

Call for Applications: Program-Specific Researcher (Postdoctoral Fellow), Mathematical Biology and Medicine Group (Seirin Group)

Institute for the Advanced Study of Human Biology (ASHBi), KUIAS Kyoto University

17 September 2021

Japan's Ministry of Education, Culture, Sports, Science and Technology (MEXT) recently selected the Institute for the Advanced Study of Human Biology (ASHBi: <https://ashbi.kyoto-u.ac.jp>) for participation in the World Premier International Research Center (WPI) Program, establishing it within Kyoto University Institute for Advanced Study (KUIAS: <https://kuias.kyoto-u.ac.jp/e/>) on 30 October 2018 with Mitinori Saitou, a world-leading developmental biologist, at its head. ASHBi is now looking for a Program-Specific Researcher (Postdoctoral Fellow) in the laboratory of Professor Seirin-Lee (Mathematical Biology and Medicine Group: <https://sites.google.com/site/seirin711lee/home>). Details are as follows.

1. Job Titles:

Program-Specific Researcher (Postdoctoral Fellow)

2. Number of Positions:

One (1)

3. Affiliation:

Institute for the Advanced Study of Human Biology (ASHBi), KUIAS Kyoto University
Yoshida Konoe-cho, Sakyo, Kyoto 606-8501 Japan

4. Eligibility:

Essential requirements are as follows:

1. By the starting date of employment an applicant will have a PhD in mathematical biology, applied mathematics, scientific computing, modelling within the life sciences or a related discipline.
2. An applicant will have demonstrated excellence in research achievements to date, as evidenced by publications and also possibly presentations and other scientific activities.
3. An applicant will possess sufficient specialist knowledge to engage with and develop interdisciplinary projects within ASHBi and the international collaborative project detailed below.
4. An applicant will possess the vision to contribute new ideas for research projects.
5. An applicant will have the ability to manage their own academic research and associated activities.
6. An applicant will possess excellent communication skills including the ability to write for publication,

present research proposals and results, and represent the Seirin group at meetings.

5. Starting Date:

October 1, 2021 or the earliest possible date thereafter (adjustable according to individual requirements)

6. Term:

Three (3) years in principle (The contract will be renewed annually depending on achievements).

Initial probationary employment period: six (6) months

7. Job Descriptions:

ASHBi (<https://ashbi.kyoto-u.ac.jp>) will investigate the core concepts of human biology with a focus on genome regulation and disease modeling, creating a foundation of knowledge for developing innovative and unique human-centric therapies. The key goals are to: 1) achieve outstanding research in key individual themes in human biology in the area of reproduction, development, growth and aging as well as heredity and evolution; 2) elucidate the principles for the emergence of species differences among humans, non-human primates, and rodents for proper extrapolation of the findings in model organisms to humans; 3) generate primate models for key gene functions and intractable diseases; 4) reconstitute key human cell lineages and tissues in vitro and validate their properties based on integrative information; and 5) contribute to formalize an ethics for the use of human/non-human primate materials and create a philosophy to direct the values of the Institute's research outcomes.

The institute is seeking suitable candidates for a Program-Specific Researcher (Postdoctoral Fellow) to accelerate its mission.

Within this mission, the Mathematical Biology and Medicine laboratory of Professor Seirin-Lee (Seirin group) will approach a variety of topics in the life sciences (cell and developmental biology) and clinical medicine with model-driven and data-driven mathematical tools. The successful candidate will join this group to develop into a leading interdisciplinary researcher, conducting high calibre research in interdisciplinary projects within ASHBi. Further, a proportion of time (approximately 60%) will be dedicated to an international collaboration between the Seirin Group and Professors Maini, Gaffney from the University of Oxford, and Drs Krause, Headon from the Universities of Durham and Edinburgh.

This project will aim to develop theoretical models of self-organisation in developmental biology that assess and test different hypotheses and mechanism-based principles for integrated epithelial-mesenchymal systems. The epithelium is a thin sheet of contiguous cells that interact with motile individual cells in the underlying mesenchyme, and many organs in the human body are formed from this composite epithelial-mesenchymal structure with the system as a whole, ultimately developing repeating structures in the skin,

intestines and the epithelial tree of the kidneys, for example. Also of relevance to current efforts in engineering artificial tissues and organs in regenerative medicine, the fundamental question of the project is how biological structure forms in epithelial-mesenchymal systems across multiple developmental stages, timescales and lengthscales as tissue matures.

Thus, the project will theoretically examine the orchestration and regulation of genes, cellular signalling and mechanics within the epithelial-mesenchymal structure for the induction and progression of biological self-organisation. We will combine extensive murine and chick experimental characterisations, previously measured within the Headon group, with interrogations of theoretical models. In particular, the project will utilize model parameter identifiability and sensitivity analyses, together with parameter estimation as required, to lead into systematic model selection studies. These will identify and exclude candidate mechanisms underlying the morphogenesis of epithelial-mesenchymal organs, and determine how surviving hypotheses may be distinguished and assessed in further experimental work. Hence, expertise in modelling within the life sciences and investigating reaction-diffusion partial differential equations are required for this project, while familiarity in numerous other areas will be relevant, for instance cell chemotaxis models, parameter identifiability and sensitivity investigations, and model selection studies.

8. Working Conditions:

Five (5) working days per week (days off: Saturdays, Sundays, public holidays, year-end and New Year holidays, Foundation Day, and summer vacation, as per University guidelines)

Working hours: 38 hours 45 minutes per week under a discretionary labor system.

9. Salary:

Paid in compliance with the rules of Kyoto University, depending on skills and experience.

10. Allowance:

No allowance (such as for commuting, housing, bonuses, etc.) will be provided.

11. Social Insurance:

National Public Service Mutual Aid Association health policy

Employee's pension insurance

Employment insurance

Worker's accident insurance

12. Deadline:

Open until the position is filled.

13. Evaluation Procedure:

Submitted applications will be reviewed, followed by interviews for short-listed candidates. Potential applicants are welcome to contact Prof Seirin-Lee to see if the position is still open before applying.

14. Application Method:

Application documents must be prepared in English according to the "**Application Guidelines**", and submitted as email attachments.

Submit via email to: ASHBi-recruit@mail2.adm.kyoto-u.ac.jp

15. Additional Information:

Submitted documents are used only for the purpose of applicant screening and hiring. Personal information will not be disclosed, transferred or loaned to a third party under any circumstances without just cause. Kyoto University promotes gender equality. Responses and applications from female researchers are highly welcomed.

To prevent passive smoking, Kyoto University prohibits smoking at indoors and outdoors at all campuses except for the designated smoking areas.

Application Guidelines

Follow the instructions below to prepare and submit your application. Write in English, and use a 10.5 point font or larger. You may include photographs or charts in color or black and white. Please submit your application via email.

Deadline: Open until the position is filled
Submit by email to: ASHBi-recruit@mail2.adm.kyoto-u.ac.jp
(Related documents should be sent as email attachments)

Applications with serious deficiencies and/or false information will not be evaluated.

1. Basic Information (CV)

- (1) Name
- (2) Home Address and Contact Information (phone, email, etc.)
- (3) Recent Photograph
- (4) Date of Birth, Age, and Gender
- (5) Academic Degree (including date of acquisition)
- (6) Nationality
- (7) Current Appointment (your current affiliation, department, and position)
- (8) Education (begin with high school and list education)
- (9) Professional Experience
- (10) Awards
- (11) Position Sought (host research group name, job title)
- (12) Contact details of two (2) referees (name, affiliation, position, address, e-mail address). Please include your current or most recent employer, whenever possible and indicate whether we can contact them now.

2. Summary of research conducted up to present (within 2-3 pages of A4 paper)

You are also welcome to include an outline of planned research if there is a research plan you want to pursue at ASHBi.

3. A supporting statement describing how you meet the essential eligibility requirements

4. Reasons for applying for ASHBi (within 1 page of A4 paper)

1. Why are you applying to ASHBi?
2. Explain how you will contribute to furthering the research activities at ASHBi.

5. List of Publications/Grants

Describe your publications in reverse chronological order, including published papers, books, invited lectures, awards, patents, etc. Describe the grants you obtained.

Contact

Email: ASHBi-recruit@mail2.adm.kyoto-u.ac.jp

Address: Institute for the Advanced Study of Human Biology (ASHBi) KUIAS, Kyoto University
Yoshida Konoe-cho, Sakyo, Kyoto 606-8501 Japan