

**Review in the procedure for conferring the post-doctoral degree of  
habilitated doctor to Dr inż. Anna Juras from the Adam Mickiewicz  
University in Poznań**

I was very delighted to be the reviewer in the habilitation procedure for Dr inż. Anna Juras. In preparing the expert opinion, I drew on the materials that were sent to me with the nomination. The materials document the applicant's rich scientific, publishing and educational activities.

Dr Juras completed her doctorate in biological sciences at the Faculty of Biology at Adam Mickiewicz University in Poznań, Poland, under the supervision of Prof. dr. hab. Janusz Piontek in 2012. Since that year, she has been working as an assistant professor at the Institute of Human Biology and Evolution, Faculty of Biology at Adam Mickiewicz University in Poznań, Poland.

As her habilitation thesis, she submitted a series of five monothematic articles, mainly dealing with aDNA analysis of populations from the Neolithic to the Iron Age in Central and Eastern Europe. As she states, she was involved in collecting bone material for aDNA analyses, performing laboratory tests, analysing high-throughput sequencing results, conducting mtDNA studies including the determination of haplotypes, the coordination and participation in population genetic studies, selecting reference populations and interpreting the results in these papers, which is also confirmed by the statements of the co-authors.

The excellent collaboration with foreign universities and laboratories should also be emphasised with regard to the number of co-authors. As examples, the applicant mentions: the Centre for GeoGenetics at the University of Copenhagen in Denmark (Prof. Eske Willerslov and Dr Helena Malmström), the Estonian Biocentre at the University of Tartu in Estonia (Dr Alena Kushniarevich and Dr Ene Metspalu), the aDNA laboratory at the Human Evolution, Department of Organismal Biology, University of Uppsala in Sweden (the team of Prof. Mattias Jakobsson), the Centre for Palaeogenetics at Stockholm University (the team of Prof. Anders Gotherström and Dr Maja Krzewinska), the Laboratory of Genomics and Bioinformatics at the Institute of Molecular Genetics of the Czech Academy of Sciences in Prague (Dr Edvard Ehler) and Masaryk University in Brno (Doc. RNDr. Miroslav Králík). Of course, Dr Juras also

documents many collaborations with archaeologists and anthropologists from various Polish institutions.

The results of the scientific work are perhaps the most closely monitored parameters in the assessment of eligibility criteria. The applicant is co-author of 24 scientific papers in the Scopus database and there are a total of 422 citations to her work. Her h-index is 14. She has published the results of her research in prestigious journals such as Scientific Reports (from the Nature portfolio), Nature Communications, PLoS ONE, American Journal of Physical Anthropology, Forensic Science International: Genetics, Current Biology or Genome Biology. Her Total Impact Factor for all publications was 103.99 and the total score awarded by the Ministry of Science and Higher Education a year ago was 2100.

Her scientific work has been supported by 12 grants. Currently, her scientific projects are supported by three national (Narodowe Centrum Nauki) and one international (NAKI III, Ministry of Culture of the Czech Republic) grants.

During her career she has presented 17 papers and 6 posters at conferences in Poland and abroad.

In her scientific research she focuses mainly on aDNA analysis of prehistoric European populations. She analysed aDNA from more than 200 skeletal samples and created a valuable database of mitochondrial aDNA from prehistoric populations in Poland, which was published in GenBank. In collaboration with Dr Edvard Ehler from the Laboratory of Genomics and Bioinformatics at the Institute of Molecular Genetics of the Czech Academy of Sciences in Prague, they have created a freely accessible database of more than 2500 ancient mitochondrial genome samples (mtDNA sequences) with information on the origin and names of the samples, geographical location, possible radiocarbon dating and archaeological context.

In her work, she confirmed the migration from the steppe and provided data indicating the existence of a decreasing gradient of maternal lineages from the steppe in Western European populations associated with the Corded Ware culture. She also pointed out that the migration from the steppe involved not only males but also females, which was particularly visible in the eastern group associated with the Corded Ware culture.

Using the results of the mtDNA analysis, she showed that the Middle and Late Neolithic populations were genetically similar to each other, except for the population associated with the Corded Ware culture, which had a closer maternal genetic relationship with people from the

Pontic-Caspian steppe. These results support the theory that people from the steppe played a significant role in the formation of the Corded Ware population.

In further research, she found that the populations associated with the Mierzanowice culture and the Trzciniec culture circle were genetically closely related at the maternal level not only to each other and to the population associated with the Corded Ware culture, but also to Bronze Age populations that predominated in other parts of Poland and Europe, i.e. to people associated with the Únětice culture, the Bell Beaker culture or Bronze Age populations from the Balkans.

Analysing the ancient nuclear genomes of hunter-gatherers and farmers from the Neolithic in Central and Eastern Europe also revealed a total genetic continuity of around 4,000 years, from the Mesolithic to the end of the Neolithic in the Dnieper River Valley (Ukraine). Moreover, the study revealed that genetic diversity in the region was at a similar level during both the Mesolithic and Neolithic periods, in contrast to Poland and Romania, where Mesolithic populations had much lower genetic diversity than Neolithic populations.

The studies of the Scythian populations revealed a high level of genetic diversity at the mtDNA level, which was confirmed in later work by nuclear DNA analyses.

Other research activities include interesting genetic analyses of representatives of the Piast dynasty in terms of kinship and ancestry reconstructions, analysis of the Anatolian Early Neolithic population of Catalhöyük, participation in anthropological and palaeogenetic analyses of the pre-Columbian population in Peru or participation in the exhumation and anthropological analysis of the NKVD victims of World War II in Vladimir Volynskyi, Ukraine. I was also interested in the research of *Tannerella forsythia* on human remains.

I would like to emphasise the leadership work in establishing the laboratory for aDNA studies at the Institute of Human Biology and Evolution, which has been in existence for 12 years.

In the field of pedagogy, she has been giving lectures and courses for first degree students in Biology and second degree students in Biology and Biotechnology since the 2010/2011 academic year. And from the 2019/2020 academic year, she also teaches two conversation courses in English. From 2010 to 2011 she was a member of the Faculty of Biology's Infrastructure Committee and since 2019 she has been a member of the Faculty

Council of Biological Sciences. Dr Juras has co-supervised two doctoral theses and supervised six bachelor's theses and one master's thesis.

She is also committed to publicising her achievements in the field of aDNA to students and the general public. For her scientific achievements, she has been honoured four times with the 1st degree team award of the Rector of the Adam Mickiewicz University in Poznań for scientific excellence and two 24-month scholarships for the most scientifically productive young employees and for the most scientifically productive experienced employees.

To summarise, I can say that Dr inż. Anna Juras fulfils the scientific and pedagogical requirements for the award of post-doctoral degree of habilitated doctor together with the publication requirements. On the basis of the above facts, I recommend that Dr inż. Anna Juras be awarded the degree of habilitated doctor after a successful procedure.

In Bratislava, April 15, 2024

Doc. RNDr. Radoslav Beňuš. PhD.

