



Postdoctoral Research Associate position

The Laboratory of Metalloprotein Biology, newly located at the Institute of Biochemistry and Biophysics Polish Academy of Sciences and headed by Dr. Kevin Waldron, seeks a productive, creative, and highly motivated **Postdoctoral Research Associate**. The successful candidate will join a team that aims to study the evolution, dissect the molecular mechanism of catalysis, and determine the structural dynamics of proteins from the family of iron- or manganese-dependent superoxide dismutase (SOD) enzymes ([Barwinska-Sendra et al., Nat. Comms. 2020](#)). The position is funded by the National Science Centre within the framework of Maestro project no. 2021/42/A/NZ1/00214 entitled: **'The catalysis, metal specificity and evolution of superoxide dismutases'**. This interdisciplinary project will utilise a suite of biochemical and biophysical methodologies, including multiple approaches for structural determination.

Our lab studies the structure and function of metalloproteins. It's estimated that approximately one-third of all proteins, and nearly half of all enzymes, require an essential metal ion to function ([Waldron et al., Nature 2009](#)). Most metalloproteins are assumed to be specific for their cognate metal cofactor, showing reduced activity with other metal ions *in vitro* and *in vivo*. But the mechanisms by which metalloproteins become optimised for their target metal ion remain unknown. Furthermore, analyses of protein sequence databases demonstrate that the specificity of metalloproteins can change over evolutionary time, likely in response to changes in metal availability in the environment. For example, such changes were likely crucial in the adaptation of early organisms to the oxygenation of the atmosphere through photosynthesis, which would have dramatically altered environmental metal abundance. Our recent work has demonstrated that a more recent change in metalloenzyme specificity enabled a commensal bacterium to evolve pathogenicity by overcoming metal starvation within the host ([Garcia et al., PLoS Pathog. 2017](#)).

Building on our recent biochemical, microbiological and evolutionary studies of these ubiquitous metalloenzymes, which play a crucial role in cellular defence against oxidative stress ([Frye et al., J. Inorg. Biochem. 2022](#)), here we will apply **cutting-edge methodologies in biochemistry, biophysics and structural biology** to determine how these SOD enzymes function at atomic resolution in collaboration with world-leading technical experts. We will determine how they perform their chemical reaction within a dynamic structure, including testing the role of dimerisation in catalysis.

Job description:

The successful applicant will be responsible for executing laboratory-based research within the project. They will express, purify and characterise SOD enzymes, perform mutagenesis, and apply structural methods (e.g. crystallography, nuclear magnetic resonance spectroscopy) to determine their structure and function. Training will be provided in necessary protocols. The project will also involve collaborating with other Polish and international research groups to develop novel methods for studying these metalloenzymes.



Requirements for the candidate:

- A PhD in biology/biochemistry/molecular biology or a related subject. There is no limit of years after PhD completion.
- A demonstrable passion for science and research.
- Ability to work both independently (under appropriate supervision) and as part of a collaborative and interdisciplinary team, including training junior researchers in lab methods and collaborating in team goals.
- Demonstrable hands-on experience in biochemistry, biophysics and structural biology methods.
- Proficiency in spoken and written English.
- Solid knowledge in molecular biology methods.
- Previous experience working with metalloproteins would be an advantage, but is not mandatory.
- Knowledge and experience with bioinformatic analyses (e.g. protein sequence analyses and phylogenetics) would be an advantage, but is not mandatory.

We offer:

- A full-time employment contract for 24 months (including 3 months probationary period) with possibility of extension up to 48 months, starting from 9th December 2022 or as soon as possible thereafter.
- Gross salary of 9 400 PLN/month (with an additional 13th salary). Net salary depends on individual circumstances influencing tax.
- A position with 100% focus on research (no teaching obligations) in a leading, well-equipped, recently refurbished laboratory and within a dynamic and interdisciplinary team.
- Extensive opportunities for training, including potential visits to collaborating laboratories to work with leading experts in diverse fields and technologies.
- Good work-life balance culture.

Informal inquiries:

Informal inquiries are very welcome. Please send an email to kwaldron@ibb.waw.pl including any questions, a brief description of your motivation and other relevant information.

How to apply:

The application, in English, should be sent to Dr. Kevin Waldron (kwaldron@ibb.waw.pl). Please include the subject heading "Postdoc application" in your email. Applications must be written in English, and should contain a scientific CV (up to 6 pages), a cover letter with a description of the applicant's key achievements and motivation (up to 2 pages), and contact details for 2 potential academic referees, including your PhD supervisor. All documents should be merged in a single pdf file.

Selected candidates will be invited for an interview (possibly on-line). Applications submitted after the deadline will be still considered if the position is not filled.

Please include the following statement in your application: "I hereby give my consent for the processing of my personal data by the Institute of Biochemistry and Biophysics PAS with its seat in Warsaw Pawińskiego 5a, 02-106 hereinafter referred to as the Institute for the purpose of the recruitment process and for future



recruitment processes conducted by the Institute under Art. 23 ust 1 pkt 1 of the Personal Data Protection Act dated on 29 August 1997, consolidated text: Journal of Laws 2016, item 922 with further amendments and under Art. 6 ust.1 lit. a of 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 GDPR (Dz. U. UE. L. z 2016 r. Nr 119)".

Closing date: December 15th, 2022

The evaluation process will start immediately upon receipt of the applications. Selected candidates will be invited for interview. The competition may be extended until the finding of a suitable candidate.