This project has received funding

The present file describes the advertisement for 2 doctoral candidate (DC) positions within MSCA Doctoral Network ColoMARK (MSCA-DN-2021-101072448).

1. ColoMARK

The ColoMARK network integrates 17 teams with multidisciplinary expertise (omics, epidemiology, microbiome, circulating tumour DNA, bioinformatics, statistics & machine learning, assay development, circulating RNAs, circulating tumour cells, tumour profiling, clinics) aiming at the identification and development of novel colorectal cancer (CRC) biomarkers via state-of-the-art liquid biopsy approaches. ColoMARK will provide cross- and interdisciplinary innovative training with special emphasis on transversal competences to 10 doctoral candidates (DCs). They will constitute a next generation of **effective, multi-skilled and proactive future professionals** that comply with the tenets of the Principles for Innovative Doctoral Training, and that achieve enhanced intersectoral employability.

2. Eligibility criteria for all DC positions under MSCA

- The applicants MUST not have resided or carried out their main activity (work, studies, etc.) in the country of the recruiting beneficiary for more than 12 months in the 36 months immediately before the recruitment date (unless as part of a compulsory national service or a procedure for obtaining refugee status under the Geneva Convention).
- Applicants MUST NOT be in possession of a PhD
- Additional eligibility criteria may be described for each position in the descriptions below.

3. Working conditions

DCs will receive a fully funded working contract for three years including health insurance and social benefits.

Salaries will comply with MSCA and local institution regulations. This quantity describes the living allowance for the DCs, including all costs related to the contract, including social security and insurance, where appropriate. A flat rate Mobility allowance will also be included in the contract. Additional allowances (family, long-term and special needs) will be added if applicable.

Recruited DCs must work exclusively for the action.

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4. Requirements and obligations

- The DC must be ***enrolled in the local PhD programmes of the hosting institutions,*** which will contribute greatly to providing specialised education on both core scientific topics, as well as transversal skills.

- In addition, the DC must participate in ***training activities provided by the ColoMARK*** including network-wide training, clinical rotations, workshops, summer/winter schools, or e-training. This reinforces the doctoral candidates´s exposure to a varied choice of training activities outside of the host lab, and will be focused on enhancing the personal, team-wide and network-wide capabilities of the DCs.

- One of the strongholds of MSCA Doctoral Network actions is the flexibility of DC work amongst the different teams, and this mobility enhances and improves the participant interrelations. Therefore, all ColoMARK DCs will perform ***a minimum 5 months of secondments*** at other ColoMARK teams, including at least 3 weeks in the non-academic sector (according to internal regulations that restrict interactions with for-profit organisations).

- ColoMARK is greatly committed to patient and public involvement in research (PPI). DCs will therefore team up and work alongside patients in order to produce better research and researchers.

5. Framework for recruitment procedure

DC recruitment will take all measures to implement the principles set out in the Commission Recommendation on the European Charter for Researchers and the Code of Conduct for the Recruitment of Researchers. This means recruitment will follow an ***open, transparent, impartial and equitable*** recruitment procedure, on the basis of:

- scientific skills and the relevance of the research experience
- the impact of the proposed training on the researcher's career
- a fair gender representation by promoting genuine equal access during recruitment. This will include an unbiased assessment of skills and merits during evaluation. Where two applicants are tied with regards to merits, ColoMARK choose the one from the underrepresented sex.

6. Recruitment process

Vacancies will be advertised and published internationally, to guarantee openness of the call. The call for applicants will be **open until 15th May 2023**.

Shall any conflict of interest arise during the procedure, this shall be notified to the ColoMARK project manager at: colomark@gmail.com.

DC recruitment will be a two stage process. On ***stage 1***, applicants will be evaluated firstly on eligibility, and then according to their CV: academic and professional qualifications, prior research experience and skills, publications, teaching activities, level of independence, knowledge transfer and dissemination output, mobility experience, and letter of motivation describing their purpose and goal in participating in ColoMARK. Career breaks or variations in the order of CVs will not be penalised. The CVs will be evaluated by the supervisor and co-supervisor for each position, and additional input may be provided by other ColoMARK members if required.

The top applicants or those attaining a minimum score will then proceed to ***stage 2***. Applicants will be notified of this decision by May. For this stage, the letters of support will be evaluated together with an interview by a Selection Committee consisting of the two supervisors and additional local team members. Please note that all interviews will be recorded, and that by applying to any of these positions, you accept these conditions.

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Recordings will be kept privately for use exclusively within the ColoMARK consortium. Interviews will happen during May 2023.

Due to the mobility rule, a basic level of written and oral English will be required from the applicants in order to guarantee appropriate communication upon incorporation at the host groups.
Results from the selection process and the list of selected DCs will be published at the latest by early June 2023. **The applicants must start their employment under ColoMARK by 30th July 2023**.

7. Application procedure

Aspirants should apply for each DC position according to the specific descriptions provided below. The following information must be included for all applications:

- Academic qualifications, including official certificates with marks and credits (for BSc and MSc)
- Narrative CV (1,000 words max)
- Motivation letter describing their interest in the selected DC project(s)
- Abstract (500 words max) description of MSc thesis (and copy of derived publications, if appropriate)
- 2 letters of support (including e-mail and telephone contact information)

Applications to more than one DC project within ColoMARK is permitted, but this information should be clearly disclosed in the motivation letters to each of the positions,and ranked in order of preference.

8. Group description

Dr Ceres Fernandez (she/her) is a PI at IDIS. Her work is focused on genetic predisposition to colorectal cancer and the identification of novel biomarkers to offer better prevention strategies for the disease. Dr Fernandez has a vast experience in NGS data analysis, genome-wide association studies (GWAS), and transcriptome-wide association studies (TWAS), and is a pioneer in multi-omic wide association approaches in CRC. She has published over 40 works in indexed journals, totalling over 1,500 citations. She has been a member of COST Actions EuColonGene (BM-1206), TransColonCan (CA-17118), and recently, CA21116 TRANSPAN. For a list of relevant publications, see https://pubmed.ncbi.nlm.nih.gov/?term=fernandez-rozadilla&sort=date

DESCRIPTION OF DC PROJECTS AND POSITIONS

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DC1 project title

Study of ctDNA biomarkers in the context of bowel cancer screening programmes.

Recruiting centre

Fundación Instituto de Investigación Sanitaria de Santiago (FIDIS), Santiago de Compostela (Spain). Supervisors: Dr C. Fernandez (FIDIS), Assoc. Prof. Dr E. Heitzer (Medical University of Graz, Austria). The DC will be enrolled in a doctoral programme at the University of Santiago de Compostela (USC).

Project description

The main aim of this project is to assess the usefulness of ctDNA mutation detection for patients undergoing colorectal cancer population-wide screening. DC1 will evaluate the different ctDNA available technologies throughout the network to identify that with the highest sensitivity/specificity for early stages (pre-malignant polyps and localised tumours). Then, he/she will obtain the genomic profiles of: a) somatic mutation of the primary growth (including hotspot driver mutations; and b) the circulatory somatic mutation profile. The ctDNA predictivity will also be compared and/or used in conjunction with the a priori genetic polygenic risk score obtained from the genotyping of the 200+ SNPs that influence CRC risk. Models will be created to conjugate the fixed predisposition component together with epidemiological risk factors and dynamic ctDNA values to identify patients that should undergo colonoscopy.
The project outline includes both wet lab as well as dry lab training, in an approximate 30-70% proportion.

Additional eligibility criteria

Applicants must fulfil the requested list of academic qualifications and skills

Academic qualifications requested

BSc in biomedical sciences* (or similar, depending on country) + MSc in bioinformatics OR BSc in computer science* + MSc in genomics*.
*similar (in content) degrees may be considered (depending on description), as the titles may vary depending on country of origin

Skills requested

Basic bioinformatic training
Wet lab experience on genomic techniques (e.g. nucleic acid extraction and QC)

Skills valued

Bioinformatic understanding of NGS data analysis, particularly DNA variant calling
Previous experience with ctDNA data analysis
Lab experience working with ctDNA
Knowledge/work on cancer genetics/genomics
Previous experience with prediction models, including polygenic risk scores
Previous experience on biomarker development

Application procedure

Applicants should follow the application procedure and submit the files as a single pdf here: FIDIS Job Opportunities (position 044/2023).

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DC10 project title

Single-cell RNA sequencing of circulating tumour cells (CTCs) in CRC patients to identify novel biomarkers of disease monitoring and progression.

Recruiting centre

Fundación Instituto de Investigación Sanitaria de Santiago (FIDIS), Santiago de Compostela (Spain). Supervisors: Dr C. Fernandez (FIDIS) and Dr. Vivian Viallon (IARC, France). The DC will be enrolled in a PhD programme at the University of Santiago de Compostela (USC).

Project description

The main aim of this project is to utilise circulating tumour cells (CTCs) and their transcriptomic landscape over the course of the disease and treatment to identify novel biomarkers that can help us guide therapeutic strategies. DC10 will utilise CTC isolation techniques to obtain SOPs for the isolation of CTCs for downstream transcriptomic analyses. The dynamic CTC transcriptomic data will be mined to identify biomarkers that can help predict disease outcome and guide therapeutic strategies. The CTC results will be compared with those obtained from primary tumour analyses and other complementary biomarkers, to create optimal models.
The project outline includes both wet lab as well as dry lab training, in an approximate 20-80% proportion.

Additional eligibility criteria

Applicants must fulfil the requested list of academic qualifications and skills.

Academic qualifications requested

Skills requested

Basic bioinformatic training
Basic wet lab experience on genomic techniques (e.g. nucleic acid extraction and QC)

Skills valued

Previous experience with RNAseq data analysis
Lab experience working with CTCs
Knowledge/work on cancer genetics/genomics
Previous experience with prediction models, including predictors
Previous experience on biomarker development

Application procedure

Applicants should follow the application procedure and submit the files as a single pdf here: FIDIS Job Opportunities (position 045/2023).