



Universidad de Costa Rica
Centro de Investigación en Biología Celular y Molecular (CIBCM)
Escuela de Biología

Postdoctoral position in genome editing in plants (2018-2019)

The Program for Genetic Improvement of crops (PMGC) at Centro de Investigación en Biología Celular y Molecular, University of Costa Rica seeks to implement a strategy for genome editing, specifically CRISPR/Cas9, in rice that contributes to the mitigation of climate change.

The candidate for the postdoctoral position will play a key role in the development and application of an in-planta transformation system in rice (<https://doi.org/10.1007/s11627-017-9870-1>; <http://www.thericejournal.com/content/5/1/23>; [Journal of Agricultural Technology 2014 Vol. 10 \(2\): 467-474](#)) in order to analyze whether the modification of the trehalase enzyme active site by genome editing, specifically CRISPR/Cas 9, affects the tolerance/ resistance to salinity in rice, a crop of economic, social and nutritional importance for Latin American countries.

Professional and academic profile of the candidate:

- Minimum degree of doctorate in genetics, biotechnology, molecular biology or related area obtained in the last five years.
- Whether the candidate is Costa Rican or a foreigner, it is requested that their doctorate degree would be recognized and authenticated (apostilled) by the competent authority of the country where the degree was obtained. In all the above cases, the candidates must not have any employment relationship with the University of Costa Rica.
- Preferably, the candidate will have previous research experience with editing genomes in plants (such as CRISPR/Cas9, TALEN, others).
- Preferably, experience in molecular cloning and plant cell culture under in vitro culture conditions.
- Proven basic knowledge in bioinformatics and molecular biology (DNA extraction, RNA, PCR, RT-PCR, qRT-PCR, NGS) would be required
- Proven scientific productivity through scientific articles published or accepted in indexed journals.
- Good organizational and communication skills.
- A deep scientific curiosity and aptitude to solve problems through the application of the scientific method.
- The capacity to work independently, as well as in a team, are essential.
- Ability to work and guide undergraduate and graduate students.
- The applicant must demonstrate proficiency in both written and spoken English.
- Preferably, with proven basic knowledge of the Spanish language (in case Spanish is not your mother tongue).

Detailed description of the postdoctoral research work:

- Selection and analysis of the sequence of the target gene (XM_015757488) and design of the gRNA
- Cloning of the gRNA in the expression vector.
- In planta genetic transformation (ex vitro) of rice by *Agrobacterium tumefaciens* or biolistics.
- Regeneration and selection under conditions of abiotic stress (salinity) of the genetically-edited rice plants.
- Collection of plant material and DNA and RNA extraction.
- Molecular verification of genetic editing by restriction analysis, PCR and sequencing.
- Molecular verification of the expression of the trehalase gene by qRT-PCR.
- Data collection and analysis, and preparation of the respective manuscripts for later publication in national or international journals.
- Maintain a close collaboration with the group of researchers of the project for the supervision and training of undergraduate and graduate students (Master's degree).
- Support with lectures in the courses of genetic engineering of plants for graduate students in the School of Agronomy and the School of Biology.
- Assist with the preparation of research proposals to search for national and international financing.

Other aspects to consider:

- In the case of foreigners, the Office of International Affairs and External Cooperation (O.A.I.C.E.) is the authorized office to manage (before the Migration and Immigration Office) the immigration procedures for persons who will be associated with the University of Costa Rica. The requirements for processing the special teaching or researcher category are published on the O.A.I.C.E. website (http://www.oaice.ucr.ac.cr/archivos/REQUISITOS-CATEGORIA_ESPECIAL_DE_DOCENTE.pdf).
- Likewise, all expenses incurred by the postdoctoral person during their stay in the country (housing, transportation, household and other personal expenses) will be borne by the postdoctoral person.
- The postdoctoral person, during their stay in the country, must have health and work insurance.
- Once the person has been selected, he or she will sign a contract with the Rector of the University of Costa Rica in which the duties and rights of the postdoctoral person will be specified.



The University of Costa Rica offers you:

- Monthly net salary of 1,000,000 colones (approximately US \$ 1,700).
- A postdoctoral position for a maximum of two years.
- The appointment of the second year will be subject to the delivery of a satisfactory report of the first year's work.
- Laboratories and greenhouses fully equipped for the development of the investigation.

Application process:

The following documents must be sent in PDF format in a single file in Spanish or English to Dr. Andrés Gatica Arias to the following email address (andres.gatica@ucr.ac.cr):

1. Cover letter, including motivation for applying for the postdoctoral position (no more than one page).
2. Complete curriculum vitae, including the degree and academic title, date of thesis defense, previous academic positions, academic distinctions, full list of publications, and contact information of three references.
3. Academic and language degrees.
4. The candidate must provide a medical certificate and crime sheet.
5. Indicate the closest tentative date, once the selection process has finished, to start the postdoctoral work.

Application deadline: February 15th, 2018

lication deadline: February 16th, 2018 midnight Costarican time