MBARI SCIENCE COMMUNICATION WORKSHOP
FOR C-MORE GRADUATE STUDENTS AND POST-DOCS

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\textbf{Intellectual Merit}

In Spring 2010, C-MORE formed a Professional Development Organizing Committee (PDOC) to help develop and implement the new professional development training program (PDTP) for graduate students and post-docs outlined in the C-MORE renewal proposal. The committee’s members are L. Ventouras (President, MIT), J. Padilla-Gamiño (C-MORE Education Office Representative; UH), S. Bench (UCSC), B. Burkhardt (OSU), S. Grant (UH), and K. Munson (WHOI). Following extensive discussions and polling of graduate students and post-docs from all six C-MORE institutions, the committee identified effective communication to non-scientific audiences as a key training priority.

To target this priority, Padilla-Gamiño previously submitted an EDventures proposal to offer a science communication workshop in partnership with Communication Partnership for Science and the Sea (COMPASS) in Hawaii in September 2010. This proposal requested funds for both the workshop as well as travel to enable participation from C-MORE partner institutions. The core workshop funding was approved; however the travel funds were not. Instead, the review panel advised we hold a pilot workshop for UH participants, and if successful, recommended that we subsequently request funding for additional workshops at the C-MORE partner institutions.

The Hawaii workshop, attended by 19 graduate students, post-docs and faculty members, was highly rated by all participants (\textbf{Appendix 1}). On a scale of 1-10, the mean overall rank was 9. When asked if they would recommend the workshop to a peer, all 19 participants said yes.

Due to the great success of the Hawaii workshop, we are now proposing this same science communication training be made available to all C-MORE participants. We would ultimately like to organize two additional workshops on the east and west coasts (Phase 2 and 3, respectively). In this proposal, we are requesting funds for the Phase 2 workshop, to be held at the Monterey Bay Aquarium Research Institute (MBARI) in May 2011. That workshop would serve UCSC, MBARI, and OSU participants. In the near future, we plan to submit a second proposal for an additional workshop to be held at WHOI or MIT in Fall 2011.

The proposed workshop would follow a similar format to the Hawaii workshop (\textbf{Appendix 2}). The workshop will last one day and include hands-on training modules such as: message development, mock interviews, communicating through new media and podcasting, and writing for non-scientists. Students will learn what journalists want from scientists, and about the opportunities, challenges and constraints that arise when bridging the scientific and communication worlds. Local and national journalists will actively participate in the workshop, as they did in Hawaii. Workshop evaluations will be analyzed by both the COMPASS staff and the C-MORE evaluation team.
**Broader Impacts**
Communication of research findings is critical for both the advancement of science and a well-informed public. Although scientists commonly convey their findings to their peers (e.g., through departmental meetings, conferences, peer-reviewed publications, books), they rarely receive training to convey their results to non-scientific audiences such as journalists, policymakers and the general public. Having the capacity to communicate and translate research work to wide audiences is of critical importance for the next generation of marine scientists because they can inform policymakers of science and technology advances and stimulate science curiosity in the young, both of which are essential to develop new solutions to global challenges. Several Hawaii workshop participants have since reported using the “message box” exercise when preparing to discuss their research with general audiences.

Post-workshop follow up by workshop attendees will be encouraged. Follow-up activities can also fulfill the requirements for the Science Communication module which has 2 required parts (as listed at [https://sites.google.com/site/cmoreprofdevtable](https://sites.google.com/site/cmoreprofdevtable)):

1. Attend a C-MORE workshop in science communication
2. Subsequently write a press release or other communication based on your research, incorporating feedback from a professional.

We will emphasize the importance of putting the workshop training into action and we fully expect, and will encourage participants (even those who are not following the PDTP) to follow up with press releases or other forms of public communication.

We will also collect electronic copies of “before” and “after” message boxes that can be distributed to C-MORE members (possibly by posting them on the PDTP section of the C-MORE website). Finally, we are committed to creating a web page that will contain information about local media contacts as well as completed press releases and links to any published articles (on blogs or in other media).

**Alignment with C-MORE Goals**
The proposed COMPASS communication workshop addresses all three C-MORE's education goals:

a) *Produce leaders in the next generation of microbial oceanography by providing state of the art training.*

The C-MORE PDTP was created to provide C-MORE post-docs and graduate students with essential professional skills that will help them to succeed in today’s competitive job market. The communications workshop is part of the Communicating Science module of the PDTP and will train participants to become better communicators to a variety of audiences.

b) *Increase scientific literacy in microbial oceanography.*

The press releases and podcasts which will be produced as a result of the training received in the workshop will enhance the microbial oceanography literacy of the target audiences.

c) *Broadening participation.*
If scientists are better able to communicate their science to diverse audiences, they are more likely to gain the interest of their audience, and this should result in increased interest in science among diverse audiences.

**Alignment with C-MORE EDventures Proposal Preference Criteria.**
The proposed COMPASS communication workshop will address all five preference criteria:

2) *Bridge research and education.* This workshop bridges research and education in that participants learn how to communicate their research to educate others.

3) *Involve multiple C-MORE partner institutions.* This workshop serves UCSC, OSU, and MBARI. Planning and coordination is being supported by the C-MORE education office at UH.

4) *Are written by graduate students and post-docs.* This proposal was written by C-MORE graduate students from UCSC, WHOI and UH, based on input from the Professional Development Organizing Committee (PDOC).

5) *Foster partnerships between members of the C-MORE and other scientific and/or educational communities.* The proposed workshop will foster partnerships between C-MORE graduate students/post-docs/faculty and science communication experts, including COMPASS staff, local journalists and outreach specialists at the partner institutions. It will also promote partnerships among the C-MORE partner institutions, as the workshop serves three institutions (MBARI, UCSC and OSU).

6) *Are innovative and may lead to external funding* (“proof-of-concept”). If funded, the workshop will provide professional communications training to C-MORE graduate students, post-docs and faculty. This can lead to future funding in two ways:

   a) After the pilot year of the PDTP, the C-MORE education office will seek external funding (e.g. NSF) for future workshops. However, first C-MORE must pilot these workshops and conduct evaluations to show “proof of concept”.

   b) This training will strengthen participants' abilities to explain the importance of their research, which may improve the success rate of their future research proposals.

**Budget Narrative**
The total cost for MBARI workshops is $10,010 which we are requesting from C-MORE EDventures. The biggest expense is the $6,000 flat fee per workshop, which represents a significant discount from the standard COMPASS fee of $10,000. This fee includes developing a detailed agenda (with input from C-MORE personnel), distributing pre-workshop materials, collecting surveys and biographies of participating students (each workshop is tuned to the participant’s interests and necessities), coordinating the participation of journalists and facilitating two full-day workshops.

We are also requesting funds to cover travel expenses for the COMPASS workshop facilitator. Aside from 2 OSU participants, no travel funds are requested as the rest of the participants will be within easy driving distance.
Based on the pilot workshop in Hawaii, we have found that having ~4 journalists at each workshop significantly improves the role-playing scenarios and enhances the diversity of opinions about how to best communicate science. Thus, we are requesting $800 to offer four $200 honoraria to journalists.

Food for 20 people is estimated at $37 per person, using the rates of MBARI’s preferred caterer. The coffee service has not been included because this will be donated by MBARI.

The pre-workshop dinner ($200) proved to be an important activity prior the workshop in Hawaii. During the pre-workshop dinner, the C-MORE workshop organizers, journalists and COMPASS workshop facilitator (Liz Neeley) had an opportunity to discuss the activities for the following day.

**Itemized Budget**

<table>
<thead>
<tr>
<th>Item</th>
<th>Cost</th>
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<tbody>
<tr>
<td>COMPASS fee For organization of one workshop, including staff time and resources</td>
<td>$6,000</td>
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<tr>
<td>COMPASS workshop facilitator -- airfare (1 person)Seattle-Santa Cruz airport ($220 round trip air + 80 round trip shuttle)</td>
<td>$300</td>
</tr>
<tr>
<td>COMPASS workshop facilitator -- accommodations (1 person) 2 nights @ $150/night</td>
<td>$300</td>
</tr>
<tr>
<td>COMPASS workshop facilitator -- meals/ per diem (1 person) 1 day @ $85/day</td>
<td>$85</td>
</tr>
<tr>
<td>Travel expenses for OSU participants (2 people @ $700/person) ($300 roundtrip air + 100 airport shuttle + $300 for 2 nights hotel)</td>
<td>$1400</td>
</tr>
<tr>
<td>Journalist honoraria 4 journalists @ $200/journalist</td>
<td>$800</td>
</tr>
<tr>
<td>Lunch 25 people @ $37/person/day – excludes coffee break (donated by MBARI)</td>
<td>$925</td>
</tr>
<tr>
<td>Pre-workshop dinners for organizers and journalists @ $200/dinner/group</td>
<td>$200</td>
</tr>
<tr>
<td><strong>TOTAL ESTIMATED COST</strong></td>
<td><strong>$10,010</strong></td>
</tr>
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</table>
Background
The University of Hawai‘i Center for Microbial Oceanography: Research and Education (C-MORE) program organized an all-day COMPASS workshop attended by 19 graduate students, postdoctoral students, CMORE staff and SOEST faculty on Friday, September 24, 2010. Nearly every participant was affiliated with C-MORE. The purpose of the workshop was to help C-MORE students and faculty scientists become more effective and comfortable communicating science to the general public. Workshop leader and COMPASS Assistant Director of Ocean Science Outreach Elizabeth Neeley stressed the importance of understanding the approach taken by journalists when covering scientific research.

Neeley organized several practical activities including mock interview scenarios with reporters as well as interview do’s and don’ts. Participants critiqued each other and themselves following each mock interview scenario, which seemed to improve the quality of each successive interview scenario. One activity that received high praise from workshop participants was the message box. The message box is a graphic that allows researchers to refine their message for multiple purposes including interview talking points, explaining their profession or framing a press release. Tailoring complex microbial oceanography research findings into a simple, understandable message for the lay person is challenging for the best scientists and the message box activity appeared to help participants explain their research in a clear, concise way.

Participants were asked to complete a short evaluation survey as the day’s activities concluded. The survey instrument consisted of ten questions. Participants were asked to rate the workshop in terms of convenience and how interesting and useful the various workshop activities were. Several open ended questions were also asked, prompting participants to provide comments, describe any lessons they learned, and suggestions for improving the workshop. A synopsis of participant responses is discussed below.

Workshop Logistics
In rating the convenience of the workshop, participants were asked to rate (a) the timing of the workshop, (b) the workshop location and (c) the length of the workshop, using a five-point scale where ‘1’ equals very inconvenient, ‘2’ inconvenient, ‘3’ neutral, ‘4’ convenient, and ‘5’ very convenient.

Table 1. Workshop Convenience (n=19)

<table>
<thead>
<tr>
<th>Question</th>
<th>Mean</th>
<th>Median</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Timing of the workshop (date, date, time of day)</td>
<td>4.32</td>
<td>5</td>
<td>1-5</td>
</tr>
<tr>
<td>Workshop location</td>
<td>4.47</td>
<td>5</td>
<td>1-5</td>
</tr>
</tbody>
</table>
Overall, respondents felt that the timing, location and length of the workshop were either convenient or very convenient. Only one respondent out of 19 rated all three as ‘very inconvenient’, which reduced the overall mean convenience score slightly. In an open-ended question asking participants to provide comments or suggestions, the person who rated the convenience of workshop as ‘very inconvenient’ in all three areas asked organizers to “Please send out more information about the schedule before the workshop starts”. The only other ‘inconvenient’ rating was received on the question about the workshop location. Since two workshop participants traveled from the continental United States to attend the COMPASS workshop, it was that reasonable for one of them to remark “aside from the travel time to get here the workshop was very well organized.” So although the location of the workshop—Honolulu, Hawai‘i—may not have been convenient for them, they still rated praised the organization of the workshop. Two participants suggested using name tags for those participating and another asked that more information about the survey and the message box be disseminated in advance of the workshop. However, most participants praised the organization and structure of the workshop.

**Level of Interest**

Participants were also asked to rate how interesting various sections of the workshop were to them, using a five-point scale where ‘1’ is not at all interesting, ‘2’ slightly interesting, ‘3’ moderately interesting, ‘4’ quite interesting, and ‘5’ very interesting.

<table>
<thead>
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<th>Section Title</th>
<th>Mean</th>
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<th>Range</th>
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<tr>
<td>“What journalists want from you and bridging the worlds”</td>
<td>4.32</td>
<td>4</td>
<td>3-5</td>
</tr>
<tr>
<td>“Message Box”</td>
<td>4.26</td>
<td>4</td>
<td>2-5</td>
</tr>
<tr>
<td>“Scenarios”</td>
<td>4.68</td>
<td>5</td>
<td>3-5</td>
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Overall, very positive ratings were reported for all of the workshop sections with “Scenarios” receiving slightly higher ratings than the other workshops. Also, only one response of “slightly interesting” was reported out of 57 total responses (19 responses to each of the three questions).

**Usefulness of Workshop**

Participants were also asked to rate the utility or the usefulness of the workshop on a five-point scale where ‘1’ equals not at all useful, ‘2’ slightly useful, ‘3’ moderately useful, ‘4’ quite useful, and ‘5’ very useful.

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<td>5</td>
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Very positive ratings were given regarding the usefulness of the three workshop sections. Only one ‘slightly useful’ was reported by a participant, and it was the same participant who reported the message box activity as only ‘slightly interesting’. Most comments about the specific sections of the workshop were positive, with only a few suggestions for improvement. Three participants would have liked more time to review and refine their message boxes individually before they were interviewed in front of the group. One person even commented that “I am NOT a fan of role-playing but actually found it [Scenarios] very useful”.

Overall Rating
Respondents were also asked to rate the workshop overall (on a scale where 1 = very poor and 10 = excellent). The mean and median workshop ratings were nine (nearly excellent), with a range of 7-10. Participants were also asked if they would recommend the workshop to a peer and all 19 responded that they would, a strong indication of the COMPASS workshop’s overall utility.

The evaluation survey concluded with three open-ended questions: (a) what lessons from the workshop will you incorporate in your future work and is there anything that you’ll do differently; (b) do you have any feedback about the individual trainers; and (c) please make any additional suggestions for improvement.

Lessons Learned
In describing the lessons they learned from the COMPASS workshop, 8 of 19 participants mentioned that they would use the message box, especially when talking to the press. Two of 19 said they would talk to the press and/or collect contact information on reporters. Two participants declared their intentions to refine the message of their research in a concise way and two others stated that they would prepare more before speaking with the press or speaking about their research.

Evaluation of Trainers
Feedback and comments for the individual trainers were also extremely positive. Nearly everyone praised COMPASS workshop leader Elizabeth Neeley for her time-management and moderation skills, knowledge of scientific issues, and ability to convey how to communicate with the press effectively. Members of the press corps present were also praised for their helpfulness in explaining how scientists can communicate with the press better. The following comment is indicative of the types of comments made by workshop participants: “Liz- very good at keeping session smooth and sparking conversation. David, Helen, Audrey- awesome, SUPER HELPFUL, thank you.”

Suggestions for Improvement
Several additional comments or suggestions for improvement were given by workshop participants. Two felt that the workshop wasn’t long enough and would like to attend a full COMPASS workshop over the course of three days. The opportunity to interact with journalists was mentioned several times. Two participants thought that the importance of
cultivating press relationships perhaps could’ve been mentioned earlier in the workshop. Others expressed general praise for the workshop, e.g., “It was great, thank you”.

In sum, the COMPASS Science Communication Workshop appeared to have a very positive effect on CMORE graduate students and faculty. The fact that all 19 reported that they would recommend the workshop to a colleague is indicative of the program’s merit. Participants had few suggestions for improvement and almost nothing negative to say about the program’s content, organization or timing. The COMPASS workshop seems to be a worthy investment of time and resources for CMORE students and faculty.
COMMUNICATIONS WORKSHOP AGENDA
NSF Center for Microbial Oceanography Research and Education
University of Hawaii, Manoa
September 24th, 2010

Purpose of Workshop: This COMPASS workshop is designed to help participants become more effective and comfortable communicators. You will learn new tools for organizing your thoughts and practice using them in interview situations. We will workshop your ideas, and you will leave with new insights and communications tools to apply as you go forward.

9:00 AM  Overview of training objectives and agenda
9:05 AM  Participant introductions and workshop expectations
10:00 AM  What Journalists Want from You and Bridging the Worlds
What makes a good story, what do reporters look for, and where they find their stories? Discuss their opportunities, challenges and constraints. (Journalist panel: Audrey McAvoy, Ben Markus, David Briscoe & Helen Altonn)
11:00 AM  Coffee Break
11:15 AM  The Message Box
Brief introductory lecture, then participants will work on the message boxes they have drafted and brought with them. Participants will revise on own or in pairs.
12:00 PM  Scenarios
Scenarios: Role-playing typical scientist/journalist interactions: The cocktail party, phone interviews, airplane conversation, etc.
12:30 PM  Lunch
1:30 PM  Scenarios (continue)
2:30 PM  Coffee Break
2:45 PM  Hands-on work in smaller groups – podcasting & writing projects
4:45 PM  Wrap-up & reflection
5:00 PM  Evaluations