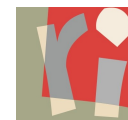# Entering French research organisms

Flora Jay, CR2 CNRS, LRI
(Laboratoire de Recherche en Informatique)

Journée après thèse
ED EOBE et STIC - Université Paris-Saclay

– CV –

2005-2008 Computer Science and Applied Mathematics
Ingénieur Ensimag Grenoble

2007-2008 Master 2 Research – Modeling biology
UJF Grenoble

2008-2011 PhD – Bayesian statistics for population genetics
TIMC-IMAG, Université de Grenoble
Olivier François, Michael Blum

2012-2014 Postdoc - Theoretical popgen. & paleogenomics
University of California Berkeley, USA
Montgomery Slatkin

2014-2015 Postdoc – Genomes and human demography
Muséum National d'Histoire Naturelle, Paris
Frédéric Austerlitz

From Oct. 2015 CR2 CNRS, *recruited by CID 51*
Laboratoire de Recherche en Informatique
Bioinfo

Research: reconstructing the past from genomic data

PhD

- Bayesian statistics

- Population genetics (+ecology)

Postdocs

- Theoretical population genetic

- Handling large-scale data (complete genomes)

- Paleogenomics (ancient DNA)

Research project

- Developments for massive genomic data and integration of temporal ancient DNA – approximate Bayesian methods & machine learning
  → inference of population demography

Being a researcher

- Advancing knowledge on topics you like

- Taking up challenges

- Interacting with people all around the world

- Lot of freedom (might be hard to handle)

- Leading projects, mentor students

- Applying for grants

- A bit of teaching (not mandatory)

  But also:

- Supervising a team

- Participating in technology transfer, ...

Know your options!

- Find out about all the possibilities in your field (read, chat, ask around...)

- Employers/Institutes (each has its specificities)
    - CNRS
    - INRIA
    - INRA
    - CEA
    - Inserm
    - Pasteur
    - IFREMER
    - …

- Positions

    - Researcher (CR)

    - Research engineer (IR, …)

- Do NOT hesitate to apply to several positions

National Center for Scientific Research CNRS

CNRS

- Wide range of topics. 10 institutes:

  humanities and social sciences, mathematics, physics, chemistry, particle and high energy physics, engineering, biology, information sciences, earth sciences and astronomy, ecology and the environment

- ~ 1200 labs hosting CNRS researchers (France+international)

- Funding: mostly government, some CNRS income (from contracts, patents, ...)

CNRS - Sections

- ## 41 sections

  06   Information Science: computer science fundamentals, calculi, algorithms, models and applications   (INS2I)

  07   Information Science: processing, integrated device-software systems, robots, control, images, contents, interactions, signal and languages (INS2I, INSIS)

  08   Micro- and nanotechnologies, micro- and nanosystems, photonics, electronics, electromagnetism, electrical energy (INSIS)

  CNRS institute

- ## + 5 interdisciplinary commissions
  50 – 54

  51 : Modeling and analysis of biological data and systems: approaches through computer science, mathematics, and physics

  54 : Experimental methods, concepts and instrumentation in materials science and life science engineering

CNRS - Application

- Competitive admission process starting in December

- Do not need to be a French citizen

- Application (written and the later interview) in French or English

- No age limit

- CR-N: unlimited trials (replace the old CR2 / CR1 positions)

- *IR: research engineer (another competition)*

- **You can apply to multiple positions and sections**

All the criteria are online
https://www.dgdr.cnrs.fr/drhchercheurs/concoursch/informer/default-en.htm

Competition 2017

Example

<u>Section n°07 : Information sciences: signals, images, languages, automatic control, robotics, interactions, hardware-software integrated systems</u>

<u>N°07/01</u> - 6 Senior scientists 2nd class. Competitive entry is open for research themes pertaining to Section n°<u>07</u>.

<u>N°07/02</u> - 2 Associate scientists 1st class. Competitive entry is open for research themes pertaining to Section n°<u>07</u>.

2 CR1

<u>N°07/03</u> - 4 Associate scientists 2nd class.
Among whom:
- 1 preferably with a research programme devoted to « Cognitive robotics or bio-inspired robotics or robotics design »,
- 1 preferably with a research programme devoted to « human-computer interaction, virtual reality »,
- 1 preferably with a research programme devoted to « problems related to multimodality and heterogeneity in automatic control or signal and image processing ».

5 CR2

<u>N°07/04</u> - 1 Associate scientist 2nd class. On the following theme « Signal and image processing in Neuroscience (Electrophysiology and/or Cerebral imaging)". Candidates must develop a research program to be executed in a CNRS research unit depending from the Institute of Biological Sciences (INSB)

Some positions are quite specific (constraint on topic, institute, ...)

Competition 2017

Example

Section n°08 : Micro- and nanotechnologies, micro- and nanosystems, photonics, electronics, electromagnetism, electrical energy

N°08/01 - 9 Senior scientists 2nd class. Competitive entry is open for research themes pertaining to Section n°08.

N°08/02 - 1 Associate scientist 1st class. Competitive entry is open for research themes pertaining to Section n°08.

N°08/03 - 5 Associate scientists 2nd class. 5 Associate scientists 2nd class including one as a priority on the following theme "Photonics" and for this theme the candidate will carry out his research in one of the INP main laboratories.

1 CR1, 5 CR2

Interdisciplinary committee n°51 : Modeling and analysis of biological data and systems: approaches through computer science, mathematics, and physics

6 CR2

And so on... ~300 researchers to be recruited in 2017 (junior+senior)

You have a better chance if

- You did postdoc... (true for most of the fields)

- … not in your PhD lab, better if abroad

- Good publication record + citations + talks in international conferences

- Collaborations with different labs (in France and international)
  // published by yourself

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Warning

- Highly competitive

- Work and luck play a role

- Do not loose faith in you !

Prepare your application

- Start early!

- Read carefully instructions of each section, they vary

- Find at least one lab willing to host you
  some sections ask for two or three labs
  NOT your PhD lab (depends on the CNRS institutes)

- cv, past activities, research project

- Have a webpage/website (useful for postdoc application, and for everyday visibility as well)

Research proposal

- Your very own project

- Make use of your past experiences and skills

- Combine them to create something new and ambitious

- Should bring something to the field

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Writing

- Define <u>short-term and long-term goals</u>

- State clearly: challenges / your objectives / methods

- You ◄► hosting lab   You ◄► community (collaborations)

- Think about the future

Interview

Short: 10/15 minutes presentation + 10/15 questions

Presentation: find a balance cv / past activities / project

- Principal past contributions, their originality and relevance

- Research project: main topics, methods you plan to use, how it fits in the lab, …

- Committee is diverse (not all experts)
  introduce the scientific context

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- Practice a lot, old labs, postdoc lab, hosting lab, …

- different specialties → different questions

Take-home message

- Try to think about the future when you choose your postdoc

- Know your options

- Talk about your future plans with colleagues

- Whole application requires time and energy
  → stay confident

- Advertisement
  3rd Junior Conference on Data Science and Engineering
  Saclay, 13-14th September
  junior-data-science.org
  Master, Engineer, PhD Students
  → Networking!

Useful links

- Guidelines for "Concours CNRS"

  https://www.dgdr.cnrs.fr/drhchercheurs/concoursch/pdf/Guide-EN.pdf

  http://www.dgdr.cnrs.fr/drhchercheurs/concoursch/informer/default-en.htm

- Details about all CNRS sections

  http://www.cnrs.fr/comitenational/sections/intitsec.php

Other organisms

- **INRIA**

  – Applied Mathematics, Computation and Simulation

  – Algorithmics, Programming, Software and Architecture

  – Networks, Systems and Services, Distributed Computing

  – Perception, Cognition and Interaction

  – Digital Health, Biology and Earth

- **CEA**

  – Controlled thermonuclear fusion

  – Climate and Environmental sciences

  – Chemistry and radiation-matter interactions

  – Physical sciences

  – Nanosciences

  – Cryotechnologies

  – Radiobiology and nuclear toxicology

  – Applying nuclear-baser technologies to health

Other organisms

- Inserm

- INRA

  - improving the performance of all facets of agricultural systems

  - mediating and adapting to the impacts of climate change

  - using biomass in chemical, energy, and bioeconomic applications

  - developing sound, sustainable food-production systems

  Agroecology, systems biology