

A POSTDOC POSITION

in the Laboratory of Stem Cells, Development and Tissue Regeneration at the Centre of New Technologies (University of Warsaw), headed by dr. Krzysztof Kobiela, invites applications for a postdoctoral position. A position is funded by the National Science Centre within Opus grant "Hair follicle stem cells regulation during hair cyclic regeneration".

The project:

The main goal of the project is investigate the behavior of hair follicle stem cells (hfSCs) during stem cells (SCs) quiescence and activation. Our long term objective is to understand how this regenerative hair cycling behavior is regulated at the molecular level, and to apply this knowledge toward regenerative medicine. We have previously shown that inhibition of bone morphogenetic protein (BMP) signaling resulted in the precocious activation of quiescent hfSCs. Recently my laboratory discovered a new, previously unreported mechanism of hfSCs regulation where a competitive balance of BMP/WNT signaling occurs intrinsically in the hfSCs population. We found that hfSCs with suppressed BMP signaling display profound altered expression in the BMP pathway itself and Wnt pathway. However, precisely how BMP/WNT signaling integrates different activators and inhibitors to achieve a molecular network capable of cyclic activation of hfSCs is still unveiling. We hypothesize that there is a constant competition between activator and inhibitor activities in hfSC populations which is critical for maintenance of hfSC homeostasis.

There is great interest in understanding very basic processes that are important for adult stem cells regulation, as these cells are crucial for physiological tissue renewal throughout life. Adult SCs are not only able to produce cells/progenies that participate in adult tissue renewal during normal tissue maintenance, but they can also regenerate tissues after injury. Moreover, precise regulation of adult SC homeostasis is very critical, since deregulation of normal stem cell self-renewal may result in cancer formation. Thus, understanding adult SC regulators which tightly govern the intricate balance of signaling pathways which either activate or inhibit SC homeostasis is a very important question in regenerative medicine. In the proposed research, we would like to understand the molecular mechanism of BMP and WNT signaling in SC regulation using hfSCs as a model system. Currently, my laboratory shed light on how a competitive balance of BMP/WNT signaling regulate hfSCs but there is a gap in our scientific knowledge regarding how BMP/WNT signaling integrate the regulation of different molecular networks in hfSCs during hair cycle. This is an important basic science question in SC biology, since we and other groups have shown that BMP/WNT signaling are key regulators of SC homeostasis in different adult systems. Thus, further understanding the molecular mechanisms through which BMP/WNT signals in hfSCs might be highly instructive to comprehend the general mechanisms that underlie SC homeostasis and how the different SCs determine tissue-specific regeneration as well as cancer formation. This insight might be very useful in translating these basic discoveries to novel forms of SC therapy with applications for human diseases as cutaneous wound healing, androgenetic alopecia or burn alopecia. As BMP/WNT signaling has a key regulatory role in maintaining different types of adult SC homeostasis, the implication for future therapy might be potentially much broader and not limited to skin regeneration, alopecia and skin cancer.

Selected Publication:

1. KobielaK K.*; Kandyba E, Leung Y. "Skin and Skin Appendages Regeneration" in Translational Regenerative Medicine, (Book chapter, Elsevier publications, Editor Dr. Atala A., (December 2nd, 2014)
2. Kandyba E, KobielaK K.* Wnt7b is an important intrinsic regulator of hair follicle stem cell homeostasis and hair follicle cycling. Stem Cells. 32(4):886-901, 2014. (Faculty of 1000 Recommendation)
3. Leung Y, Kandyba E, Chen YB, Ruffins S, Chuong CM, KobielaK K.* Bifunctional ectodermal stem cells around the nail display dual fate homeostasis and adaptive wounding response toward nail regeneration. Proc Natl Acad Sci U S A. 2014 Oct 21;111(42):15114-9.
4. Kandyba E, Hazen V, KobielaK A, Butler J.S, KobielaK K.* Smad1&5 but not Smad8 establish stem cell quiescence which is critical to transform the premature hair follicle during morphogenesis towards the postnatal state. Stem Cells. 32(2):534-47, 2014
5. Kandyba E, Leung Y, Chen YB, Widelitz R, Chuong CM, KobielaK K.* Competitive balance of Intrabulge BMP/WNT signaling reveals a robust gene network ruling stem cell homeostasis and cyclic activation. Proc Natl Acad Sci USA 110(4):1351-6, 2013. (Faculty of 1000 Recommendation) US Patent Application No.61/536 936; Sep 27, 2011
6. KobielaK K, Stokes N, de la Cruz J, Polak L, Fuchs E. Loss of a quiescent niche but not follicle stem cells in the absence of bone morphogenetic protein signaling. Proc Natl Acad Sci USA 104:10063-10068, 2007
7. KobielaK K, Pasolli HA, Alonso L, Polak L, Fuchs E. Defining BMP function in the hair follicle by conditional ablation of BMP receptor-1A. J Cell Biol 163:609-623, 2003

Qualifications:

- Ph.D. in Biology or Medicine or related sciences obtained not earlier than 7 years before the year of employment in the project (excluding maternity leave, parental leave, period of sickness benefit or rehabilitation benefit due to incapacity for work, etc.),
- Good knowledge of English,
- Knowledge of Adobe Photoshop, Adobe Illustrator, PowerPoint
- Team work skills,
- Experience in laboratory work (gel electrophoresis, PCR, RT-PCR, q-PCR, DNA/RNA/Protein extraction/purification, DNA cloning, western blot, cryo- and paraffin- sectionings, cell culture, FACS sorting, immunofluorescent /immunohistochemistry staining, in situ hybridization, mouse breeding/numbering/genotyping, some basic mouse surgeries, microscope techniques)

The application should include:

- Curriculum Vitae (CV)
- Cover letter, describing Candidate motivation
- PhD certificate
- One or more letters of recommendation from a scientist who is familiar with the Candidate (submitted directly to email address below)
- Information on scientific publications, scholarships, prizes and awards or other relevant documents demonstrating the excellence of Candidate
- A list of attended conferences with titles and authors of presentations
- A personal data processing agreement

Employment conditions:

The employment as full-time postdoctoral assistant with approximate gross monthly salary 4500 PLN. The initial appointment is one-year with possibility of renewal. The appointment should start in **December 2017**.

Contact:

Please apply to: k.kobielaK@cent.uw.edu.pl (entitle your email "A POSTDOC POSITION").

Deadline for applications: December 12th, 2017

Applications will be accepted until the position is filled.
Expected date of competition results: **December 18th, 2017**

All candidates will be notified of the outcome of the competition by email.

Please include in your CV: "In accordance with the personal data protection act from 29th August 1997, I hereby agree to process and to store my personal data by the Institution for recruitment purposes."