



Master Biologie Moléculaire et Cellulaire 'BMC',  
Université Paris Cité - UFR Sciences du Vivant

Parcours : **Biologie et Développement Cellulaires 'BDC'**

<http://www.master2bdc.fr/>

Fiche de Projet de Stage de M2, 2022-2023

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**Titre du projet :** Study of the tumorigenic effects of 'RTK-RAS' signaling axis variants associated with Rhabdomyosarcoma in the chicken embryo.

**Résumé du Projet de Stage** (en 300 mots maximum, mots clés en gras)

We propose to decipher molecular and cellular mechanisms that generate variability in the manifestation of a cancer. This is a basic research project but designed to better understand, better diagnose, and perhaps better cure a paediatric cancer called Rhabdomyosarcoma. The project will focus on mutations in genes that code for regulators of the RTK-RAS-MAPK signalling pathway. We will study how mutations that a priori all ectopically induce this signalling pathway cause tumour transformations specific to each mutation from embryonic tissues. All experiments will be performed in the chicken embryo where we can combine transcriptomic analysis and 3D imaging with classical developmental biology approaches. If you like to understand what provides or inhibits morphological plasticity in epithelial cells this project is for you! If you like developmental biology, oncology, imaging, image processing, we should apply.

**Publications de l'équipe relatives au projet de stage (max 5)**

- 1- Manceau L., Richard Albert J., Lollini P.L., Greenberg M., Gilardi-Hebenstreit P., Ribes V. **2022**. Divergent transcriptional and transforming properties of PAX3-FOXO1 and PAX7-FOXO1 paralogs. **PLoS Genet.** May 23;18(5):e1009782. doi: 10.1371/journal.pgen.1009782
- 2- Gonzalez Curto G, Der Vartanian A, Frarma YE, Manceau L, Baldi L, Prisco S, Elarouci N, Causeret F, Korenkov D, Rigolet M, Aurade F, De Reynies A, Contremoulin s V, Relaix F, Faklaris O, Briscoe J, GilardiHebenstreit P, Ribes V. **2020**. The PAX-FOXO1s trigger fast trans-differentiation of chick embryonic neural cells into alveolar rhabdomyosarcoma with tissue invasive properties limited by S phase entry inhibition. **PLoS Genet.** Nov 11;16(11):e1009164. doi: 10.1371/journal.pgen.1009164. eCollection 2020 Nov.
- 3- Darrigrand JF, Valente M, Comai G, Martinez P, Petit M, Nishinakamura R, Osorio DS, Renault G, Marchiol C, Ribes V, Cadot B. **2020**. Dullard-mediated Smad1/5/8 inhibition controls mouse cardiac neural crest cells condensation and outflow tract septation. **Elife.** Feb 27;9:e50325. doi: 10.7554/eLife.50325.
- 4- Duval N, Vaslin C, Barata TC, Frarma Y, Contremoulin V, Baudin X, Nedelec S, Ribes V. **2019**. BMP4 patterns Smad activity and generates stereotyped cell fate organization in spinal organoids. **Development.** Jul 25;146(14):dev175430. doi: 10.1242/dev.175430. 34 citations.
- 5- Gard C., Gonzalez Curto G., Frarma Y.E., Chollet E., Duval N., Auzié V., Auradé F., Vigier L., Relaix F., Pierani A., Causeret F., Ribes V. **2017**. Pax3- and Pax7-mediated Dbx1 regulation orchestrates the patterning of intermediate spinal interneurons. **Dev Biol.** 432:24-33. doi: 10.1016/j.ydbio.2017.06.014. 10 citations.