

## FOSTERING THE NEXT GENERATION

# The John Mung Program

## Opportunities to Explore Global Frontiers

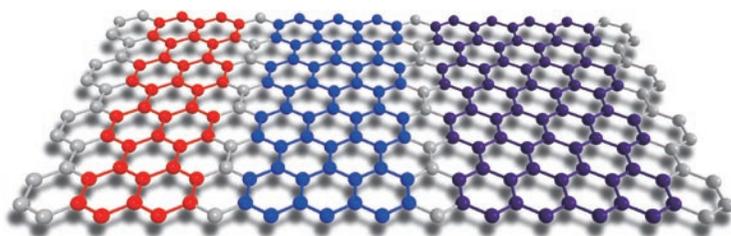
Kyoto University launched the John Mung Program\* (Kyoto University Young Scholars Overseas Visit Program) in 2012, as a project to support mid- and long-term research by junior faculty members at leading academic institutions overseas.

\*The program is named after the Japanese sailor, Nakahama Manjirō, also known in English as “John Mung,” who was the first Japanese to set foot on American soil in 1841. After he returned to Japan, he became a pioneering figure in developing the country’s international relations.

### THE NEXT GENERATION

## The next generation, now

*Opening the door to the next generation with nanocarbon materials.*



Structures of graphene nanoribbons (GNRs).

GNRs with precisely controlled widths. Through my research at the National University of Singapore (NUS), I can further investigate GNRs using a Low-Temperature Scanning Tunneling Microscope (LT-STM), which enables direct observation of the shapes of the molecular “wires”. Using these powerful instruments, I would like to demonstrate their excellent properties. I also believe that young researchers and these nanocarbon materials hold the key to the next generation of devices.

Through the John Mung Program, I would like to become a bridge for long-running collaborations between Kyoto University and NUS.

Graphene nanoribbons (GNRs), one of the most promising nanocarbon structures, are attracting increasing attention as materials for next-generation semiconductors. The properties of GNRs strongly depend on their width and edge structure.

Recently, we have developed



**Takahiro Kojima, PhD**

*Assistant Professor, Institute of Advanced Energy*  
[www.iae.kyoto-u.ac.jp/molecule/index.html](http://www.iae.kyoto-u.ac.jp/molecule/index.html)

## The John Mung Advanced Program



Kyoto University launched the John Mung Program (Kyoto University Young Scholars Overseas Visit Program) in 2012, as a project to support mid- and long-term research by junior faculty at overseas organizations. The objective of the program is to encourage young scholars to develop academic networks and promote collaborative research projects. This in turn will build a foundation to advance academic exchange, internationalize research activities, and facilitate the

expansion of external funding opportunities.

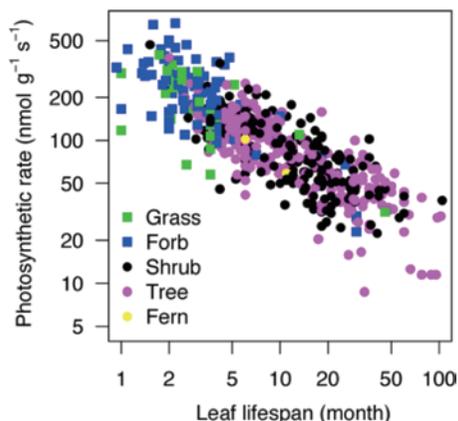
The program supports young scholars in two different ways. The Young Scholars Overseas Visit Program supports individual scholars by providing funds for their travel, living, and research expenses. The Program for Scholars’ Home Laboratories provides funding to departments, laboratories, and other academic units to compensate for the absence of young scholars who are stationed abroad for over six months. Grants can be used to cover personnel and operational expenses incurred during the period of their absence.

In 2013, the program was revised as the John Mung



## FOR-ECOL: Fundamental Rules in Plant Diversity

*Why does photosynthetic capacity vary across species?*



The worldwide leaf economics spectrum based on 2,548 species data. Photosynthetic rates vary >50 times across species and leaves with high photosynthetic rates are in general short-lived.

Plants vary extensively in size, morphology and physiology, but in terms of their basic biology, there are some general rules. The “worldwide leaf economics spectrum” is such an example, describing the way in which leaves with high photosynthetic rates do not live long, and vice versa. And yet, the physiological basis is not fully clear. I spent three months at Macquarie University, Sydney, Australia, to collaborate with Dr. Ian Wright, who discovered the worldwide leaf economics spectrum. We collected and integrated various physiological data related to the leaf economics spectrum from published and unpublished data sources in order to uncover the physiological basis underpinning the spectrum.

**Yusuke Onoda, PhD**

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## MED-SCI: MRI for Biofunctional Analysis

*Studying in vivo analysis with magnetic resonance imaging.*

During a stay in Finland at the Turku PET Centre, I was engaged in research on the development of *in vivo* magnetic resonance imaging (MRI) methods for small animals. At Kyoto University I have been developing molecular imaging probes for noninvasive functional imaging of diseases with nuclear medical or optical imaging techniques, so the MRI experience I gained at Turku will be helpful to widen my research field. I was also able to learn of different point of view through daily communication with skillful physicists and mathematicians at the lab. I believe

this experience was invaluable for my future research. I would like to express my gratitude to everyone I met during this stay.

**Takashi Temma, PhD**

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Old steamship in Turku

Advanced Program. The advanced program offers opportunities for overseas experience to a wider range of faculty members by expanding its scope of eligibility and offering more varied funding schemes. The advanced program allows scholars to apply as a team, in collaboration with other young scholars or students. This enables applicants to expand the scale of their projects. Through this program Kyoto University aims to cultivate an increased number of internationally-minded, leading scholars.

**WEB** [www.john-man.rp.kyoto-u.ac.jp/en](http://www.john-man.rp.kyoto-u.ac.jp/en)

|   | John Mung Program            | John Mung Advanced Program                                 |
|---|------------------------------|--|
| Category                                | Faculty Member               | Faculty Member<br>Non-tenure track scholar                 |
| Age                                     | Under 40                     | Under 50   |
| Period                                  | 3-12 months                  | 3-24 months<br>(1-3 months possible depending on a reason) |
| Unit                                    | Individual                   | Individual, Team<br>(Students can be included in a team)   |
| Program for Scholar's Home Laboratories | Approx. \$2,000/month/person | Approx. \$3,000/month/person                               |