



MBA program on Applied Bioinformatics to Personalized Medicine and Health.

2018-2019

Project Supervisor:

Name: Margarita Sánchez-Beato

Group: Group of Research in Lymphomas - Medical Oncology Service

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Project Title: *GENOMICS AS A TOOL TO IDENTIFY MOLECULAR BIOMARKERS IN LYMPHOMAS*

Summary:

Lymphoid neoplasm is a highly heterogeneous group of tumors composed by a large number of different diseases. The differential diagnosis and the consequent therapy are sometimes difficult to establish due to similar clinical and molecular features that some types of lymphoma share. Our work aims to create computational tools that integrate genetic and clinical information of lymphoma patients to identify predictive markers of treatment response and survival, and to propose new therapeutic approaches.

The Group of Research in Lymphomas, leads by Dr. Margarita Sánchez-Beato, is focused on studying lymphoma pathogenesis, to identify essential survival pathways and mutated genes to subsequently translate discovery into new diagnostic and therapeutic markers. We use "molecular diagnosis-driven targeted therapy" to describe this approach. We are focused on the molecular mechanisms and therapeutic potential involving clonal heterogeneity in B-cell receptor derived signaling and associated pathways. Ultimately, we pursue the rapid translation of results generated in the laboratory to the clinical setting to facilitate the identification of the appropriate therapy for every cancer patient (personalized medicine).

The group have currently several active projects focused in genomics and liquid biopsy (ctDNA) in B-cell lymphomas, mainly follicular lymphoma and diffuse large B-cell lymphoma.



Tasks of the candidate

- Support in the analysis of biological data: development and / or implementation of workflows and pipelines for NGS data analysis (aimed to the identification of somatic alterations in tumoral samples)
- Support in the creation of databases integrating genetic and clinical information of cancer patients (mainly lymphomas and lung cancer)

References:

- 1: González-Rincón J, Gómez S, Martínez N, Troulé K, Perales-Patón J, Derdak S, Beltrán S, Fernández-Cuevas B, Pérez-Sanz N, Nova-Gurumeta S, Gut I, Al-Shahrour F, Piris MA, García-Marco JA & Sánchez-Beato M. **Clonal dynamics monitoring during clinical evolution in chronic lymphocytic leukaemia**. Scientific Reports 2019. Jan 30. In press
- 2: Manso R, Sánchez-Beato M, González-Rincón J, Gómez S, Rojo F, Mollejo M, García-Cosío M, Menárguez J, Piris MA, Rodríguez-Pinilla SM. **Mutations in the JAK/STAT pathway genes and activation of the pathway, a relevant finding in nodal Peripheral T-cell lymphoma**. Br J Haematol. 2018 Nov;183(3):497-501
- 3: Franco F, González-Rincón J, Lavernia J, García JF, Martín P, Bellas C, Piris MA, Pedrosa L, Miramón J, Gómez-Codina J, Rodríguez-Abreu D, Machado I, Illueca C, Alfaro J, Provencio M, Sánchez-Beato M. **Mutational profile of primary breast diffuse large B-cell lymphoma**. Oncotarget. 2017 Oct 24; 8(61):102888-102897.
- 4: Manso R, Rodríguez-Pinilla SM, González-Rincón J, Gómez S, Monsalvo S, Llamas P, Rojo F, Pérez-Callejo D, Cereceda L, Limeres MA, Maeso C, Ferrando L, Pérez-Seoane C, Rodríguez G, Arrinda JM, García-Bragado F, Franco R, Rodríguez-Peralto JL, González-Carreró J, Martín-Dávila F, Piris MA, Sánchez-Beato M. **Recurrent presence of the PLCG1 S345F mutation in nodal peripheral T-cell lymphomas**. Haematologica. 2015 Jan; 100(1):e25-7.
- 5: Vaqué JP, Gómez-López G, Monsálvez V, Varela I, Martínez N, Pérez C, Domínguez O, Graña O, Rodríguez-Peralto JL, Rodríguez-Pinilla SM, González-Vela C, Rubio-Camarillo M, Martín-Sánchez E, Pisano DG, Papadavid E, Papadaki T, Requena L, García-Marco JA, Méndez M, Provencio M, Hospital M, Suárez-Massa D, Postigo C, San Segundo D, López-Hoyos M, Ortiz-Romero PL, Piris MA, Sánchez-Beato M. **PLCG1 mutations in cutaneous T-cell lymphomas**. Blood. 2014 Mar 27; 123(13):2034-43.

Expected skill:

- Good level of spoken and written English
- Basic knowledge of genetics/molecular biology
- Knowledge of R, Perl and Python

Possibility of funding: Cannot guarantee