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## Curriculum Vitae 2019

### 1 Personal Data

Name: Fernando Roa  
E-mail: froao at unal.edu.co  
Skype: ferroao



### 2 Summary

I have experience in genetics and plant and human cytogenetics (IGH - PUJ), in techniques such as estimation of genomic size by cytometry, sister chromatids exchange, G-banding, FISH. I also have experience with molecular cytogenetic protocols such as DNA extraction, Nick translation, restriction reactions and PCR. Other techniques were applied in practical courses such as RNA extraction and microsatellites.

On the computational side, experience in databases, scientometrics (<https://cyto.shinyapps.io/cerrado/>) and programming including the R language, R-shiny, excel VBA, bash, python. Experience in accessing or downloading by script (R, VBA) databases such as gbif, Plants Of the World Online, The Plant List, Open Tree of Life, crossref.

I also applied these and other tools to DNA analysis, such as: Galaxy-based servers, Next Generation Sequencing (RepeatExplorer) reads processing and more specifically, phylogeny and DNA software such as geneious, mafft, iqtree, revBayes. I speak English, Portuguese and some German.

### 3 Personal links

Curriculum: <https://ferroao.gitlab.io/curriculumlumpu/>

ORCID: <https://orcid.org/0000-0001-5940-4374>

CV-Lattes: <http://lattes.cnpq.br/3239984208140922>

ResearchGate: [https://www.researchgate.net/profile/Fernando\\_Roa](https://www.researchgate.net/profile/Fernando_Roa)

Gitlab: <https://gitlab.com/ferroao>

### 4 Professional experience

#### 4.1 **Post-doc** 2014-2019

Main activity: Research in Plant molecular cytogenetics; Teaching in undergraduate and post-graduate

Projects: - Plant cytogenetics database of Cerrado

Scholarship: CAPES

- Reconstruction of ancestral characters in the phylogeny of Fabaceae

- Reconstruction of ancestral characters in the phylogenetic context of genus *Callisia*

- Genome size of plants of Cerrado

Institution: Universidade Federal de Goiás, Goiânia, Brazil. PPGMP Agronomia

Inst. contact: +55-62-3521-1688

Begin: feb-2014 End: jan-2019

#### 4.2 **School teacher** 2013

Main activity: Sciences

Institution: INEM Francisco de Paula Santander, Bogotá - SED

Inst. contact: +57-1-3241000

Begin: mai-2013 End: jan-2014

### 5 Main Degrees

#### 5.1 **Doctorate** 2007-2011

Title: Plant Biology

Sistematics

Diploma date: jul-02-2012

Scholarship: CNPq – Research funding agency - Brazil

Universidade Federal de Pernambuco, Recife, Brazil

Thesis: Analysis of the distribution of 5S and 45S rDNA sites in plant karyotypes Supervisor: Marcelo Guerra

Keywords: database, ribosomal DNA, FISH, molecular cytogenetics. language: portuguese

link: <https://repositorio.ufpe.br/handle/123456789/747>

Other projects: - Citotaxonomy of *Aristolochia*

- Citotaxonomy of *Tripogandra*

- Citrus Heterocromatin

Grade average: 4.3 (from 0.0 to 5.0)

#### 5.2 **Master** 2006-2007

Title: Plant Biology

Sistematics

Diploma date: jul-05-2010

Scholarship: CAPES – Education funding agency - Brazil

Universidade Federal de Pernambuco, Recife, Brazil

Thesis: Molecular citotaxonomy of genus *Callisia* (Commelinaceae)

Supervisor: Marcelo Guerra

Keywords: Molecular cytogenetics, FISH. language: portuguese

link: <https://repositorio.ufpe.br/handle/123456789/966>

Grade average: 4.0 (from 0.0 to 5.0)

Theses - approved with distinction

### 5.3 College

Title: Biology Genetics  
Diploma date: sept-15-2005  
Universidad Nacional de Colombia  
Thesis: Cytogenetic analysis with 4MV X-radiation of cells of early onset Alzheimer patients and controls  
(Instituto de Genética Humana, PUJ) Supervisor: Gloria Osorio, Marta Lucía Bueno  
Keywords: cytogenetics, Alzheimer. language: spanish  
link: <http://www.bdigital.unal.edu.co/8057/>  
Grade average: 4.0 (from 0.0 to 5.0) with honors, tuition payment exemption

### 5.4 High-School

Title: High school graduate Sciences  
Diploma date: jul-15-1995  
German School, Bogota. language: spanish-german  
Grade average: 8.1 (from 0.0 to 10.0)

## 6 Language proficiency

### 6.1 English

TOEFL-ITP; TOEFL 657/677; 103/120  
C1; C1 2018; 2012

### 6.2 Portuguese

CELPE-BRAS Higher intermediate  
B1 2011

### 6.3 German

Sprachdiplom II Passed  
B2-C1 1995

## 7 Articles

7.1 The Cerrado (Brazil) plant cytogenetics database 2017

Roa, Fernando; Telles, Mariana Pires de Campos. *Comparative Cytogenetics*. 11. 285–297  
doi [10.3897/CompCytogen.v11i2.11395](https://doi.org/10.3897/CompCytogen.v11i2.11395) <https://compcytogen.pensoft.net/article/11395/>  
Repo.: <https://gitlab.com/ferroao/cerradocytomu>  
Web-page: <https://cyto.shinyapps.io/cerrado/>

7.2 Non-Random Distribution of 5S rDNA Sites and Its Association with 45S rDNA in Plant Chromosomes 2015

Roa, Fernando; Guerra, Marcelo. *Cytogenetic and Genome Research*. 146. 243–249  
doi [10.1159/000440930](https://doi.org/10.1159/000440930) <https://www.karger.com/Article/FullText/440930>

7.3 Distribution of 45S rDNA sites in chromosomes of plants: structural and evolutionary implications. 2012

Roa, Fernando; Guerra, Marcelo. *BMC Evolutionary Biology*. 12. 225  
doi [10.1186/1471-2148-12-225](https://doi.org/10.1186/1471-2148-12-225) <http://www.biomedcentral.com/1471-2148/12/225>

7.4 Karyotype differentiation in three species of *Tripogandra* Raf. (Commelinaceae) with different ploidy levels 2010

Marques, Andre; Roa, Fernando; Guerra, Marcelo. Genetics and Molecular Biology. 33. 731–738  
doi [10.1590/S1415-47572010005000085](https://doi.org/10.1590/S1415-47572010005000085) <http://dx.doi.org/10.1590/S1415-47572010005000085>

7.5 Cytotaxonomy of diploid and polyploid Aristolochia (Aristolochiaceae) species based on the distribution of CMA/DAPI bands and 5S and 45S rDNA sites 2009

Berjano, Regina; Roa, Fernando; Talavera, Salvador; Guerra, Marcelo. Plant Systematics and Evolution. 280. 219–227

doi [10.1007/s00606-009-0184-6](https://doi.org/10.1007/s00606-009-0184-6) <http://link.springer.com/10.1007/s00606-009-0184-6>

## 8 Software: packages, scripts, pages

### 8.1 Shiny-App: Cytogenetics characteristic evo modeling

Repo.: <https://gitlab.com/ferroao/cytoevopri>

Web-page: <https://cyto.shinyapps.io/cytoevo/>

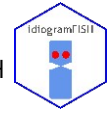


### 8.2 R-package: idiogramFISH: plot Idiograms and Karyotype indices

Repo.: <https://gitlab.com/ferroao/idiogramFISH>, <https://cran.r-project.org/web/packages/idiogramFISH>

CRAN: [downloads](#) **1417**

Web-page: <https://ferroao.gitlab.io/manualidiogramfish/>



### 8.3 Script: Reading databases

Repo.: <https://gitlab.com/ferroao/getdatabase>



### 8.4 Rmarkdown: Curriculum

Repo.: <https://gitlab.com/ferroao/curriculumpu>

Web-page: <https://ferroao.gitlab.io/curriculumpu>



## 9 Lectures

### 9.1 Cytogenetics

40h

Graduate

2015.I

Universidade Federal de Goiás

### 9.2 Cytogenetics

64h

College

2014.I

Universidade Federal de Goiás

## 10 Mentoring

### 10.1 Undergraduate research

Student: Daniella Rezende

Institution: Universidade Federal de Goiás

01-08-2014 - 31-07-2015

## 11 Courses taught

### 11.1 Evolution of cytogenetic characters in the phylogenetic context

5h

VI Reunião Brasileira de Citogenética e Citogenômica, Goiânia

21 05/2019

### 11.2 Molecular and classic Citogenetics in plants

6h

XXV Semana do ICB, Universidade Federal de Goiás

18-20 11/2014

## 12 Talks in Events

### 12.1 Cytogenetics for resolving evolutionary questions

Encontro da liga acadêmica de genética. portuguese 27-04-2018  
UFG. Goiânia, Brasil

### 12.2 Reconstruction of ancestral states of cytogenetic characters in Leguminosae

Reunião de citogenética do Brasil Central. portuguese 20-10-2017  
UCG. Goiânia, Brasil

### 12.3 Database of Plant Cytogenetics. Current situation of the field

Reunião de citogenética do Brasil Central. portuguese 08-12-2016  
UCG. Goiânia, Brasil

### 12.4 Distribution of 5S and 45S rDNA sites and implications

II Simposio de Genética. spanish 28-05-2012  
Universidad del Quindío. Armenia, Colombia

### 12.5 Trends on the distribution of the 45S ribosomal DNA in plants

Society for Experimental Biology Main Meeting 02-07-2010  
Prague, Czech Republic

### 12.6 Cytogenetics and Molecular cytotaxonomy of species of genus *Callisia* Loeffl. (Commelinaceae)

II simposio Latinoamericano de citogenética y evolución. spanish 17-08-2007  
UN, Palmira, Colombia

## 13 Congress presentations and abstracts

### 13.1 Splitting is the answer. Cytogenetics and systematics analyses of *Callisia* Loeffl. (Comelinaceae)

Poster

Roa F, Pellegrini MOO, Vaio M, Guerra M 21-24 05/2019  
VI Reunião Brasileira de Citogenética e Citogenômica. Goiânia

### 13.2 The Cerrado Plant cytogenetics database

Poster

ROA, F; Telles, MPC 08-11 11/2016  
IV Congresso Brasileiro de Recursos Genéticos. Curitiba  
Anais do IV Congresso Brasileiro de Recursos Genéticos. portuguese

### 13.3 Genome size and chromosome counts in Brazilian Cerrado spermatophytes

Poster

ROA, F; Antunes, AM ; Souza, LGR ; Telles, MPC 26-29 05/2015  
4 Reunião Brasileira de Citogenética. Atibaia  
Trabalhos da 4ta RBC. portuguese

### 13.4 Distribution of 5S and 45S rDNA sites in plant chromosomes

Talk

Guerra M, Roa F 23-25 04/2012  
Gatersleben Research Conference. IPK Gatersleben, Germany  
Annals of the Gatersleben Research Conference. 53

### 13.5 Trends on the distribution of the 45S ribosomal DNA in plants

Talk

Roa F, Guerra M 30-03 07/2010  
 Society for Experimental Biology Main Meeting. Prague, Czech Republic  
 Annals of the SEB Meeting. 262

13.6 Preferential position of 5S ribosomal RNA genes in plant genomes Poster  
 Roa F, Guerra M 31-03 04/2009  
 II Brazilian Symposium of Molecular genetics. Búzios, Brasil  
 Annals of the II Brazilian Symposium of Molecular genetics. 180. portuguese

13.7 Chromosomal variation of heterochromatin and 5S and 45S rDNA in species of *Aristolochia*  
 Roa F, Berjano R, Guerra M 02-05 09/2007  
 53 Brazilian congress of genetics. Aguas de Lindóia, Brasil  
 Annals of the 53 Brazilian congress of genetics. 56. portuguese

13.8 Cytogenetics and molecular cytotaxonomy of species of genus *Callisia* Loeftl. (Commelinaceae) Talk  
 Roa F, Guerra M 15-18 08/2007  
 II Latin-American symposium of cytogenetics and evolution. Palmira, Colombia  
 Annals of the II Latin-American symposium of cytogenetics and evolution. 217. portuguese

13.9 Cytogenetics of a spontaneous tetraploid of *Nothoscordum pulchellum* Kunth (Alliaceae) Poster  
 Roa F, Guerra M 06-10 11/2006  
 57 National congress of Botany. Gramado, Brasil. portuguese

13.10 Contrasting chromosome patterns in three species of genus *Callisia* Poster  
 Roa F, Guerra M 03-09 09/2006  
 52 Brazilian congress of genetics. Foz do Iguaçu, Brasil  
 Annals of the 52 Brazilian congress of genetics. 1107. portuguese

13.11 Transport of biomass by *Atta laevigata* Smith (Formicidae) in the eastern plains Poster  
 Velasco P, Roa F 06-10 10/2003  
 III Scientific meeting of biology students. Bogotá, Colombia  
 Acta Biológica Colombiana, Vol. 8 No. 2. 117. spanish

## 14 Taken Courses and Workshops

14.1 Introducing python Theoretical and Practical Course  
 Universidade Federal de Goiás, Goiânia, Brasil 80h  
 Portuguese 28/07-09/08 2019

14.2 Flow cytometry Theoretical and Practical Course  
 Universidade Federal de Pernambuco, Recife, Brasil 15h  
 30/11-02/12 2015

14.3 Isolation of cells by Splitt and acoustofluidics Theoretical Course  
 Universidad Nacional de Colombia. Centro Internacional de Física 32h  
 Spanish 28/01-08/02 2013

14.4 Engativa Wetlands 2013 Course  
 Jardín Botánico de Bogotá 60h  
 Spanish 30/09-30/11 2013

14.5 2nd Biological evolution workshop Workshop  
 Universidade Federal de Rio Grande do Sul, Porto Alegre, Brasil 24h  
 16/11-18/11 2009

#### 14.6 Identification and characterization of gene function in plants and microorganisms

Universidade Federal Rural de Pernambuco, Recife, Brasil  
Portuguese  
20h  
Theoretical Course  
28/07-01/08 2008

#### 14.7 Stem cells, facts, fiction and future

53 Brazilian congress of genetics, Águas de Lindóia, Brasil  
Portuguese  
3h  
Congress Course  
02/09-05/09 2007

#### 14.8 Cytogenetics in the diagnosis and genetic counseling of recurrent abortion

II Latin-American symposium of cytogenetics and evolution, Palmira, Colombia  
Spanish  
4h  
Congress Course  
15/08-18/08 2007

#### 14.9 Chromosomes and phylogeny: The use of cladistics in cytogenetics

52 Brazilian congress of genetics, Foz de Iguaçu, Brasil  
Portuguese  
3h  
Congress Course  
03/09-09/09 2006

#### 14.10 Physical mapping and positional cloning in plants

52 Brazilian congress of genetics, Foz de Iguaçu, Brasil  
Portuguese  
3h  
Congress Course  
03-09-09/09 2006

#### 14.11 Basic and molecular cytogenetics

Instituto de Genética Humana, Bogotá, Colombia  
Spanish  
2520h  
Training  
15/09-15/12 2002

#### 14.12 Animal cell culture

Instituto Nacional de Salud, Bogotá, Colombia  
Spanish  
84h  
Theoretical and Practical Course  
04/06-14/07 2001

#### 14.13 Transgenic plants

Universidad Nacional de Colombia, Bogotá, Colombia  
Spanish  
19h  
Theoretical Course  
23/06-24/06 2000

### 15 Military service

Escuela de Ingenieros Militares, Bogotá, Colombia  
15-07-1995 - 21-07-1996