

### **Short Job Description: Deep learning guided antimicrobial polymer discovery**

We are looking to hire a postdoc to work on an exciting interdisciplinary collaboration project between the Bioinformatics Institute (BII, A\*STAR) and the Institute of Bioengineering and Bioimaging (IBB, A\*STAR). In this two years project, we are aiming to develop a deep learning model for the prediction of potential antimicrobial agents using a combination of well-established public datasets and an in-house database. Prior knowledge in deep learning is NOT REQUIRED, although candidates with deep learning expertise are welcomed. Training on deep learning is provided on the job. Appreciate it if you can forward this job description to your colleagues or to any potential candidates. Please kindly DM me or send your CV to Eddy Tan ([eddy\\_tan@bii.a-star.edu.sg](mailto:eddy_tan@bii.a-star.edu.sg)), and Malay Singh ([malay\\_singh@bii.a-star.edu.sg](mailto:malay_singh@bii.a-star.edu.sg)).

### **Long Job Description: Deep learning guided antimicrobial polymer discovery**

#### Project Description:

Artificial intelligence (AI) techniques have been employed in the niche field of macromolecular therapeutics to accelerate the development of new, highly selective antimicrobial polymers. However, current AI methods utilize simplistic representations in creating models to identify non-hemolytic antimicrobial polymers. As such, we at the Bioinformatics Institute (BII, A\*STAR) are looking to hire a postdoc to work on an exciting interdisciplinary collaboration project with the Institute of Bioengineering and Bioimaging (IBB, A\*STAR). In this two years project, we are aiming to develop a deep learning model for the prediction of potential antimicrobial agents using a combination of well-established public datasets and an in-house database. You will be working among a team consisting of people with different domain expertise such as biologists, polymer chemists, bioinformaticians, and AI scientists. Therefore, the ideal candidate should be a team player who can formulate and execute creative ideas for a given problem. Join us if you are excited about improving the quality of healthcare and interested in learning AI skills. Interested applicants are welcome to email a full CV and a one-page letter of intent summarizing past experience and strengths as well as contact details of two referees to Eddy ([eddy\\_tan@bii.a-star.edu.sg](mailto:eddy_tan@bii.a-star.edu.sg)), or Malay Singh ([malay\\_singh@bii.a-star.edu.sg](mailto:malay_singh@bii.a-star.edu.sg)).

What is in it for you? You will be working in a team of AI researchers who have a deep understanding of the fundamentals of deep learning and have considerable experience in applying deep learning to different problems. You will have the opportunity to learn and hone your AI skills through this project as well as by learning from other on-going projects in the team. You will be trained to be in the very niche area of applying graphical neural networks for macromolecular therapeutic applications. This is the differentiating factor for you as a postdoctoral research fellow at our lab. You will also learn to sharpen your communication, collaboration, project management, and leadership skills.

#### Responsibilities:

1. Assist in the development and maintenance of an antimicrobial database
2. Develop and implementation of novel AI algorithms for the prediction of antimicrobial and hemolytic activity
3. Periodically present the progress to the group and submit the research findings to top-tier journals and conferences

#### Basic Requirements:

1. Ph.D. in Computer Engineering, Computer Science, Mathematics, Statistics, or related discipline.
2. Proficient in python programming
3. Excellent communication (verbal and written) and presentation skills
4. Curious, detail-oriented, and analytical, with a proven ability to learn quickly
5. Ability to work as a team player, which includes the willingness to contribute ideas and knowledge with peers
6. Ability to adjust according to the pace of the project and its changing requirements.

Following skill sets are **optional** but will be advantageous for applicants to highlight any relevant experience(s) in the submitted CV.

1. Experience in machine/deep learning with a focus on graphical neural networks
2. Knowledge in chemistry, biochemistry, and antimicrobial agents
3. Having worked in multidisciplinary teams

For more information, please visit the CVPD websites: <http://web.bii.a-star.edu.sg/~leehk/> and <https://www.a-star.edu.sg/bii/research/ciid/cvpd>