Protect the Brain!

Neuroscience outreach event for Brain Awareness Week and beyond

Donita L. Robinson and Kathleen K. Sulik

Bowles Center for Alcohol Studies and Dept. Psychiatry, University of North Carolina, Chapel Hill, NC 27599, USA

Goals

1. To disseminate information and promote enthusiasm about neuroscience to residents of North Carolina, targeting youth
2. To provide structured and fun opportunities for students, faculty and staff at the UNC Bowles Center for Alcohol Studies to practice community engagement

Partnerships

North Carolina Museum of Life and Science provided hands-on lab space and support from museum staff

UNC Bowles Center for Alcohol Studies provided new, brain-centered interactive exhibit staffed by scientist volunteers

Dana Foundation provided Brain Awareness Week supplies (brochures, activity books, pencils, brain erasers, stickers)

National Institute of Alcoholism and Alcohol Abuse provided funding through P60 Alcohol Research Center at UNC and brochures on prevention of alcohol abuse

Volunteers

Recruited by emails to listservs

- Bowles Center for Alcohol Studies
- Neurobiology Curriculum graduate students
- UNC School of Medicine Science Outreach and Teaching

Materials

- Rat brains from the research labs (rats scheduled for euthanasia)
- Human brain loaned from the UNC School of Medicine Body Donation Program
- Sheep brain, plastic human adult and fetal skulls from Carolina Biological Supply http://www.carolina.com/
- Additional animal skulls from the NC Life and Science Museum collection
- Supplies for the cerebrospinal fluid experiment (eggs, Tupperware containers, plastic bags) from local grocery store

Brain Awareness Week: "Protect the Brain!" interactive exhibit

Instructions to volunteers

Brain Awareness Week is just around the corner!

The UNC Bowles Center for Alcohol Studies is sponsoring an interactive exhibit in the Health Lab at the NC Museum of Life + Science in Durham (http://www.ncmls.org/). We will be there Tues Mar 13 – Sat Mar 17, and will work in two shifts: shift 1 is 10:15 – 12:30, and shift 2 is 12:15 – 2:30. The activities are described below; I'd like 4-5 people per shift. ***If you can help, please sign up for one or more shifts via email at DLR@unc.edu. I will need your name and cell phone #.*** If you need to car pool from UNC campus, please let me know and I will facilitate that.

We tested the following activities out in December and they were a big hit! We expect 100 – 150 visitors per day, from preschool to adult, and several elementary and middle school groups. I was told that some groups are specifically coming during our week to see the Brain Lab!

We will lead visitors through 3 stations focused on the theme "Protect Your Brain!"

Station 1: Name that skull. The first protection of the brain is a bone – the skull. The museum has several animal skulls (including a baby human and a tooth whale!!). Visitors can guess what animal the skull came from, look at the surface of the skull up close with a microscope probe, and look at human skull models. (Check it out: http://faculty.washington.edu/chudler/skull.html)

Station 2: The "skin" on the brain. The next station has real brains – sheep brains with and without meninges, rat brains, and a human brain. We'll have gloves if people want to touch the human brain, but only we will actually hold it. (Check it out: http://faculty.washington.edu/chudler/cover.html)

Station 3: Mr Egghead experiment. The last station illustrates how cerebrospinal fluid protects the brain. We will have raw eggs (the brain with meninges) that we put in plastic Tupperware containers (the skull). If it is not busy, kids can draw faces on the eggs. When they shake the egg in the Tupperware, ask what they hear – does that sound good for the brain? We'll show them how to even smash the egg in the Tupperware. Next, we give them a new egg and clean Tupperware and this time they fill the container with water (cerebrospinal fluid). Now what do they hear? Can they break the egg? (Check it out: http://faculty.washington.edu/chudler/vent.html)

Public health messages. The exhibit shows how the body protects the brain, but we can do things to protect our brains, too. As we chat with kids and adults, we can reinforce healthy behaviors: wearing helmets, eating healthy food, protecting our brains from drugs and alcohol (or excessive alcohol in the case of adults). We will have some brochures, activity books, and stickers to give to kids.

If there is a line, we can have the kids do a reaction time test while they wait in line (Check it out: go to http://faculty.washington.edu/chudler/chreflex.html and scroll down to "How fast are you?"). You can test the child's reaction time under different conditions (with eyes closed, while talking, while tapping foot, with non-dominant hand, etc).

The numbers

- 5 days (Tuesday – Saturday)
- 4 hr/day, 2-hr shifts
- 4 – 5 volunteers at a time
- 380 child visitors
  - range 63 – 97/day
- 259 adult visitors
  - range 35 – 71/day

Feedback from visitors

Comment from 6–year-old: "Keep your brain safe."

Comment *from 9-year-old:* "I think that you get a lot of information and I see a lot of people without helmets every day. I think that after they see this lab they will wear helmets more often… I think your setup was perfect. Thank you so much."

Comment from parent: "I love how 'hands on' it was. The egg experiment was great. Applied learning 'sticks' better than theoretical."

Comment from parent: "This was an awesome lab, I would like to see more like these."

Comment from parent: "This is a really good learning process for the children. Excellent lab."

Comment from grandparent: "The scientist is awesome. My granddaughter totally understood and enjoyed her. Thanx!"

Comment from parent: "I think research about the brain is very important. There is a lot still left to learn so lives can be saved."

Volunteer post-event survey

Volunteers: 6 undergraduates, 4 graduate students, 6 postdocs, 4 faculty, 5 staff, 2 professionals

Scale: 1-strongly agree, 9-strongly disagree (Mean ± SD)	
I enjoyed participating in the "Protect Your Brain" Lab.	1.7 ± 0.6
I think this experience was beneficial to the museum visitors who participated.	1.8 ± 0.9
Participating in the "Protect Your Brain" Lab will positively affect how likely I am to participate in community science activities.	2.0 ± 1.4
Are you interested in attending a professional development session in communicating science with the public?	Yes: 59% Maybe:14% No: 23%

Comment from graduate student: "I didn't expect the adults/parents to have such excellent questions. I found talking about the brain with them surprisingly enjoyable."

Comment from graduate student: "My favorite part was talking to a teenage girl who had so many questions about how the brain worked that her parents had to literally drag her away from our booth. I get very excited to see others with that type of enthusiasm for brain science. We collectively encouraged her to ask more questions and to even consider a career in science. I also really loved seeing that the children could make an instant connection with the hands on experiment about protecting their brain (egg)."

Adapting the exhibit

Table-top version of "Protect the Brain!"

- Presented at the North Carolina Science Festival (state-wide, multi-site, 2-week event coordinated by the UNC Morehead Planetarium and Science Center) http://www.ncsciencefestival.org/
- 3-4 scientists staffed table-top interactive booth exhibits at "science street fairs"
  - Fewer skull and brain specimens
  - Streamlined CSF (egg) experiment

Classroom version of "Protect the Brain!"

- Presented in a 45-min activity at day camp (ages 8 to 10)
  - Working in groups of 4-5 students
  - Fewer skull and brain specimens

Acknowledgments

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