

Final Report

Project Title:

**Support for Students, Postdoctoral Fellows and Trainees to
Attend Radiochemistry-Related Symposia at Pacificchem 2015**
Award #: DE-SC0014342

Principal Investigator on Project:

D. Scott Wilbur, Ph.D.
University of Washington, Box 355016
Department of Radiation Oncology
616 N.E. Northlake Place
Seattle, WA 98105
206-616-9246
dswilbur@uw.edu

Report Provided to:

Dennis R. Phillips, Ph.D.
U.S. Department of Energy
Office of Science
Office of Nuclear Physics
Isotope Development and Production for
Research and Applications
301-903-7866
Dennis.Phillips@science.doe.gov

Mailing Address:

U.S. Department of Energy
Germantown Building/SC-26.2
1000 Independence Ave., S.W.
Washington D.C. 20585-1290

February 6, 2016

Final Report

1. Project Description

This project was undertaken to meet the growing need for training personnel who will be involved in professional careers requiring knowledge of radiochemistry, such as those working in radionuclide production, and in biological, industrial, medical and environmental fields that use radionuclides in their work. The goal of the project was to provide financial assistance to students and trainees from academic and government institutions (US preferred) to attend selected radiochemistry-related symposia at the Pacificchem 2015 meeting held in Honolulu, Hawaii in December 2015. The funding, meant to provide a portion of an awardee's travel cost, was specifically directed at attendance to the following symposia: #363, *Isotope production-Providing Important Materials for Research and Applications*; #215, *Chemistry of Molecular Imaging*, and #11, *Chemistry for Development of Theranostic Radiopharmaceuticals*. Those symposia were held December 16th (am & pm: #11, #363), December 17th (am: #11, #363; pm: #275) and December 18th (am & pm: #275).

Pacificchem meetings are held every 5 years in Honolulu, Hawaii. The meetings are joint sponsored by a number of Chemistry Societies from Pacific Rim countries. The meetings are composed of a large number of symposia (>300) on a wide variety of topics, which make them similar to small meetings within the larger overall meeting. Therefore, attendance at the three symposia within Pacificchem 2015 was similar to attending a meeting focused entirely on radiochemistry-related topics. To obtain the financial assistance, the student/trainee: (a) had to be an undergraduate student, graduate student or Postdoctoral Fellow in a physical science department or National Laboratory; (b) had to submit a letter from their supervisor indicating that he/she will be enrolled as a student/trainee at the time of the meeting, and were committed to attending the meeting; and (c) had to submit a resume or curriculum vitae along with a brief statement of why they wanted to attend the symposia. The Bursary Selection Committee reviewed the applications and selected awardees from the students that applied.

Attendance of the students/trainees to the Pacificchem 2015 symposia provided information on the role radiochemistry and radionuclides can have in the development of future diagnostic and therapeutic agents. It is very likely that attending the symposia stimulated student interest in radiochemistry, and thus, will provide support for their decision to enter the field, or an impetus to make this technical area a career choice. This stimulus will ultimately help to fill the future workforce needs for professionals trained in radiochemistry needed within US, and in particular the Department of Energy.

2. Budget

An amount of \$20,000 for bursaries was received from DOE. No Facilities and Administration (F&A) costs were charged by the University of Washington, which allowed all of the funds to be paid out as bursaries to students or trainees (including Postdoctoral Fellows). We initially expected to have 20 students qualify, with the bursaries given being \$1000 per student/trainee. Fewer students qualified and were awarded travel bursaries, so the amount each received was more (\$2000). Prior to paying the bursaries, each awardee was required to provide meeting receipts to confirm that they attended the Pacificchem 2015 meeting, and that the travel costs exceeded the \$2000 bursary. If the student/trainee documented costs were lower than the bursary then the amount of bursary would equal their costs. However, because the cost for flights, hotel rooms, registration costs and food for every awardee exceeded \$2000, the full amount was provided to each awardee.

3. Timeline

The application for funds to provide bursaries was submitted March 23rd, 2015 to DOE under the FY 2015 Continuation of Solicitation for the Office of Science Financial Assistance Program (DE-FOA-0001204). The original timeline for the steps taken to provide the bursaries is outlined in the table below. A revised budget and budget justification was requested, and was provided May 12, 2015. Formal notice of the award was provided August 21, 2015, and the dates of the award period were set as August 15, 2015 thru August 14, 2016. At the receipt of this report by DOE, we will have complied with the timeline provided.

Task #	Description	FY 15											
		July	Aug	Sept	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	June
1	Advertise Bursary Availability												
2	Receive Applications												
3	Review Applications												
4	Choose/Notify Awardees												
5	Obtain Mtg Receipts from Awardees												
6	Mail Bursary Checks												
7	Write and Send Final Report												

4. Advertisement

We felt it was very important to let as many potential candidates as possible know that bursaries were available to the symposia. The first task was to put together a advertisement flyer that contained the information on the bursary and how to apply. A draft advertisement flyer was reviewed by the members of the Selection Committee prior to finalizing its content. The final flyer draft is attached as Appendix Item #1. The flyer was sent to all of the presenters and coauthors on the accepted presentations in the radiochemistry-related Pacifichem 2015 symposia. The Flyer was also sent to members of the Radiopharmaceutical Sciences Council of the Society of Nuclear Medicine and Medical Imaging. The same information (as on the flyer) about bursary availability was sent to all of the members of the Society for Radiopharmaceutical Sciences via email, and was posted as Notice #47 (July 20, 2015) on the DOE National Isotope Development Center web site. We believe the advertisement for the bursaries reached the majority of the potential applicants.

5. Applicants

Our initial goal was to fund 20 student bursaries. However, we did not get that many applicants. It is likely that the amount of bursary was not high enough for students not planning on attending to commit to attending. We received 15 student applications and the Selection Committee decided to award 11 bursaries. Initially, we advertised that applicants from US universities and institutions would be "preferred", but discussions with DOE indicated that we should have stated that it was required. A list of applicants that were awarded the bursaries is provided below, along with the departments and institutions they are associated with. Following that is a list of those applicants that did not receive bursaries (along with their institutions).

Bursary Awardees:

1. Peter Agbo, Postdoc. Fellow, Chemical Sciences Division, LBNL, Berkeley, CA
2. Ahlem Bouhlel, Postdoc. Fellow, Washington University School of Med., St. Louis, MO
3. Maryline Ferrier, Postdoc. Fellow, Inorganic Isotope and Actinide Chem., LANL, NM
4. April Gillens, Ph.D. student, Environmental Engineering and Sci., Clemson Univ., SC
(Note that April Gillens did not attend the meeting as her advisor did not have money to pay for the costs beyond the bursary.)
5. Matt Gott, Ph.D. student, Chemistry Department, Univ. of Missouri, Columbia, MO
6. Carissa Hampton, Postdoc. Fellow, MURR & Univ. of Missouri, Columbia, MO
7. Junghyun Kim, Ph.D. student, Pharm. Sci., Univ. North Carolina, Chapel Hill, NC
8. Yawen Li, Postdoc. Fellow, Radiation Oncology, Univ. of Washington, Seattle, WA
9. Santanu Maity, Postdoc Fellow, Bioengineering, UC Berkeley, CA
10. Kristian Myhre, Ph.D. student, Univ. of Tenn./ORNL, Oak Ridge, TN
11. Travis Shaffer, Ph.D. student, Memorial Sloan Kettering Cancer Center, NY, NY

Not awarded bursaries

12. Jason Crawford, Medical Physics, University of Victoria, BC Cancer Agency, Canada
13. Istvan Hajdu, Nanoparticles and Theranostic Agents, University of Saskatoon, Canada
14. Leena Hogan, Chemistry, University of Sydney and ANSTO, Australia
15. Fei Liu, Dept. of Nuclear Medicine, Beijing Cancer Hospital & Institute, Peking Univ., China

6. Notice of Award to Applicants

Notices of award were provided by email to the awardees. Notices to the applicants who were not awarded bursaries were also provided by email. An example of the email award notice follows:

“On behalf of the Pacificchem 2015 Bursary Selection Committee, it is my pleasure to inform you that you have been selected to receive a bursary to assist in the cost of attending the Pacificchem 2015 meeting. As the announcement flyer indicated, you will be expected to attend a minimum of one of the radiochemistry related symposia, #s 11, 215 and 363. Attendance at a full symposium, 1.5 days time, or an equivalent time attending talks in the 3 symposia is required. Please check in with Henry VanBrocklin, Dennis Phillips or myself at the symposia to confirm attendance. Following the meeting, you will need to send me, via email, copies of your travel receipts (hotel, airfare and registration), and a check will be sent to you from my institution (Univ. of Washington) for the bursary.”

7. Attendance Verification

Verification that the each awardee attended one or more of the radiochemistry-related symposia was made by the awardee checking in with an organizer of each symposium. To assist in verifying attendance, a list of awardees was provided to the organizers (myself, Henry VanBrocklin and Dennis Phillips). They checked off those awardees on the sheet when they were contacted, then gave that sheet to me after the sessions were over. I checked that each awardee had checked into at least one of the symposia. All awardees checked in. An example of the checklist used is provided as Appendix item #2.

8. Recognition for sponsorship

The organizers of the symposia and the student awardees are very thankful to receive the bursary funding. To acknowledge the sponsorship provided by DOE, a slide containing the sponsors of the symposia was made and shown during the introduction and at breaks in the symposia. A copy of the acknowledgement slide for symposium #11 has been included as Appendix item #3. In addition to presenting the acknowledgement as a slide, the same information was made into posters, which were placed on the door outside of room so that it was noticeable as attendees entered the room.

9. Disbursement of Funds

Disbursement of funds to the bursary awardees was done through Thao Eichhorn, Grants and Contracts Manager for the Department of Radiation Oncology at the University of Washington. She contacted the awardees and collected all of the requisite receipts from them. Once it was verified that the awardee had spent at least \$2000 in traveling to the meeting, she submitted the information to the University of Washington accounting such that the money for reimbursement could be wired or sent as a check.

A final budget accounting of the funds disbursed will be provided to DOE separately from this report by the University of Washington Grants and Contracts management.

10. Summary

The radiochemistry-related symposia held at Pacificchem 2015 were all very successful. Many of the attendees commented that they felt the symposia were excellent. All of the bursary awardees commented that they felt it was a great opportunity for them and they learned a lot from the symposia. That feedback has made the efforts that were put into apply for and making available the travel bursaries worth it for me. While not a requirement, I am confident that most if not all of the awardees will utilize radiochemistry in their careers.

I would like to thank the DOE, Office of Science, Office of Nuclear Physics for all those who benefited from the generous financial support to attend the Pacificchem 2015 symposia. I am hopeful that such support will continue in the future.

Pacifichem 2015

January 1 – April 3 | Call for Abstracts

February 2 | Housing Opens

June 25 | Early Registration



*Chemical Networking:
Building Bridges Across the Pacific*

Chemistry for Development of Theranostic Radiopharmaceuticals, Symposium #11

Corresponding Symposium Organizer: Dr. D. Scott Wilbur (US)

Co-Organizers: Dr. Michael Adam (CA), Dr. Yasushi Arano (JP), Dr. Paul Donnelly (AU),
Dr. Jae Min Jeong (KR), Dr. Xianzhong Zhang (CN)

This symposium will cover all aspects of the chemistry associated with development of theranostic radiopharmaceuticals. Theranostics radiopharmaceuticals have combined capability of diagnostic imaging and radionuclide treatment in a single agent. By combining imaging with therapy, treatments can be tailored to a specific patient. Patient-specific treatments can be more effective than broadly applied therapeutics, as they focus on the pharmacology relative to that patient and characteristics of his/her disease. In the simplest form, a theranostic radiopharmaceutical may contain a disease-targeting agent coupled with a single radionuclide that has emissions for both imaging and therapy. However, in more sophisticated forms, a theranostic radiopharmaceutical may be multifunctional and multimodal in nature. Multifunctional theranostic agents can have chemical moieties that: (a) target diseased tissue, (b) provide imaging capabilities (radioactive and/or photonics or contrast) to determine disease targeting, pharmacokinetics and biodistribution, and (c) deliver particle-emitting radionuclides for therapy, alone or in combination with chemotherapy agents. The symposium will highlight advances made in; (1) theranostic radionuclide preparation/purification; (2) chemistry of developing multifunctional disease-targeting scaffolds, (3) chemistry of conjugating radionuclide chelating or bonding agents; (4) chemistry of radiolabeling the theranostic agents; and (5) use of biological testing in development of theranostic radiopharmaceuticals.



@Pacifichem / #Pacifichem



www.facebook.com/Pacifichem

Appendix Item #2

Check List – Students Receiving Pacifichem 2015 Bursaries

- 1] Peter Agbo
- 2] Ahlem Bouhlel
- 3] Maryline Ferrier
- 4] April Gillens
- 5] Matt Gott
- 6] Carissa Hampton
- 7] Junghyun Kim
- 8] Yawen Li
- 9] Santanu Maity
- 10] Kristian Myhre
- 11] Travis Shaffer

Pacifichem 2015, Chemistry for Development of Theranostic Radiopharmaceuticals (#11)

We would like to thank our sponsors for their generous donations and assistance with this symposium



U.S. DEPARTMENT OF
ENERGY

Office of
Science



nordion



TRIUMF

RCTEM
Industries Ltd



University of Washington

 **SCINTOMICS**
Global Radiopharmacy Technology