The Medical University of Warsaw is seeking a candidate for the position of:

Post-doc

Number of available positions: 1

Place of work: Microbiota Lab, Medical University of Warsaw

Field of science: Pharmacy, Veterinary, Biological sciences, Chemistry

Type of recruitment: National Science Center OPUS LAP project

Scope of tasks:

Revision of current concepts of tannins impact on gastrointestinal tract homeostasis in piglets.

Tannins are commonly considered as anti-nutritional factors in piglets nutrition with attributed negative health effects. On the other hand, certain tannin-containing plant materials are well known for their anti-diarrheal properties, which have been utilized since ancient times in human and veterinary medicine but had been superseded by antibiotics, since discovery of penicillin in 1928 and introduction of antimicrobials in farm animal production since the 1950s. Diarrhea among piglets is one of the most important health conditions in pigs farming. Piglets are susceptible to infection by several enteropathogens, the most important being enterotoxigenic *Escherichia coli*. Decades of extensive antibiotics use in prevention and therapy of infections in animals significantly contributed to spread of antimicrobial resistance, leading to the restrictions on their use in farming. As the consequence, the development of preventive and therapeutic strategies targeted on maintaining piglets gut health, which are based on novel mechanisms, is urgently needed.

Recent advances in analytical methods allow thorough structural characterization of tannins composition, what enables standardized use and precise dosing of plant materials preparations containing hydrolysable and condensed tannins. As the consequence, utilization of their biological properties in animal nutrition with full control of undesirable side effects can be potentially achieved. What is more, studies on interactions with gut microbiota put a new light on metabolism and disposition of tannins offering an opportunity of novel discoveries regarding the mechanisms of their biological activities.

The aim of the submitted proposal is to constructively address the paradigm of the anti-nutritional properties of tannins by verification of the general hypothesis, that specific hydrolysable and condensed tannins contained in purple loosestrife herb and faba bean pods can improve intestinal homeostasis, beneficially influence intestinal microbiota as well as prevent piglets from *E. coli* infections, without expressing negative effects on their health status. In order to verify stated hypothesis, the collaboration between Microbiota Lab (Centre for Preclinical Studies, Medical

ul. Banacha 1, 02-097 Warszawa
tel. 22 57 20 953, kom.: 605 051 200
e-mail: sgranica@wum.edu.pl
www.wum.edu.pl

University of Warsaw) and Institute of Animal Nutrition (Freie Universität Berlin) will be continued, originating from the research conducted by PI within Alexander von Humboldt post doc fellowship. The combination of the expertise and infrastructure of both institutions will allow formation of an interdisciplinary Project Team which will be fully qualified and equipped to answer scientific questions stated in the submitted proposal.

Verification of the stated hypotheses will give an intrinsic insight into mechanisms of health effects of hydrolysable and condensed tannins in piglets, what can potentially lead to change of their perception in the field of animal nutrition. The obtained results can then serve as an initial point for further studies on development of novel, sustainable feed additives dedicated to farm animals being scientifically based alternatives to antibiotics. Taking into consideration the anatomical and morphological similarities between gastrointestinal tract of pigs and humans, the translation of the obtained results to human medicine can be of a great significance in terms of development of effective anti-diarrheal therapeutic strategies originating from reintroduction of historically used medicines.

The candidate will participate in the following research tasks:

- Plant extract preparation, LC-MS analyses, and isolation of natural products.
- Metabolites determination in tissues and body fluids.
- Biosynthesis and isolation of postbiotic metabolites.
- Tissue Protein Expression and Phosphorylation (WB an qPCR).
- Histology and Immunohistochemistry.
- Studies on IPEC-J2 cell monolayers including co-cultures with bacteria.

Requirements:

- Doctoral degree in pharmacy, chemistry, biotechnology, biology, veterinary medicine or a related field.
- Research experience in microbiology, *in vitro* cell culture and molecular biology techniques (Western blot, immunocytochemistry).
- Good knowledge of English, which enables a free work with written sources, preparation of publications, presentation of own results and contact with foreign researchers.
- Strong motivation for scientific work, commitment to realization of planned tasks, creativity in solving problems, independence, ability to work in a team

Employment conditions:

We offer:

- Type of contract: full-time employment contract
- Gross monthly remuneration: 10 000 PLN/month (employer's gross, net approx. 6000 PLN/month) is funded by the National Science Center.
- Duration of contract: 3 years

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- Starting date: September 1, 2022 (negotiable)

- Commencement of employment:
  - Work in a young team in an excellent scientific environment
  - Access to the state-of-the-art equipment and facilities dedicated to chemical analysis and molecular biology research.
  - Participation in courses and conferences.
  - Comprehensive training in chromatography and molecular biology techniques.
  - Training and visits in collaborating laboratories in Poland and Germany (Institute of Animal Nutrition, Freie Universität Berlin)

Application procedure and deadline: closing date for applications: 04.08.2022

Applications should be sent to jpiwowarski@wum.edu.pl with note "Postdoc

Microbiota Lab".

Individual conversations will be scheduled online.

Required documents: CV, description of professional experience with emphasis on research techniques used by the applicant, list of publications, letter-of-intent, references.

You can use the foreign equivalent of a Polish academic degree if it meets at least one of the following criteria:

- is covered by the provisions of an international agreement on the equivalence of education,
- was issued by an authorized institution operating in an EU, OECD or EFTA Member State,
- was issued in another country and recognized on the basis of the regulations on the recognition of academic degrees obtained abroad (learn more about the procedure for the recognition of academic degrees: https://nawa.gov.pl/en/recognition/recognition-for-professional-purposes/recognition-of-scientific-degrees-and-titles

Informal inquiries can be sent to the principal investigator: Jakub Piwowarski, PhD jpiwowarski@wum.edu.pl

Link to website:

https://microbiota.wum.edu.pl/en

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Additional information:

Please include the following clause in your CV:

"I give consent for my personal data included in the recruitment form to be processed by Medical University of Warsaw with its registered seat in Warsaw at Żwirki i Wigury 61 for the purposes of recruitment for postdoc position pursuant to Regulation (EU) 2016/679 of the European Parliament and of the Council of 27 April 2016 on the protection of natural persons with regard to the processing of personal data and on the free movement of such data, and repealing Directive 95/46/EC in compliance with a legal obligation to which the data controller is subject to (Art. 6 section 1 letter a) and the Act on personal data protection of 10 May 2018 (Journal of Laws of 2018, item 1000)."

The rules for the protection of personal data used by the Medical University of Warsaw:

1. The administrator of personal data is the Medical University of Warsaw located in Warsaw, Żwirki i Wigury 61, 02-091 Warszawa.

2. Contact to the Data Protection Officer - email address: iod@wum.edu.pl.

3. Personal data will be processed in order to implement the recruitment process pursuant to art. 221 of the Labor Code, and in the case of providing a broader scope of data pursuant to art. 6 § 1a GDPR - consent expressed by the candidate.

4. Access to personal data within the University's organizational structure shall only have employees authorized by the Administrator in the necessary scope.

5. Personal data will not be disclosed to other entities, except for entities authorized by law.

6. Personal data will be stored for the period necessary to carry out the recruitment process, up to 12 months from the settlement of the recruitment process. After this period, they will be removed.

7. You have the right to access your data, the right to rectify, delete, limit processing, the right to transfer data, the right to object to the processing, the right to withdraw consent.

8. You have the right to withdraw consent to the processing of your personal data at any time, which will not affect the lawfulness of the processing that was carried out on the basis of consent before its withdrawal.

9. You have the right to lodge a complaint with the Office for Personal Data Protection when it is justified that his personal data are processed by the

Administrator in breach of the general regulation on the protection of personal data of April 27, 2016.

10. Providing personal data is voluntary, but necessary to participate in the recruitment process to the extent specified in art. 221 § 1 of the Labor Code, voluntary in the remaining scope.

11. Decisions will not be taken in an automated manner and personal data will not be subject to profiling.

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