

**Erasmus + KA2 - Capacity Building for Higher Education**  
**Project: Oncogenetics development in Eastern countries**  
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### Participants

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### Objective

Development of skills/knowledge in Oncogenetics in Eastern European Countries .

### Definition of Oncogenetics

Personalized medical and diagnostic care of patients and their families with monogenic or familial inherited risk of cancer. Hereditary predisposition to cancer is the only one risk factor of cancer that defines a sub-group of population at very high risk of cancer (60-90% cumulative risk over life) and can propose adapted medical follow-up and prevention. Oncogenetics concerns about 5% of the whole population, and has already demonstrated its efficiency in terms of better prognosis for patients and in terms of prevention by reducing the incidence of cancers in healthy relatives in families (societal impact).

### Activities

Pr BIGNON was pioneer in France when he set up an Oncogenetics department in Clermont-Ferrand (1988). Pr. BIGNON's team has since continued developing Oncogenetics in 27 countries (Romania, China, Tunisia, Lebanon, ...). This partnership has enabled to create in Iasi (Romania) a special university diploma through our international Oncogenetics school, and many pioneer medical consultations in public hospitals, gene tests in laboratory and medical organization of follow-up and prevention of high-risk population in other countries.

Presently, in Clermont-Ferrand, more than 8000 families are registered (200 000 people) and benefit from a special follow-up based on the identified cancer risk (breast/ovarian, colorectal, polyposis...). Family members exposed to the familial risk undergo germ-line gene test and then periodically several medical examinations (breast MRI, colonoscopy, whole body MRI...) and/or prophylactic surgeries (oophorectomy, mastectomy, thyroidectomy...) through a regional network of 200 physicians and annual meetings.

Research activity represent more than 300 peer-review international scientific papers since 1990 (H index = 48; citations > 9 000)

### Staff

Yves-Jean BIGNON's team comprises 3 oncogeneticists, 3 biologists, 1 pharmacist (quality manager), 1 biostatistician, 1 computer scientist, 2 genetic counselors, 5 secretaries and 6 skilled biological technicians. Over 2000 medical consultations are performed yearly and 800 genetics tests (massive parallel sequencing of a panel of genes).

### Current plans

- In a medium term, Pr. BIGON's team considers a wide H-2020 project as follows: we have evidenced a higher risk of congenital poly-malformation (CPM - those concerning several anatomical systems) in families predisposed to cancer. The aim of this H-2020 project could be the study of risk factors for CPM that might contribute with deleterious mutations favoring cancers to an increase of CPM. We hypothesize that genetic anomalies could potentiate environmental risk factors such as ionizing radiations, endocrine disruptors, etc.  
In some countries, and more specifically in eastern countries that have been affected by the Chernobyl disaster, a few populations could be especially targeted by a wide epidemiologic survey, but before launching this survey, it's necessary to develop first Oncogenetics in these countries.
- **The current CBHE project** could form the first step: it aims at transferring skills of Oncogenetics knowledge and organization in the following countries: Belarus, Ukraine and Moldavia. Following topics describe main components of this skill transfer:
  - ✚ Education/teaching: University agreements, local conferences (global information) and teaching seminars (for physicians) in each University
  - ✚ Technical workshops in Clermont-Ferrand (for medical doctors):
    - How to perform an oncogenetic consultation
    - How to gather oncogenetic information (pedigrees...)
    - In which cases genetic testing is relevant?
    - How to give counselees a positive or negative result?
    - How to organize gene test for relatives
    - How to organize the medical follow-up according to the genetic result
    - How to deal with cancer prevention
  - ✚ Genetic testing could be performed in our laboratory in a first step. In the future, local genetics laboratories could be developed in each country, with University programs to allow developing local skills able to handle such technics. Biologists and PhD students could be trained in our laboratory.
  - ✚ Equipment: Hardware/software  
Since genetic testing that can be performed by our laboratory, means to enable genetic consultations are not that important: this is mainly man power, man skills, education & training, organization. We can provide our specialized software, developed in Centre Jean Perrin, to help designing oncogenetic pedigrees and interpreting them. This software also facilitates the follow-up of at-risk families.

### Nota Bene

*These plans as described above must be considered as a working draft and are supposed to progress.*