Annual Penn State Symposium in Plant Physiology. Plant Signaling 2000. State College, Pennsylvania, USA.
- 1995 Recipient of competitive travel fellowship from the Centro Argentino Brasileño de Biotecnología (CABBIO) to attend the course "Plant cell and tissue culture" organized by CABBIO and Centro Nacional de Pesquisa de Hortaliças. Brasília-DF, Brasil.
- 1994 Recipient of competitive travel fellowship from the French Embassy in Chile to attend the International Symposium and Practical Course "Mechanisms of Signal Transduction on Eukaryotic Cells"; organized by INSERM (France), CONICYT (Chile) and others. Santiago, Chile.

### Research experience

- 2003- Assistant Professor. Department of Biochemistry, Biophysics and Molecular Biology, and Plant Sciences Institute. Iowa State University, Ames, IA, U.S.A.

- 2002-2003 Associate Scientist. Delaware Biotechnology Institute, University of Delaware, Newark, DE, U.S.A.
- 1997-2001 Visiting Postdoctoral Research Associate. Research Advisor: Pamela J. Green, Professor. MSU-DOE Plant Research Laboratory, Michigan State University, East Lansing, MI, U.S.A.
- 1993-1997 Graduate Research Assistant. Advisor: María T. Téllez-Iñón, Professor. Institute of Genetic Engineering and Molecular Biology (INGEBI-CONICET) / Department of Biological Chemistry. University of Buenos Aires, Argentina.
- 1992-1993 Undergraduate Research Assistant. Advisor: María T. Téllez-Iñón, Professor. Institute of Genetic Engineering and Molecular Biology (INGEBI-CONICET). National University of Mar del Plata, Argentina.

### Synergistic Activities

Reviewer for the Plant Genome Program, Directorate for Biological Sciences, National Science Foundation.

Reviewer for The Plant Cell, Journal of Molecular Evolution, Plant Physiology, Plant Molecular Biology, Biochemistry, Planta, Plant Cell reports, and EMBO Journal

Development of the Plant ncRNAs Database, and associated website. Plant Research Laboratory, Michigan State University. (<http://www.prl.msu.edu/PLANTncRNAs/>).

### Collaborators

Gwyn Beattie (Iowa State University); Adam Bogdanove (Iowa State University); Volker Brendel (Iowa State University); Drena Dobbs (Iowa State University); Robert Jernigan (Iowa State University); Shauna Somerville (Carnegie Institution, Stanford); Kan Wang (Iowa State University); Steve Whitham (Iowa State University).

### Publications

1. **MacIntosh GC**, LeBrasseur ND, Millard T, Czymmek K and Green PJ (2005) Extracellular ribonuclease activity negatively affects cell elongation of Arabidopsis plants. Manuscript in preparation.
2. **MacIntosh GC**, Lu C, Young J, Green PJ (2005) Two Non-coding RNAs, *AtGUT15* and *AtCR20*, modulate the ABA response at high temperature in Arabidopsis. Manuscript in preparation.
3. Ru, Y, Huang W, **MacIntosh GC**, Brendel V (2005) Assessment of the Number and Roles of MicroRNA Genes in Arabidopsis thaliana. Submitted
4. LeBrasseur NL, **MacIntosh GC** and Green PJ (2005) Wounding induction of RNS1 is largely transcriptional and is controlled by ABA-dependent and -independent pathways in *Arabidopsis thaliana*. Submitted. **The first two authors contributed equally to this paper**
5. Raices M, **MacIntosh GC**, Ulloa RM, Gargantini PR, Voza NF, Tellez-Inon MT (2003) Sucrose increases calcium-dependent protein kinase and phosphatase activities in potato plants. Cell Mol Biol 49: 959-964

6. Raíces M, Ulloa RM, **MacIntosh GC**, Crespi M and Tellez-Inon MT (2003) *StCDPK1* is expressed in potato stolon tips and is induced by high sucrose concentration. *J. Exp. Bot.* 54: 2589-2591.
7. LeBrasseur ND, **MacIntosh GC**, Pérez-Amador MA, Saitoh M and Green PJ (2002) Local and systemic wound-induction of RNase and nuclease activities in Arabidopsis: RNS1 as a marker for a JA-independent systemic signaling pathway. *Plant J.*, 29: 393-403.
8. Ulloa RM, Raíces M, **MacIntosh GC**, Maldonado S and Téllez-Iñón MT (2002) Jasmonic acid affects plant morphology and the expression and activity of a Calcium-dependent protein kinase in *Solanum tuberosum*. *Physiol. Plantarum* 115: 417-427.
9. **MacIntosh GC**, Wilkerson C and Green PJ (2001) Identification and analysis of Arabidopsis expressed sequence tags characteristic of non-coding RNAs. *Plant Physiol.* 127: 765-776.
10. **MacIntosh GC**, Bariola PA, Newbigin E and Green PJ (2001) Characterization of Rny1, the *Saccharomyces cerevisiae* member of the T<sub>2</sub> RNase family of ribonucleases: Novel functions for ancient enzymes? *Proc. Natl. Acad. Sci. USA* 98: 1018-1023.
11. Gutiérrez RA, **MacIntosh GC** and Green PJ (1999) Current perspectives on mRNA stability in plants: multiple levels and mechanisms of control. *Trends Plant Sci.* 4: 429-438.
12. Bariola PA, **MacIntosh GC** and Green PJ (1999) Regulation of S-Like Ribonuclease levels in Arabidopsis. Antisense inhibition of RNS1 or RNS2 elevates anthocyanin accumulation. *Plant Physiol.* 119: 331-342.
13. Ogueta SB, **MacIntosh GC** and Téllez-Iñón MT (1998) Stage-specific substrate phosphorylation by a Ca<sup>2+</sup>/calmodulin-dependent protein kinase in *Trypanosoma cruzi*. *J. Eukaryotic Microbiol.* 45: 392-396.
14. Ulloa RM, **MacIntosh GC**, Melchiorre M, Mentaberry AN, Dallari P, Moriconi DN and Téllez-Iñón MT (1997). Protein kinase activity in different stages of potato (*Solanum tuberosum* L.) microtuberization. *Plant Cell Reports*, 16: 426-429.
15. **MacIntosh GC**, Ulloa RM, Raíces M and Téllez-Iñón MT (1996). Changes in Calcium-dependent Protein Kinase activity during “*in vitro*” tuberization in potato (*Solanum tuberosum*, L.). *Plant Physiol.*, 112: 1541-1550.
16. Ogueta SB, **Mac Intosh GC** and Téllez-Iñón MT (1996). Characterization of an autonomous Ca<sup>2+</sup>/ Calmodulin-Dependent Protein Kinase from *Trypanosoma cruzi*. *Mol. Biochem. Parasitol.*, 78: 171-183. **The first two authors contributed equally to this paper.**
17. Ogueta SB, **MacIntosh GC** and Téllez-Iñón MT (1993). Characterization and regulation of CaM KII of epimastigote forms of *T.cruzi*. *Memorias do Instituto Oswaldo Cruz* 88, Suppl I, 138.

**Selected talks:**

*What do secreted RNases do, and why are there everywhere?* Invited speaker, INGEBI, Universidad de Buenos Aires, Argentina, March 4, 2004; Universidad Nacional de Mar del Plata, Argentina, March 19, 2004.

*Extracellular ribonuclease activity negatively affects growth of Arabidopsis plants.* 19<sup>th</sup> Annual Meeting of the Mid-Atlantic Plant Molecular Biology Society. Beltsville, MD, August 19-20, 2002.

*Functional analysis of Arabidopsis noncoding RNAs.* 3<sup>rd</sup> Annual Arabidopsis Mini-Symposium, University of Maryland, College Park, MD, April 13, 2002.

*Gene expression analysis and gene knockout mutations in yeast and Arabidopsis implicate noncoding RNAs in diverse functions.* RNA Based Life Meeting, Indiana University, Bloomington, IN, November 15-17, 2001.

*Characterization of Rny1, the Saccharomyces cerevisiae member of the T<sub>2</sub> RNase family of ribonucleases: Novel functions for ancient enzymes?* 4<sup>th</sup> Annual Meeting of the Michigan RNA Society, East Lansing, MI, October 7, 2000.

**Selected poster presentations:**

*Evaluation of nuclease genes and activities in rice through bioinformatics and proteomics.* 2nd International Symposium on Rice Functional Genomics, Tucson, Arizona, November 14-18, 2004.

*Functional characterization of Arabidopsis S-like RNases.* XIII International Conference on Arabidopsis Research, Sevilla, Spain, June 28-July 2, 2002.

*Functional characterization of yeast and Arabidopsis RNases from the T<sub>2</sub> family.* 6<sup>th</sup> International Meeting on Ribonucleases, Bath, United Kingdom, June 19-23, 2002.

*Identification and analysis of Arabidopsis ESTs that are characteristic of noncoding RNAs.* Post-transcriptional Control of Gene Expression in Plants, Iowa State University Plant Sciences Institute Symposium, Ames, IA, May 10-13, 2001.

*Genome-wide analysis of non-coding, mRNA-like RNAs of Arabidopsis thaliana.* System Approaches to Plant Biology, Keystone Symposia, Big Sky, MT, January 26-31, 2001.